MODEL I / MODEL III

PROJECT MANAGER

CAT. NO.
26-1580

TM

Radio Shack TRS-80 SOFTWARE

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Project Manager (26–1580)

IMPORTANT NOTICE

This Radio Shack "Project Manager" software package uses certain keyboard "control codes" to perform some of its editing functions. These codes are not recognized by the earlier TRS-80 Model III microcomputers. If you received details of this optional modificaton with the original purchase of your TRS-80 Model III, your computer will require the optional upgrading to be able to use this program. Your local Radio Shack dealer has whatever TRS-80 equipment you may require and will be able to help you with the necessary modification.

Important Note to Model III Users

From time to time, Radio Shack may release new versions of TRSDOS, the TRS-80 disk operating system. Check with your local Radio Shack or the *TRS-80 Microcomputer News* for notices and instructions on these enhanced versions of TRSDOS.

If you receive a new version of TRSDOS, read the following before making any modifications to your existing software packages (applications, languages, or system utilities):

- Do not convert your Radio Shack software packages for use with the new version of TRSDOS unless you are instructed to do so.
- Before converting a Radio Shack supplied Model I software package to a Model III format, check to see if Radio Shack provides a Model III version of the package. If so, you should obtain a copy of that version.
- If you're using several different software packages, press the RESET button whenever you change software.

Thank-You!

Radio Shack®

A Division of Tandy Corporation

8759106

Project Manager™

Critical Path and Resource Scheduling System

Radio Shack®
A DIVISION OF TANDY CORPORATION
FORT WORTH, TEXAS 76102

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Introduction

Project Manager is a powerful tool for scheduling projects and tasks and using resources to the maximum. Using the Critical Path Method, a technique first developed to handle large construction projects, Project Manager makes a project manageable by dividing it into tasks. The program helps pinpoint which tasks are critical for timely project completion. It develops schedules and creates charts that display each task's predecessors and successors, showing which tasks are on the critical path to project completion as well as the effects of schedule changes. It creates charts showing resources used.

Critical Path Analysis and Gantt, PERT (Program Evaluation and Review Technique), Time, Task and Resource charts are created quickly and easily. These charts allow you to look at projects and tasks in a variety of ways, helping you focus on critical areas and coordinate tasks which must be completed simultaneously.

Project Manager's Features and Benefits

- Determines which tasks are critical and cannot be delayed without delaying project completion.
- Determines which tasks have Slack Days, thus showing where time slippage can occur without delaying completion of the project.
- Permits a schedule to be built allowing for vacations, conferences, deliveries and other events with set dates.
- Allows visualization of the various tasks and subtasks in the context of the overall project.
- Provides methods for altering the schedules of tasks and subtasks within a predetermined project schedule.
- Allows for scheduling all tasks within a time range without reference to real dates and then provides a method for putting those tasks into "real time."
- Allows for a clear presentation of resource allocation for the purpose of cost-benefit analysis.
- Provides charts for the "magnification" of tasks so they can be viewed on a daily, monthly or yearly level.
- Allows for "replication" of any project so as to develop a model of a typical project that can frequently be used with minimal changes for other projects.

- Prints copies of screens.
- Provides for Data Exchange with other programs in the Manager Series, such as Time Manager (26-1582) and Personnel Manager (26-1581).

The Manager Series

Project Manager is one of a series of business productivity programs. The Manager Series programs take full advantage of your TRS-80 computer's capabilities to help you organize, plan, schedule and record significant details from your personal and business life.

System Requirements

Project Manager requires:

- TRS-80 Model I or Model III Computer with 48K Memory
- TRS-80 Expansion Interface (Model I only)
- Two TRS-80 Disk Drives

Optional Equipment:

- A printer with graphic capabilities adds to the effectiveness of Project Manager.
- A third Disk Drive

Starting Project Manager

Begin by making Backup copies of your Project Manager Program and Data Diskettes and store the originals in a safe place. A Program and Sample Data Diskette have been included for both Model I and Model III.

Creating a Backup diskette requires two steps. First, any diskette used with Project Manager must be formatted using the Radio Shack TRSDOS FORMAT utility prior to using any other operation. Next, use the TRSDOS BACKUP utility to copy all information from one diskette to another.

See Appendix A for Model I and III Backup procedures.
See Appendix B for Model I and III Formatting procedures.

After creating Backup diskettes, start the program using the following procedure.

Loading Project Manager

1. Turn on your TRS-80 Computer.

2. Insert your Backup copy of the Project Manager Program diskette into Drive Ø. Check your Owner's Manual regarding diskette handling precautions and procedures.

3. Press the [RESET] button.

4. If you are using a Model III, enter today's date. It is not necessary to enter the time, so press [ENTER] in response to the time prompt.

5. After the TRSDOS Ready (or DOS READY) message appears, type [P] [R] [J] [M] [G] [R] and press [ENTER] .

The screen will show:

```
P R O J E C T   M A N A G E R

INSERT DATA DISK IN DRIVE #1
AND PRESS <ENTER>

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Use the Backup of the original Data Diskette provided with the Project Manager package for the reference information and sample entries while working through this manual.

6. Insert your Backup Data Diskette into Drive 1 (leaving the Program Diskette in Drive Ø) and press [ENTER] .

The Model I screen will show:

ENTER TODAY'S DATE (MM/DD/YY)

Type in today's month, day, year and press [ENTER] . Your program is now loaded into the computer. You are at the Top Level Projects screen.

Refer to Section 2 and to the Reference Card to learn the function of each command listed at the bottom of the screen.

Experiment with the Project Manager program by following the examples outlined in Sections 2-8. When you are ready to create Data Diskettes for making your own entries, follow the procedures in Appendix B.

Caution: Never insert or remove a diskette unless specifically told to do so by Project Manager or unless you have exited the program. This is to avoid a possible loss of data. To exit the Project Manager program, press [CLEAR] repeatedly until the TRSDOS Ready (or DOS READY) message appears.

Overview: A Guide Through Project Manager

Project Manager is a program that helps you organize large and small projects in a systematic way. To do this, it uses the Critical Path Method (CPM), which was first developed to manage large, complex projects like the Polaris Missile Program. CPM enabled the directors of these programs to manage entire projects by monitoring the smaller, more manageable parts.

With Project Manager you can divide a project into tasks, then divide each task into its subtasks, and so on. A project can be divided into as many as 64 levels of tasks and subtasks.

Examine the chart in Figure 1 for a graphic example of a project, the construction of a house, that is divided into tasks and subtasks.

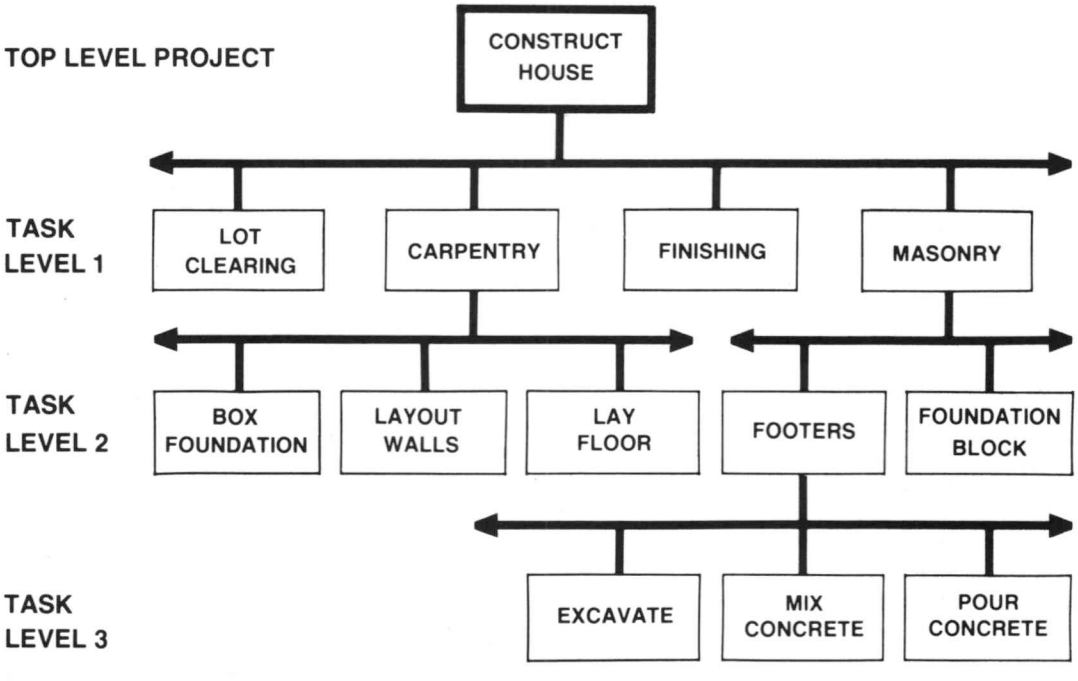


Figure 1.

Think of Project Manager as a tree structure: there is a main trunk (this is the project) and the trunk has branches (this is the first level of tasks). Each of the branches has branches (this is the second level of tasks, or subtasks).

A few conventions can be used to help determine how a project's tasks should be divided. Project Manager utilizes the stepwise refinement method, the same method used in the set of instructions included with a product that has to be assembled before use. If you were to write step by step instructions for your project, you would be well on your way to outlining its task and subtask structure.

In outlining these tasks, keep in mind that whenever part of a project changes, (*e.g.*, a physical change or a move from one department, or work station to another) a new task is indicated. The same holds true for subtasks, which are only tasks at a lower level. For example, a department may have six operations to perform to complete the task that is their responsibility. These are the subtasks of the main task.

Consider the following analogy. Suppose for a moment you are the president of an auto manufacturing company. The most important tasks to you might be as general as assembling, shipping and selling. You would not concern yourself with the details of the daily manufacturing process. That is the responsibility of your divisional managers who will have a much different perspective. They might divide assembling autos into designing, tooling, assembling major components, maintaining inventory and shipping to dealers. This level of management is concerned with the overall production of his division. The department manager will want an even more detailed breakdown, taking the task, tooling, and further dividing it: detail drawings, tooling bids, removal of old tools, receiving new tools, running prototype, readjusting machines, monitoring assembly, etc.

As you can see, the level of detail is directly related to the nature of the task for which the individual is responsible.

By combining a methodical approach with the stepwise refinement method, you will be able to start building your own projects using Project Manager. After you have worked through a few examples, you will better understand what level of detail is needed to successfully manage your projects.

The sample project entries on the original Data Diskette will be used to illustrate how Project Manager works using the Critical Path Method. In the past, a conventional way of developing project charts using the Critical Path Method has been through the use of hand drawn network diagrams as illustrated below.

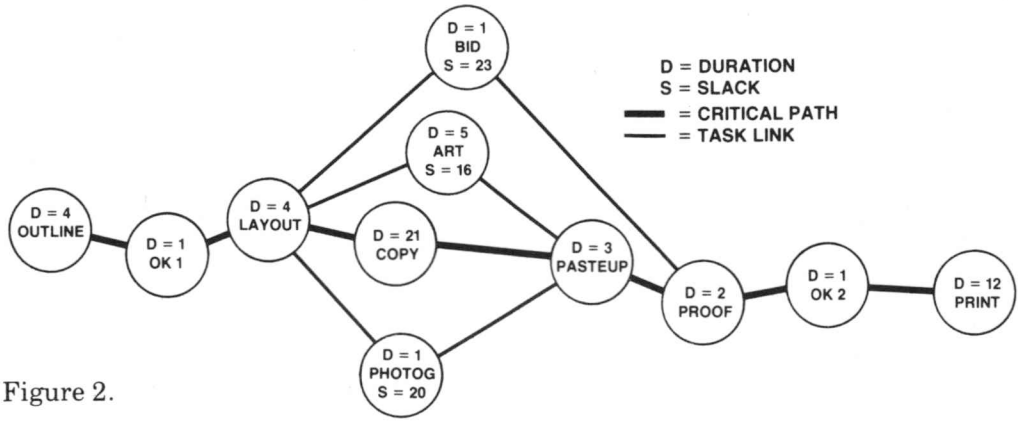


Figure 2.

With the use of the following charts, Project Manager allows you to view and update this information quickly. You will learn to use Gantt, PERT, Time and Task charts for your projects, and how to enter and manipulate the data displayed on them to meet your needs.

System Commands

Five major commands are listed at the bottom of the screen at each level:

<CLEAR> <ENTER> <ARROWS> TITLE /

The [ENTER] and [CLEAR] keys are used to move from one level to another. [ENTER] is used to move from a more general to a more detailed level, such as from the Top Level Projects to the Task Level of one project.

[CLEAR] is used to return to the previous or more general display. [CLEAR] also allows you to "change your mind" about any other command you attempt to use. Press [CLEAR] rather than [ENTER] after starting a command sequence to prevent the command from being carried out.

Although the up and down arrow keys can be used to move from one project or task to another, the quickest way to retrieve a specific record is to type the project or task title and press [ENTER].

The slash key displays the commands used with the Project Manager program. Press [/] and you will see:

A B D E I M P Q R S T U

These are the keystroke commands available at this level.

Each key is used to select a special feature and to perform various functions. Refer to the Reference Card for a brief description of each command. Press [CLEAR] to cancel the / command display.

Top Level Projects

Three sample projects are stored on your original Data Diskette: CATALOG, BUILD X and EXAMPLE. The screen displays each of these projects at the top level. You can maintain an index of all current projects at this level, along with brief descriptions and tentative schedules.

Move the pointer (>) to EXAMPLE at the Top Level Projects. Either type [E] [X] [A] [M] [P] [L] [E] and press [ENTER] or press [↓] until the screen shows:

```
>EXAMPLE: PROJECT 1
  DURATION = 23D                          END DATE = 12/31/82
  SCHEDULE = 12/Ø9/82 TO 12/31/82
```

This sample project will last 23 days, beginning on December 9 and ending on December 31.

Press [ENTER] to move to the Task Level. At this level, the project is divided into five separate tasks: A, B, C, D and E. The project title and description (EXAMPLE: PROJECT 1) are displayed at the top of the screen. TASK A and TASK C are shown, complete with schedules and other data. Part of TASK E is also visible. The number at the bottom right hand corner of the screen is the available memory indicator, refer to Appendix E for more information.

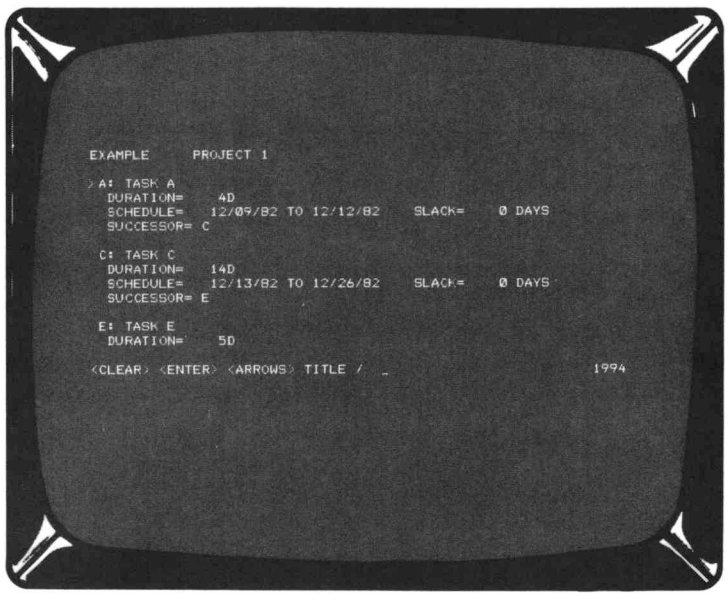


Figure 3.

Press [↓] three times to see Tasks B and D. Or type [B] and press [ENTER] to view Tasks B and D. Press [↑] three times to return the pointer to Task A.

When this project was entered into the computer, each of the five tasks was given a title, description and duration (the number of days needed to complete the task). Predecessors and successors were defined to inform Project Manager of the progression in which the tasks were to be completed.

PERT Charts

Type / L P (List PERT) and Project Manager will display the PERT chart for EXAMPLE: PROJECT 1. The PERT (Program Evaluation and Review Technique) chart can be used in this program to illustrate various task relationships, such as descriptions, resources and schedules.

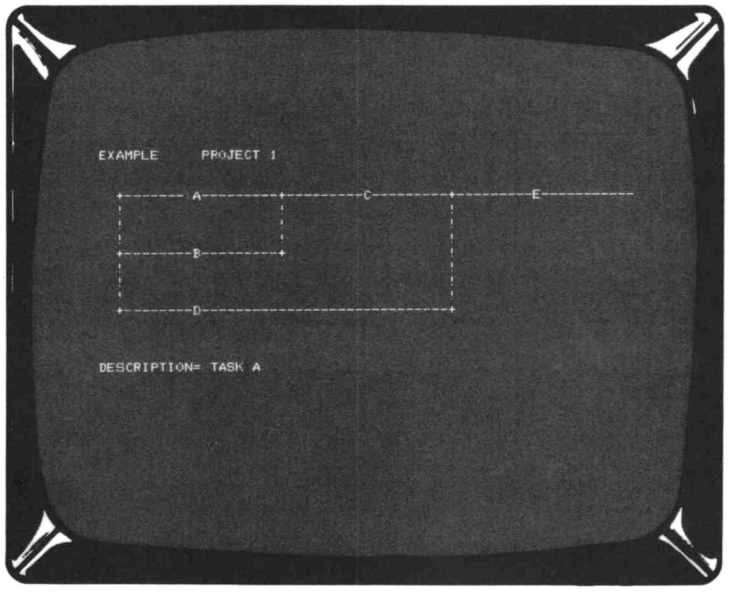


Figure 4.

The five tasks that make up this project are related, as shown in Figure 2. Tasks A, B and D all begin at the same time. Task C does not begin until both Task A and B are complete. When Task C and D are both finished, the final task, E, begins. The project is complete when this final task is finished.

See how many days are needed to complete each task by typing / S N (Screen Duration). The task titles are now replaced on the PERT chart by the duration in days of each task, as shown in Figure 5.

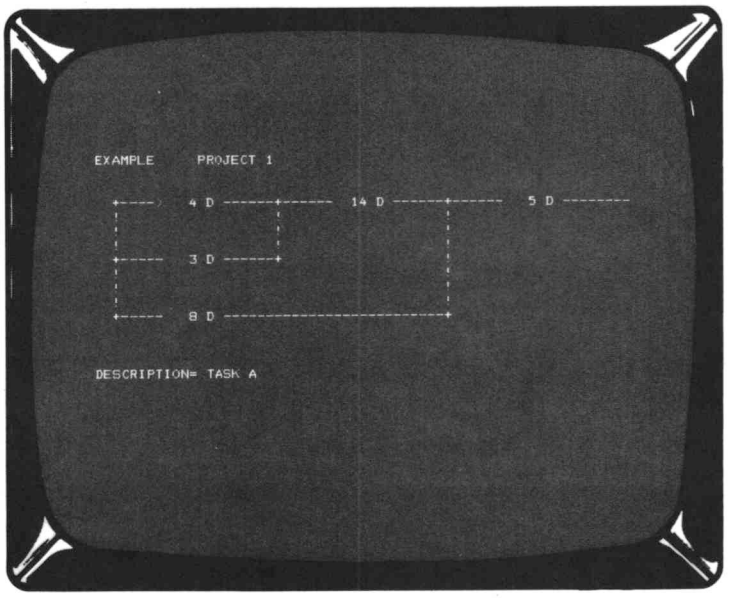


Figure 5.

The caption at the bottom of the screen, DESCRIPTION = TASK A, identifies the task indicated by the pointer. Use the four arrow keys to see the figure for each task. The prompt DESCRIPTION will change to correctly identify each task. Return to Task A when you are finished.

Resource Charts

When resources are added to the data for each task, a complete graphical analysis of resource usage can be shown with the / L R command. The example used here does not contain resource data. Section 6, "Resource Management," describes resources and their analysis.

The Critical Path

When analyzing a project, it is often important to know total completion time. The longest distance in time from the start to the end of a project is the critical path, shown on the top line of the PERT chart display. Follow a path from start to finish, counting the days to completion, and you will see that the longest time is across the top line of the chart.

The critical path for this project includes Tasks A, C and E with 4 + 14 + 5 or a total of 23 days for completion.

The critical path shows the effect of a change in task durations. Task B, for example, is scheduled for a duration of 3 days. If the duration of this task is extended to 4 days, the total project completion time and the critical path will remain unchanged. If Task B is extended beyond 4 days, there will be a longer project completion time and formation of a new critical path.

Use the following procedure to extend Task B to 5 days and see the effect on the critical path.

1. Press CLEAR to return to the Top Level Projects with the pointer set at EXAMPLE.

2. Press ENTER to review the individual tasks.

3. Type B and press ENTER to see Task B.

4. Type / E N (Edit Duration) to edit the number of days for completion of Task B.

5. Type Ø Ø Ø 5 and press ENTER to change the number of days to 5. The previous schedule is no longer valid. A new critical path must be computed to show a schedule with a 5-day duration.

6. Press [/] [C] to create a new schedule and compute a new critical path. Schedules for all tasks will be added to the data on the screen. Press [↓] three times to review all schedules. Type [B] and press [ENTER] to return the pointer to Task B.

7. Type [/] [L] [P] to list a PERT chart with the new critical path. Notice that the schedule is now altered to 5 days for Task B. The top line, which is the critical path, shows the longest distance in time from start to finish.

8. Type [/] [S] [D] to show the descriptions on the chart. Task B is now on the critical path and is included on the top line of this display.

9. Press [CLEAR] to review the Top Level Projects. In order to meet the original completion date of 12/31/82, the project must now be re-scheduled to begin on 12/ø8/82.

The effects of change in more complex projects are more difficult to determine than in this simple example. Project Manager graphically illustrates the effect of any change in schedules or completion times, whether simple or complex.

Task Charts

The Task chart ([/] [L] [T]) is identical to the PERT chart except that it is displayed in a vertical format. Use it when you need to view the data vertically. Press [ENTER] to return to the Task Level for EXAMPLE and type [/] [L] [T] to list the Task chart. (You can also enter this command from the PERT chart or any other chart.) Notice that the critical path now appears as a vertical line on the left edge of the chart.

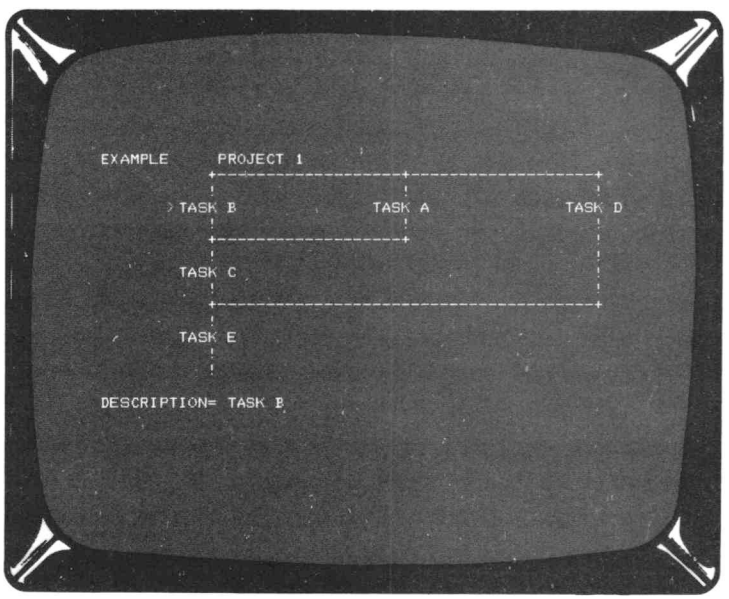


Figure 6.

Gantt Charts

To see the entire project as a bar graph, with each task shown in real time, select the Gantt chart. Type [/] [L] [G] (List Gantt) to display the Gantt chart for EXAMPLE: PROJECT 1.

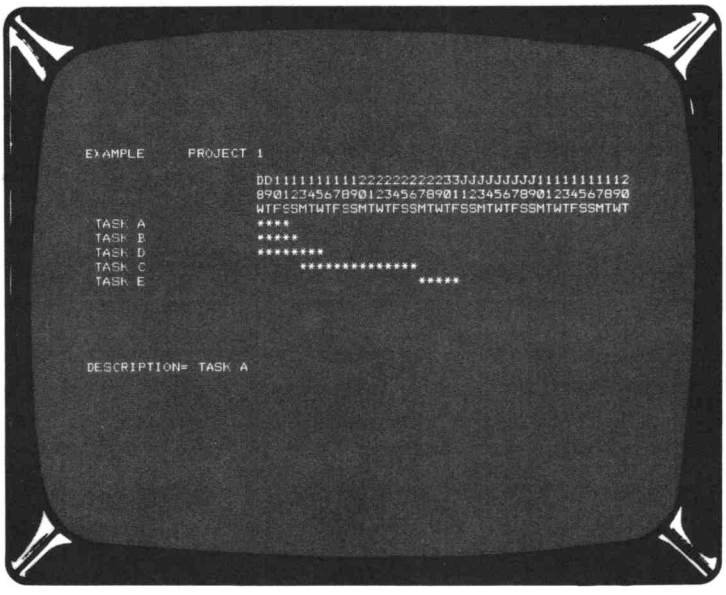


Figure 7.

Each task in this display is shown both in terms of the total time required and the daily schedule. The top line indicates that the project begins with Task A on December 8 and ends with completion of Task E on December 31. When the PERT and Gantt graphic displays are combined, the relationships between tasks and schedules can be evaluated.

Time Charts

The Gantt chart may also be viewed in a vertical format; type [/] [L] [M] (List Time) to display a Time chart. The Begin and End dates of each task and the time relationships of the tasks are seen at a glance in this effective vertical display. If a task is too large it may not all be displayed on the screen, however it will be printed in its entirety when the ([/] [P]) command is issued.

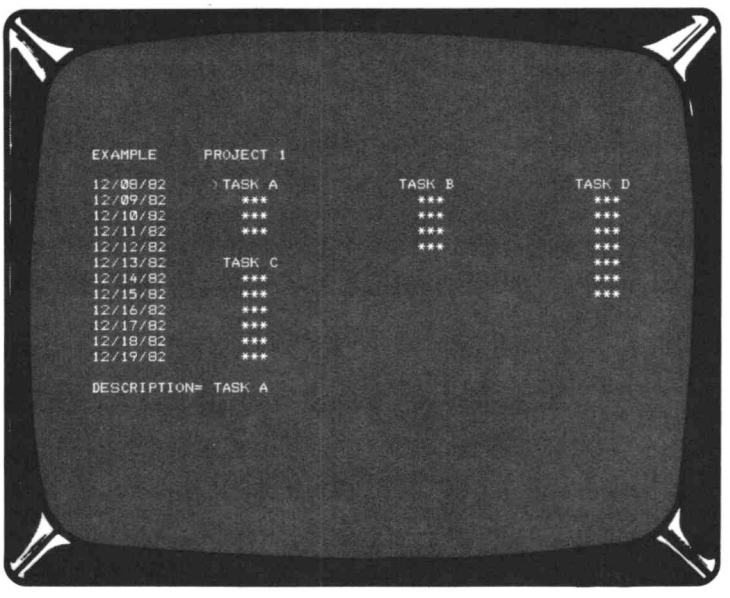


Figure 8.

Screen Data

The information displayed in the PERT, Gantt, Task, Time and Resource charts may be changed with the [/] [S] command.

With the Time chart still on the screen, type [/] [S] and you will see:

SCREEN: T D N R K

These letters represent TITLE (T), DESCRIPTION (D), DURATION (N), RESOURCE (R) and SCHEDULE (K). Typing each of these selections changes the screen data to the category specified.

Type [T] and the title of the task will be displayed on the chart. Type [/] [S] [D] to display descriptions on the chart.

To practice altering screen data, type [B] and press [ENTER] . The pointer is now on Task B. Type [/] [L] [P] to list a PERT chart. Type [/] [S] [K] to select the schedule category. The task descriptions are now replaced by the Begin and End dates for each task in the project. Practice using the [/] [S] [T] , [/] [S] [D] and [/] [S] [N] commands to change the PERT chart data for project EXAMPLE. Since this project does not contain any resources, do not use the [/] [S] [R] command. Resource functions will be discussed in Section 4, "Developing Your Own Project."

Altering Captions

The information in the captions at the bottom of the screen may be altered with the / A command. Use it to change information in the PERT, Gantt, Task and Time charts.

From the PERT chart for Task B of EXAMPLE, type / A to see:

ALTER: D N R S T K

These letters represent DESCRIPTION (D), DURATION (N), Resource (R), SUCCESSOR (S), TITLE (T) and Schedule (K). Typing each of these commands allows you to examine and compare the data for each task indicated by the caption.

Type D to display the description in the bottom caption. Then type / A N to display the duration. Practice using the other commands for altering captions (except for / A R since there are no resources in this project).

The Alter caption contains specific data for each task indicated by the pointer (>). Moving the pointer from one task to another with the arrow keys (or the task letter and ENTER) enables you to compare durations, resources, successors, schedules, etc.

Type / A K . The schedule for Task B, indicated by the pointer, appears at the bottom of the screen. Use the arrow keys to review schedules for other tasks.

Experiment with / S and / A combinations to see the variety of information that can be displayed at the chart level.

Changing Time Intervals

When viewing or printing the Gantt, Time and Resource charts, adjust the time interval to expand or contract the display. Select the Gantt chart / L G for project EXAMPLE and type / I . You will see:

INTERVAL: D W M Y

The interval prompt indicates that you can select a daily, weekly, monthly or yearly schedule. Press W to see the bar graphs contract to display the weekly schedule. Type / I D to see the bar graphs expand back to the daily schedule for project EXAMPLE. A daily interval is best with project EXAMPLE because all the entries can be shown on a daily schedule. A weekly or yearly schedule may be required to show optimum detail in longer projects. Type / S T to return to the title mode.

Locating Reference Information

Refer to the Reference Card for a brief explanation of the remaining system commands. Read the following chapters in sequence, using your Backup Data Diskette for experimentation. If you decide to make your own entries at this point, create a new Data Diskette, using the procedure described in Appendix B.

Critical Path Method

The critical path analysis technique allows you to examine the effects of change on all project schedules. The critical path for any project is calculated with the / C command. The program can then display a complete schedule for a project, showing Begin and End dates for each task, resource utilization, duration and either PERT or Gantt charts.

Sequential Projects

Some projects are simply a sequence of tasks in which each step is critical to the completion of the project on schedule.

Driving to work, for example, can be considered a series of events necessary to your arrival at the office. A delay in traffic would defer arrival, regardless of where the delay occurred. Similarly, all tasks on the critical path are affected, regardless of which task is interrupted.

The Sequential Projects chart, Figure 9, shows that Tasks A, B and C are the critical path. Each task is essential to accurate scheduling of the project.

SEQUENTIAL PROJECTS

Figure 9.

Parallel Projects

The parallel process is shown in Figure 10. When Task A is completed, Tasks B and C begin in parallel. Task D begins after both B and C are complete.

PARALLEL PROJECTS

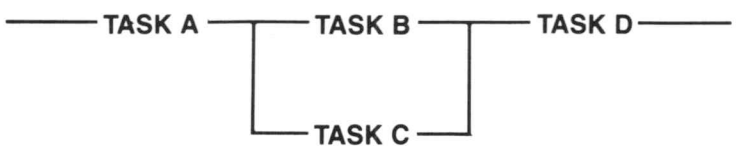


Figure 10.

The critical path is not always obvious for projects containing many parallel tasks. Tasks B and C take place at the same time in the Parallel Projects example. The critical path for the project will include the task with the longest completion time.

If Task B becomes longer than Task C, the critical path will include Tasks A, B and D. The critical path A-B-D determines both the schedule and duration of the project. The duration of a project is extended if any task on the critical path is extended.

If Task C takes less time than Task B, it is not on the critical path because it does not control the duration of the project. Extending the time required to complete Task C may or may not affect the project schedule, depending on whether or not the new time allotment extends beyond Task B.

If Task C does extend beyond Task B, a new critical path (A-C-D) is formed. Figure 11 illustrates the effect of this change.

NEW CRITICAL PATH

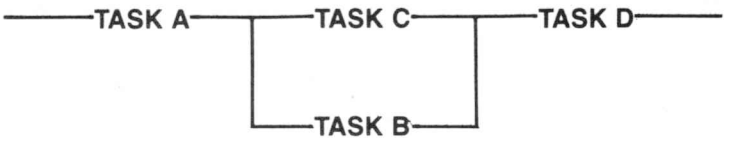


Figure 11.

Calculating the Critical Path

The critical path, calculated with the / C command (but not seen until a chart is displayed), indicates whether a change in dates or completion time of a task will affect the overall schedule or duration of a project.

Figure 12 shows how EXAMPLE: PROJECT 1 appears as a PERT chart, with the description selected as the caption. The critical path is shown as the top line and includes Tasks B, C and E.

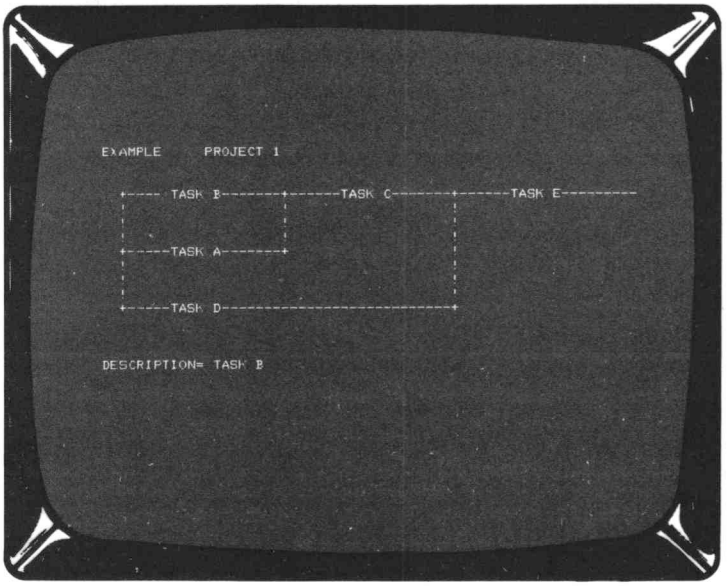


Figure 12.

Duplicate this chart on your screen by following these steps:

1. Select EXAMPLE: PROJECT 1 by moving the pointer to this project at the Top Level Projects.

2. Press [ENTER].

3. Type [/] [L] [P] (List PERT) to display a PERT chart.

4. Type [/] [S] [D] (Screen Description) to show the description of each task.

The time required for each task is displayed in Figure 13. The critical path for this project is 24 days in length. That is, Tasks A, C and E total 24 (5 + 14 + 5).

Duplicate this display by typing [/] [S] [N] (Screen Duration) to show the number of days for each task.

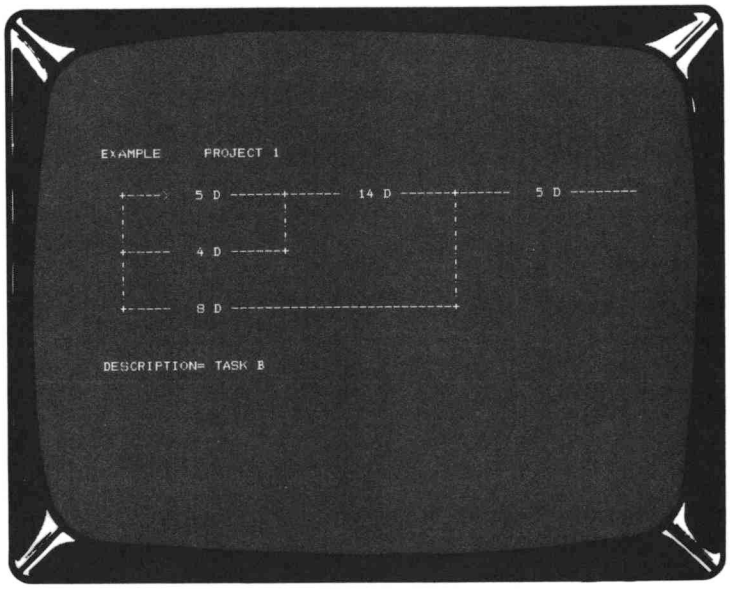


Figure 13.

Type / S D to display the task descriptions. If Task D is extended beyond the time required to complete the tasks now on the critical path, a new critical path will be formed. Extending Task D to 28 days produces the new PERT chart shown in Figure 14.

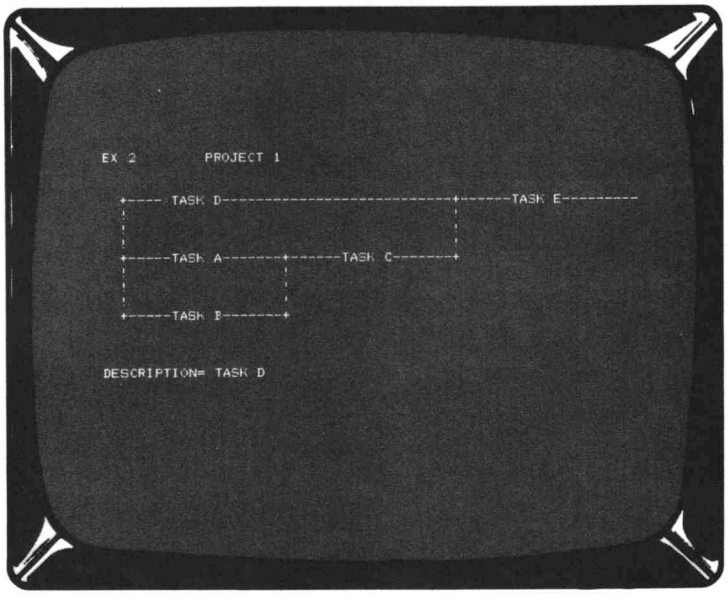


Figure 14.

Here are the steps for creating a copy of the project, extending Task D to 28 days, calculating a new critical path and displaying the results:

1. Press [CLEAR] to go to the Top Level Projects.

2. With the pointer (>) on EXAMPLE: PROJECT 1, type [/] [R] (Replicate) to produce a copy of this project. Replicating a project is not required, but it is often easier to work with a copy that can be deleted later.

3. The NEW TITLE= prompt requests a new title. Type [E] [X] [ ] [2] and press [ENTER] .

4. Press [ENTER] to go to the Task Level for EX 2.

5. Type [D] and press [ENTER] to select Task D. Notice that the task duration is 8 days and the schedule extends from December 8 to December 15.

6. Type [/] [E] [N] (Edit Duration) to edit the number of days required for this task.

7. Type [Ø] [Ø] [2] [8] as the new duration. Use the [→] and [←] keys to retype the numbers if you make a mistake. Press [ENTER] .

8. Type [/] [C] to calculate a new critical path for the project. Notice that the duration is now 28 days and the schedule extends from November 29 to December 26.

Important: Whenever a duration or schedule is changed, a new critical path must be calculated before the project charts can be displayed. The project may or may not show a change in the critical path, depending on the results of this calculation.

9. Type [/] [L] [P] to display the PERT chart shown in Figure 14. Task D, with a duration of 28 days, is now on the critical path.

Using Critical Path Analysis

Effects of schedule changes on the critical path in the above example were easy to see. Project Manager gives you the computational power to create a new critical path for even the most complex project, demonstrating the total effect of any change you want to examine.

Critical Path Error Messages

It may not be possible to calculate a critical path for a project because of schedule conflicts, date conflicts or program loops. If the critical path cannot be completed, Project Manager will list an error message, indicating the difficulty.

CPA STOPPED: Ø DURATION TASK

This message indicates that a critical path analysis cannot be completed because a task has not been given a duration time. Without a duration, the program will not know if the task is to appear on the critical path or in parallel with another task.

You might see the CPA STOPPED: Ø DURATION TASK message after initially entering durations for each project and task. Check the tasks on the level the critical path analysis was attempted. One of them (at least) will be without a duration. To continue, enter any missing durations (use / E N to edit the duration field).

CPA STOPPED: DATE CONFLICT

This message indicates a conflict between a schedule and a mandatory Begin or End date.

You will see the date conflict message if:

1. You enter a mandatory End date that precedes the earliest possible completion date computed by Project Manager.

2. You enter a mandatory Begin date that precedes the earliest possible starting date computed by Project Manager.

Check the task indicated by the pointer and compare it with the schedule listed at the bottom of the screen. If this is not the source of the problem, check through the tasks to look for other potential conflicts in project scheduling.

PROJECT TOO LARGE, OR LOOP IN TASK STRUCTURE

This message indicates that the computer is out of memory. If you have entered too many projects or tasks at one level, try to subdivide further and enter these new subtasks at a deeper level. Enter no more than 5Ø tasks at any (or all) of Project Manager's 64 levels to avoid possible problems.

A loop in the task structure indicates a problem in the task predecessor/successor relationships. If, for example, two of your tasks have a loop such that "B is a successor of A and A is a successor of B," then the program will follow that loop until it runs out of memory when you try to compute a critical path analysis with /C.

EDIT ABORTED: WOULD GENERATE TASK STRUCTURE LOOP

If you edit the successor relationships of your tasks so that none of the tasks has the parent project as a predecessor, Project Manager will not attempt to compute a critical path analysis. Instead, it will generate the above message. After receiving a task structure loop message, carefully check the successor relationships of all tasks and compute a critical path with /C before moving to another level.

Slack Days

Slack days listed with each task schedule show how many days a task can extend beyond its planned duration without affecting the critical path and project completion date.

Tasks A and C in Figure 15, for example, can slip 10 and 9 days respectively without extending the deadline for the project.

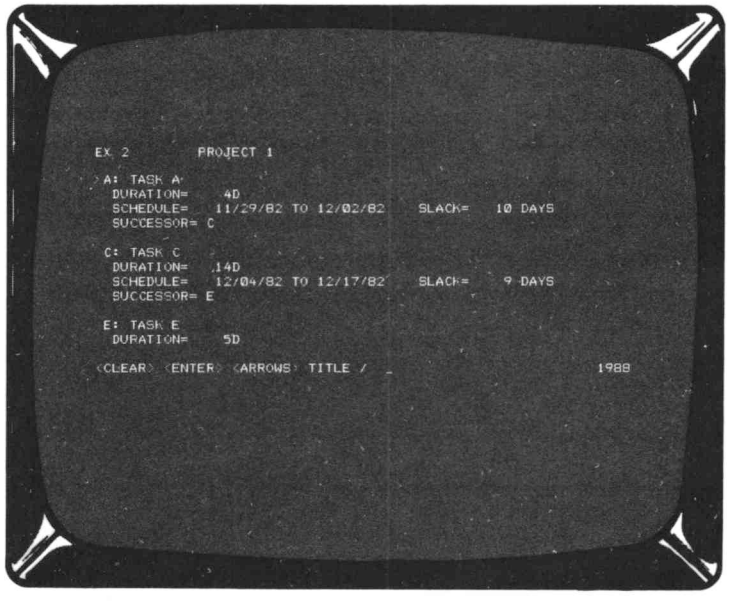


Figure 15.

Type [/] [L] [D] to list the detailed report outlining all the tasks in EX 2.

Slack days can be created whenever a task is in parallel with a task on the critical path.

To return your sample Data Diskette to its original condition, delete EX 2 as follows:

1. Press [CLEAR] to return to the Top Level Projects.

2. The pointer should be opposite EX 2: PROJECT 1.

3. Type [/] [D] (Delete) and the prompt, PRESS Y TO DELETE will appear. Press [Y] (Yes). The Top Level Projects display appears; notice that project EX 2 has been removed.

Developing Your Own Project

In this chapter you will develop your own project and enter it into Project Manager. This chapter will guide you through the steps.

First you must set up a project to enter.

How to Get Ready

Invent a project and divide it into separate tasks. Don't make the project too simple. It won't be worth your while to use the computer to analyze it. Don't make the project too big. You will get lost or overwhelmed in the job of entering all the data.

Remember that the purpose of this chapter is to give you practice analyzing a project using Project Manager. Take a small project to start with, one composed of less than a dozen tasks.

Begin by looking at how a project that is already on your Data Diskette would have been set up.

A Sample Project: Writing and Printing a Catalog

Let us suppose you need to schedule the production of a catalog and that it needs to be sent to the printer as soon as possible. First list the tasks to be done:

1. Design and schedule the project.
2. Approve the outline.
3. Do the layout.
4. Write the copy.
5. Do the line drawings.
6. Get the product shots.
7. Get the printer's bid.
8. Do the paste-up.
9. Get the printer's proofs.

10. Approve the proofs.

11. Do the final processing.

Make sure the tasks are in the order they have to be done. For example, design and scheduling will have to be done before anything else, layout has to be done before writing copy or doing line drawings, and so on. Other tasks can go on simultaneously, for example, writing copy, doing line drawings and getting product shots. In this part of the preparation you are determining Predecessors and Successors.

Determine how long (duration) each task will take. When you do a critical path analysis using Project Manager, the Durations you entered will determine when tasks and the whole project will be completed (End Date). This will determine schedules.

Next assign the resources. Make a manager and a secretary the resources for the first task, design and scheduling. Assign a photographer to take product shots. Also determine how many resources you will use, for example, how many photographers.

Put your tasks in chronological order. List the information you will need for a critical path analysis (this will be discussed further in the next section).

Use the worksheets which follow the Glossary of this manual to organize the data you will enter into the Project Manager program.

Once you have gathered and organized the information you want, use the program and put the information on your Data Diskette. With the entries in, you will be ready to experiment with the critical path, establish schedules and monitor the progress of your project.

Entering a Project

To record a new project onto your Data Diskette, begin at the broadest level. First, press [CLEAR] to move to the Top Level Projects. Then, type [/] [B] (Begin Project). You are now ready to enter your own data into the computer.

TITLE: When the computer requests a title, enter any name, with a maximum of eight characters. Press [ENTER] .

DESCRIPTION: Enter a description up to 5Ø characters long. Press [ENTER] .

BEGIN and END DATES: You have several options: If you press [ENTER] without typing a date, the program assumes that the project begins on the current date and will use this date to create schedules (schedules are created after you do critical path analysis, discussed in the next chapter).

If you enter a Begin Date, the program will use this date as the starting date for the project.

If you enter an End Date, the program will use this date as the End Date for the project unless other Begin Dates conflict.

Begin and End Dates are considered as mandatory dates by Project Manager. They fix the project in real time.

Dates are entered using the format MM/DD/YY (e.g., 12/Ø5/82). Press [ENTER] after typing each date.

Both Begin and End Dates may be changed later with the edit command (see page 29).

TM CODE: Next, you will see the TM CODE prompt. If you do not have the Time Manager program, press [ENTER] and move to Entering Task Data. If you are using the Time Manager program and want this project to appear in your calendar, enter any code that would be applicable. Codes can consist of anything from the initials of the person responsible for the project to a project number or abbreviation. For more information, see Section 9.

When you have entered all the data, the program will record your new project and add it to those stored on your Data Diskette.

Entering Task Data

Press [ENTER] to go to the Task Level. The screen heading will display the project title and description just entered. Type [/] [B] (the same command used for entering projects) to define the tasks.

Note: Some of the prompts referred to below will continue to appear until you press [ENTER] without entering any information. This is to accommodate data for as many tasks as will be involved.

TITLE: Choose a unique title, up to 8 characters in length, for each task in your project. Press [ENTER] .

DESCRIPTION: Type a brief task description, up to 5Ø characters in length; only the first 15 characters will appear on the charts. Press [ENTER] .

DURATION: Enter the projected time duration for each task by typing in a four-character number; for example, [Ø] [Ø] [Ø] [5] would represent 5. Specify the time period desired: [D] for days, [W] for weeks, [M] for months or [Y] for years. If you type in no letter, the program defaults to days. Examples: [Ø] [Ø] [Ø] [5] = 5 days, [Ø] [Ø] [Ø] [5] [M] = 5 months.

See "Setting Task Duration Multipliers," page 31, to permanently alter the duration. When a task begins or ends within a specific time range, enter those dates. Press [ENTER] after typing the duration.

PREDECESSOR: When Project Manager requests task predecessors, enter the titles of tasks that must be completed before beginning the current task. Press [ENTER] when the final predecessor has been defined.

Although predecessors are taken into account by the program, they are not displayed with the task. The task will become a successor of the task you have indicated as a predecessor.

SUCCESSOR: The successor prompt refers to the step or steps that must be taken after the current task is completed. Enter the titles of the tasks that will begin after the current one is completed. Press [ENTER] when you have inserted all the successors.

RESOURCE: If you do not want to define the resources needed for this task, press [ENTER] .

To define a resource, press ☑ when the prompt RESOURCE= appears. The RESOURCE CODE TABLE included on your original Data Diskette will appear on the screen filled with suggested applications. To change the resource codes, refer to the section, "Changing Resource Codes," on page 31 for a detailed explanation.

Or press a letter indicating one of the suggested codes. You will see the prompt, AMOUNT=. Enter either the number of resources needed to complete the current task or the cost of each resource.

After you type an amount and press [ENTER] , you will see the RESOURCE= prompt again. You can keep entering resources and amounts or press [ENTER] to move to the next prompt: TM CODE.

TM CODE: If you do not have the Time Manager program, press [ENTER] to leave this field blank. If you are using Time Manager, enter a code (for example, the initials of the person responsible for this task). This code will be used to transfer information about the current task to Time Manager. See Section 9 for more details regarding this procedure.

The new task will now be recorded onto the Data Diskette and displayed on the screen. Use the [↑] and [↓] keys to review tasks you have entered. Then read the procedures described below to edit or delete projects and tasks.

Editing Projects

Edit the data for a particular project by positioning the pointer at the title of the project (at the Top Level Projects) and typing / E . You will see:

EDIT: B D E T M

These letters represent: BEGIN DATE (B), DESCRIPTION (D), END DATE (E), TITLE (T) and TM CODE (M).

Press the letter of the category to be edited; it will appear at the bottom of the screen. Type in the new data and press ENTER .

Make as many changes as necessary by typing / E and repeating the above process. You can space over any letters that are to remain unchanged with → and ← .

Editing Tasks

To edit data for any task, position the pointer on a task title and type / E . You will see a prompt that includes some of the letters displayed in the editing mode for projects, as previously described.

EDIT: B D E N R S T M

The B, D, E, T and M keys perform the same functions at the Task Level as they do at the Top Level Projects. Three additional letters appear in the task editing prompt: DURATION (N), RESOURCE (R) and SUCCESSOR (S).

Type the letter of the category to be edited, make appropriate alterations and press ENTER .

DURATION: To change the duration of a particular task, type / E N . Then type the new information and press ENTER .

When a project is assigned a numeric duration without specifying a time period (D, W, M, Y), the system defaults to days (D). If any letter for a time period has been entered, that time period (D, W, M, Y) becomes the default until another letter for a time period is entered. For example, if a duration (project, task or subtask) is edited from Ø Ø Ø 4 D to Ø Ø Ø 1 W , the default duration does not change on any other level.

RESOURCE: To change a resource, type [/] [E] [R] . The first resource in your task will appear on the prompt line. Refer to the resource code table, if necessary, by pressing [/] . Select the letter of the new resource, and that resource will replace the previous one on the prompt line. If the amount also needs to be changed, press [→] , then type in the new information. When you are satisfied with the new resource information, press [ENTER] to transfer it into position with the other task entries.

Use the [↑] and [↓] keys while in /ER to move through the list of a task's resources and edit as many as necessary. To add another resource, press [↓] until the last resource for that task is on the bottom line. Then press [ENTER] one more time. At this point you can view the resource list, make your choice and enter it in the same manner as described above.

Delete a resource by typing [/] [E] [R] ; press [↓] or [↑] to move to the resource selected and press [!] .

SUCCESSOR: The [/] [E] [S] command operates similarly to [/] [E] [R]. However, when you use [/] [E] [S] , Project Manager assumes you are altering *existing* task relationships. Any new tasks you add to your project must be built using [/] [B] before attempting to use [/] [E] [S] . If you have not previously defined a task with [/] [B] and you type a new successor, you will see the message, DOES NOT EXIST. When you see this message, press [CLEAR] and type [/] [B] to define the new task. You can then use the predecessor and successor prompts to link this new task with other existing tasks.

After altering the task relationships, be sure to type [/] [C] to compute a new critical path.

TM CODE: If you have Time Manager and want to alter a task's Time Manager code (TM CODE), type [/] [E] [M] and enter the new code. This edit would be necessary if the initials of the person responsible for that task changed due to personnel changes.

Deleting Projects

At the Top Level Projects, use the arrow keys to move the pointer to the title of any project you wish to delete. Type [/] [D] and you will see:

PRESS Y TO DELETE

Press [Y] to delete an entire project, including all its tasks and subtasks. Press [N] to cancel the delete command.

Deleting Tasks

At the Task Level, use the arrow keys to move the pointer to the title you wish to delete. Or type the title and press [ENTER]. Type [/] [D] and you will see:

PRESS Y TO DELETE

Press [Y] to delete the task (as well as its subtasks). Press [N] to cancel the delete command.

Setting Task Duration Multipliers

When the program is loaded, Project Manager assumes that all durations entered are in days. To change the default time unit, or task duration multipliers, type [/] [M] and select [D] (Days), [W] (Weeks), [M] (Months) or [Y] (Years).

Subtasks

General information about a group of unrelated projects can be recorded at the top level of Project Manager. At the second level, the tasks necessary to complete one of the projects are created. At the third, fourth, fifth and subsequent levels, one task can be further subdivided into separate categories. A large project can be subdivided into tasks and subtasks in this manner, enabling you to separate an overwhelming project into manageable parts.

Each project and its tasks can be reviewed in a number of ways. The critical dates, necessary resources, deadlines and other factors can be determined for each phase of the overall project.

Changing Resource Codes

The set of sample resource codes included on the original Project Manager Data Diskette can be altered to meet your requirements when editing ([/] [E]) or beginning ([/] [B]) a task. The procedure is similar for both.

Alter resource codes while editing tasks as follows:

1. Type [/] [E] [R] .
2. Press [/] to display the RESOURCE CODE TABLE.
3. Press [ENTER] and the screen will display RESOURCE TO BE ALTERED.
4. Select a letter, type the new resource name and press [ENTER] .

Continue changing or adding resource codes by pressing [ENTER], selecting a code letter, typing a name and pressing [ENTER].

The process continues until you select a code letter without first pressing [ENTER]. The program will display the code name of the letter you entered and show AMOUNT=.

If you do not want to add this new resource to your project or task, press [CLEAR]. Or if you want another code name, type in the appropriate code letter. Otherwise, press [ENTER] to accept the code name displayed and enter the amount of the resource needed for this task. Use [►] and [◄] to move back and forth between the RESOURCE= and AMOUNT= prompts. To enter the amount, use the [►] key to move over to the appropriate position, type the number and press [ENTER].

Detailed Data Mode

After you have entered all the information necessary for your projects and tasks, the screen will show the titles, descriptions, durations, Begin and End dates, resources and successors (predecessors are not displayed). This default display of project information is called the detailed data mode. When you return to the Top Level Projects, you will see the data in this mode.

Dates and Scheduling

You can assign and adjust dates several ways while scheduling a project. The program can create a complete schedule for each task if you specify only the duration of each task and its relationship to predecessors and successors. It assumes today's date as a mandatory starting date until a Begin or End Date is entered at the Top Level Projects or at a Task Level.

If a Begin or End Date is entered for a project or task, it becomes a mandatory date; the schedule is constructed around this requirement. They can be used at various levels within a project, task or any level of subtask.

Project Manager, a critical path analysis program, will create an optimized schedule within the specified time duration, provided there are no conflicts. With this technique, you can adjust projects to meet vacation times, arrange resources for optimum utilization and adjust work flow to match facilities.

Conflicts in dates, if they occur, will cause an error message when a critical path analysis is attempted. These messages are described in the next section (and in Appendix D).

Project Modeling

One of the most useful features of Project Manager is its ability to create models of typical projects that you will use over and over. Whether you are building widgets in a manufacturing company or creating an advertisement for a marketing firm, there are certain aspects of your projects that will often repeat or be very similar. By taking the time to create one detailed project outline, you will have it available for unlimited future use. With minimal changes, you will be able to create a detailed schedule for similar projects in just a few minutes.

Project planning and scheduling will now become faster and easier with the use of the Replicate (/ R) command.

Replicating a Task

Here is an example of a product manufacturing model that uses the replicate command to create a different production schedule from the same original outline. After replicating the schedule, you will change the title and duration of one task to create a new schedule.

1. At the Top Level Projects, move the pointer to BUILD X: PRODUCE X TYPE FIXTURES. This can be done by using the arrow keys or by typing B U I L D ☐ X and pressing ENTER .

2. Press ENTER to move to the Task Level.

The pointer is opposite the task titled DESIGN. Review each task, its schedule and resources, by using the ↑ and ↓ keys. Return the pointer to the DESIGN task.

3. Type / L G (List Gantt) to display the Gantt chart for this task. It may take a minute before the chart appears on the screen. Note that it initially shows daily intervals.

4. Change the interval to weekly by typing / I W (Weekly Interval), since your task is longer than the screen display allows.

The entire BUILD X project from start to finish is displayed, illustrating how each task relates in weeks to the overall schedule (Figure 16).

The third row of the weekly chart displays the letter M, indicating that all the dates are Mondays. The first two rows show the month (indicated by the first letter—J, F, M, A) and the date. The design task is scheduled to begin the week of Monday, December 28 and end by Monday, January 25.

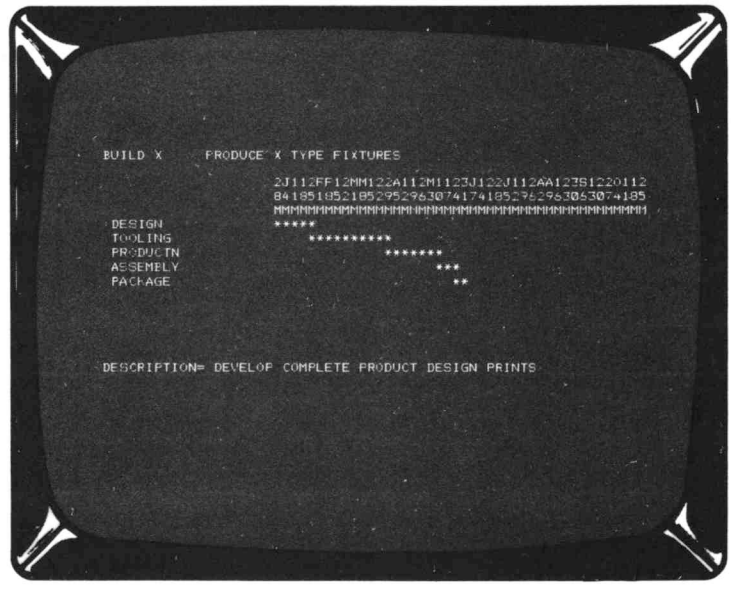


Figure 16.

If you have changed the information displayed on the screen with / A or / S , your screen may appear slightly different. Type / A D or / S T to match the screens exactly.

Creating a New Task

You can now create a second task called BUILD Y using all the task resources and information already on file under the BUILD X name.

1. Press CLEAR to return to the Top Level Projects for BUILD X.

2. Type / R to replicate the BUILD X project along with all of its tasks, durations and resources.

3. When the prompt, NEW TITLE= appears, type B U I L D ☐ Y and press ENTER .

4. Press ↑ to locate the original task (BUILD X).

5. Press ↓ to move the pointer back down to BUILD Y.

6. Type / E D (Edit Description) and use the → key to move the cursor over to the X.

7. Type Y and press ENTER to change the description.

8. Press ENTER to move to the Task Level. The information displayed exactly matches the task you copied. At this point you can edit BUILD Y to meet the specific schedule and resource requirements of a different product.

Changing the Schedule

1. With the pointer indicating the DESIGN task, type [/] [E] [N] (Edit Duration) to change the number of days from the original 3Ø to 9Ø.

2. Move the cursor to the 3rd column with the [→] key.

3. Type [9] and press [ENTER] .

Notice that the SCHEDULE heading and slack days have been removed. This results from a change in the duration of a subtask which invalidates the critical path.

4. Type [/] [E] [E] (Edit End Date) and enter [Ø] [Ø] [/] [Ø] [Ø] [/] [Ø] [Ø] to remove the mandatory End Date for the DESIGN task. Press [ENTER] .

5. Press [↑] to move the pointer to TOOLING.

6. Type [/] [E] [B] (Edit Begin Date), and enter [Ø] [Ø] [/] [Ø] [Ø] [/] [Ø] [Ø] to remove the mandatory Begin Date for TOOLING. Press [ENTER] .

7. Type [/] [C] to recalculate the critical path and date schedules. The SCHEDULE headings and slack days will appear again.

8. Type [/] [L] [G] (List Gantt). The DESIGN schedule is now much longer than the one for BUILD X.

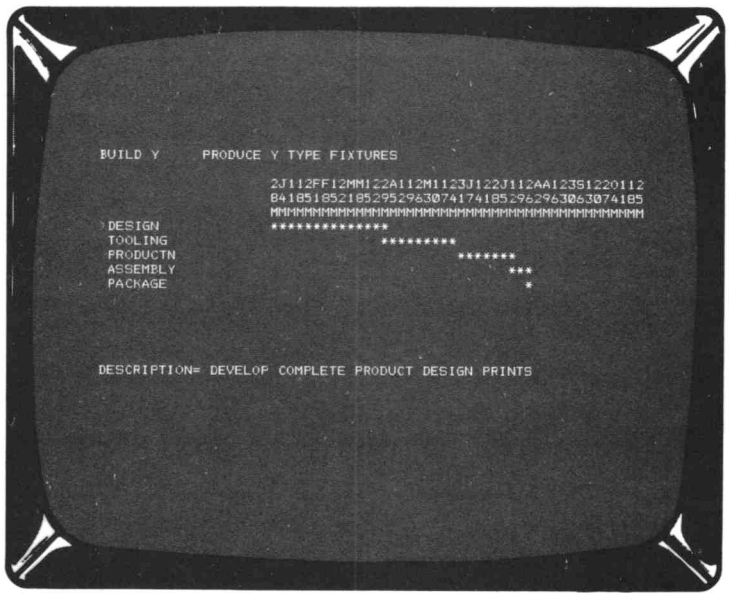


Figure 17.

Again, use [/] [A] [D] or [/] [S] [T] to match your screen to Figure 17.

Compare the Gantt Chart for BUILD X (Figure 16) with the Gantt chart for BUILD Y (Figure 17).

You can change any project facet for BUILD Y by using the other Edit commands. Just make sure you are at the Task Level when you want to edit, do a critical path or list a chart.

The Replicate command works at any level you choose, including all of Project Manager's 64 possible levels. If a project includes many tasks with similar resources, you can replicate the first task model as often as needed to complete the entire task.

To return your Data Diskette to its original status, delete BUILD Y as follows:

1. Press [CLEAR] to return to Top Level Projects.

2. With the pointer indicating BUILD Y, type [/] [D] (Delete). When the prompt, PRESS Y TO DELETE appears, press [Y] .

3. The Top Level Projects display reappears with BUILD Y removed.

Resource Management

Resources, another aspect of the Project Manager program, will be explored in this section. Schedules, duration times and dates are easily manipulated, demonstrating how resources can be monitored and forecasted.

The RESOURCE CODE TABLE shows one of many possible ways specific resources can be allocated. You can name each of these categories to accurately reflect your needs.

If your applications require efficient use of people, a table such as the one furnished with your DataDiskette is a good place to begin. Projects involving printing presses, computers, vehicles and other types of resources require quite a different labeling system.

Once you have established names that accurately reflect the resources you use and have altered the resource table to meet your needs, you will be able to use Project Manager to help manage these resources efficiently. (Refer to Section 4, for the procedure on changing resource codes.)

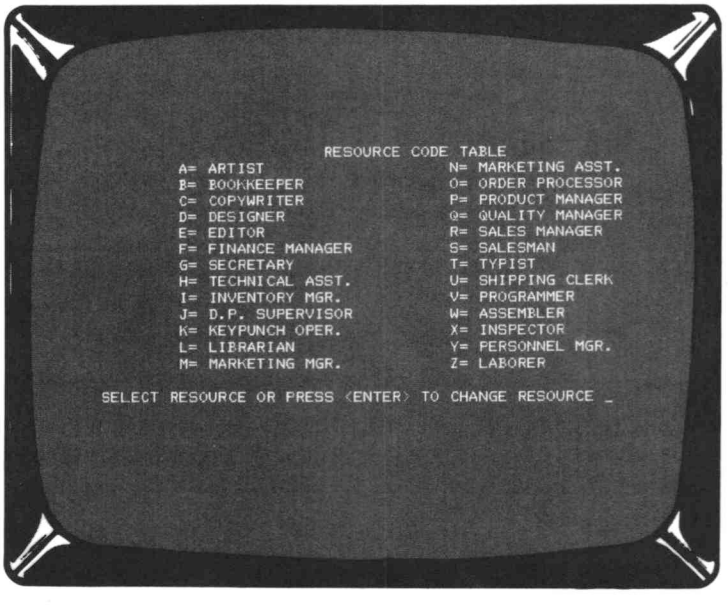


Figure 18.

The resource management function requires only that you add a resource code and amount to each task you wish to monitor. With this data, Project Manager can create charts showing how resources are used, illustrating any bottlenecks or crisis areas where resources are not sufficient and predicting future resource needs.

Both modeling and forecasting can be used with resources to show how changes will affect your project. The loss of a key employee or an unexpected equipment failure can be quickly analyzed with Project Manager to illustrate how this shift will affect schedules and completion dates. This analytical capability can help determine if additional resources are justified by improved productivity.

Reviewing the Resource Chart

The BUILD X example on your Data Diskette will demonstrate how resources can easily be monitored.

1. At the Top Level Projects, move the pointer to BUILD X: PRODUCE X TYPE FIXTURES.

2. Press [ENTER] to display DESIGN: DEVELOP COMPLETE PRODUCT DESIGN PRINTS at the Task Level.

3. Type [/] [C] to ensure that you have calculated schedules for each task.

4. Type [/] [L] [R] (List Resources).

5. When the RESOURCE= prompt appears, press [P] and Product Manager will be displayed.

6. The prompt, MAXIMUM AMOUNT= requests the number of Product Managers available; type [2] and press [ENTER] .

7. The CHART MULTIPLIER allows you to set a convenient scale for displaying resources on the screen; for this example, type [.] [5] and press [ENTER] . The left column represents a daily schedule; to the right is a column indicating the number of resources (2) currently available. The bottom prompt line shows the resource currently selected, PRODUCT MANAGER, and the amount (zero) being used on the date indicated by the pointer.

8. Set the time interval to weeks by typing [/] [I] [W] .

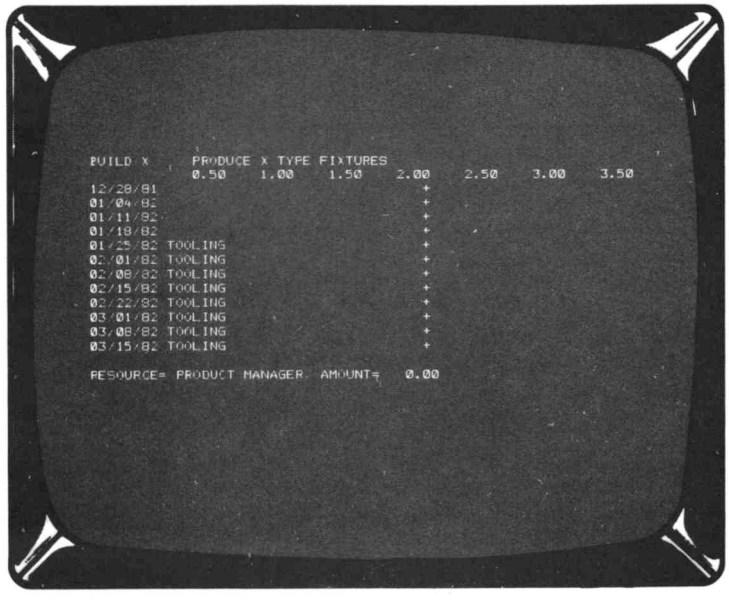


Figure 19.

The Resource chart (Figure 19) now displays four types of information. The scale across the top indicates the volume of each resource unit (which you set at .5, or 1/2, when the chart multiplier was selected). This enables you to view each 1/2 Product Manager needed for a particular task. TOOLING, for example, requires 1/2 of a Product Manager starting at the fifth week of the project.

The vertical line under the 2.ØØ scale column indicates that two Product Managers are the maximum number of resources available for this project. If your project requires more than the selected number of resources at any time, the chart will visually indicate this by printing the appropriate task names in a row that crosses this resource availability line (see Figure 22).

The column of dates on the left margin of the screen is currently set at a weekly schedule.

Type [/] [I] [M] to see the entire five month project schedule (Figure 20). In May you require an estimated 1/2 of a Product Manager for each task of Production, Assembly and Package, for a total of 1.5 Product Managers.

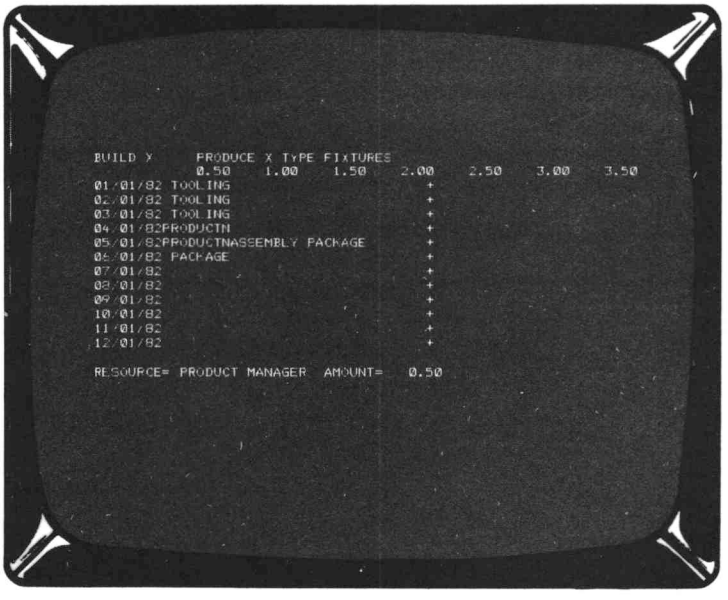


Figure 20.

The prompt line at the bottom of the screen indicates the resource currently selected and the amount of that resource being used on the date indicated by the pointer.

Press [↓] until the last row of tasks is lined up with the pointer. Notice that even though the top scale indicates Ø.5Ø, the actual amount needed for the task totals Ø.25 Product Managers.

Press [↑] five times to return the pointer to the top date of the chart.

Increase the scale to see each task in greater detail by typing / L R , P , 2 and press ENTER . Now type . 2 5 and press ENTER for the multiplier; notice how it changes the display. The horizontal scale is shown with .25 increments; the task rows lengthen correspondingly.

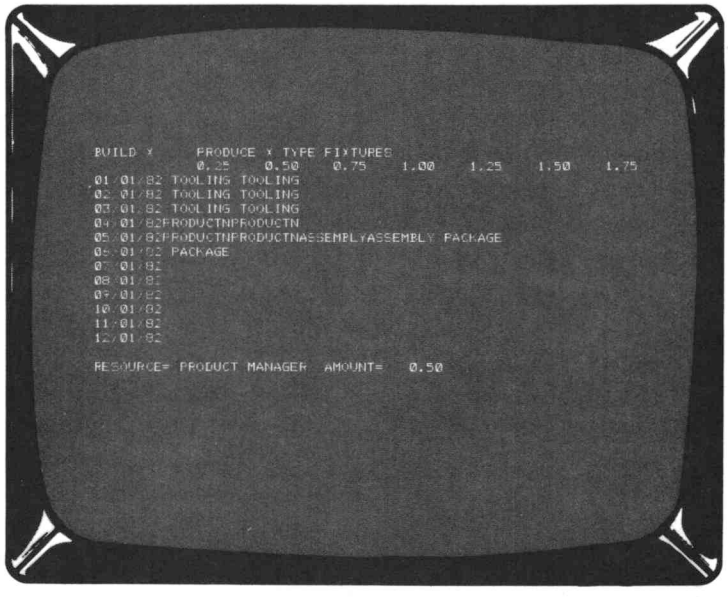


Figure 21.

Multiple Resources

If your resource multiplier is set too small to allow all the task names to be displayed in the row to which they belong, you will see a row of ********, indicating that more than one task name is sharing that space. For instance, type / L R , P , 2 , press ENTER , 1 and press ENTER for the multiplier. The screen will show:

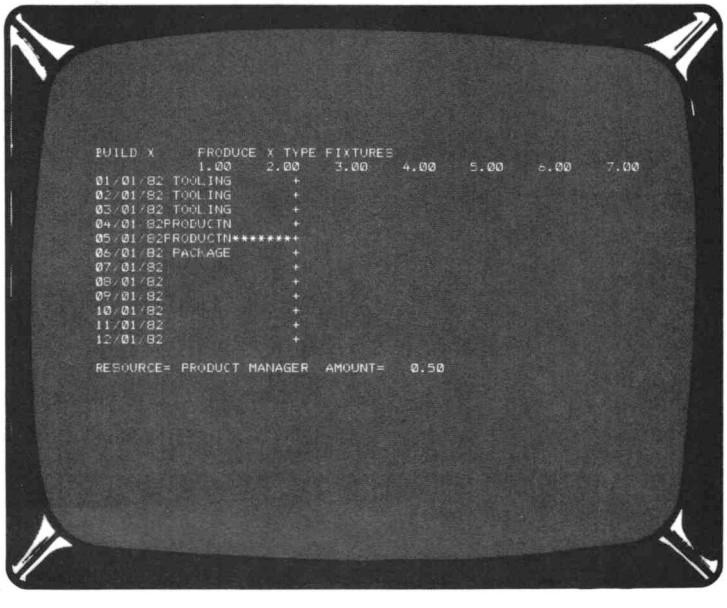


Figure 22.

The resource amount total at the bottom of the screen always tells you the exact amount of total resource needs during the specific period when one row of tasks extends beyond the right side of the chart.

Type [/] [L] [R] , [P] , [2] , press [ENTER] , then [.] [1] and press [ENTER] . Now press [↓] until the row of tasks for May is the first line. Notice that the AMOUNT= prompt indicates 1.25 while .7Ø is the greatest amount visible on the horizontal scale. Even though the task now extends beyond the right side of the chart, the total amount of resources needed is reflected below in the AMOUNT=1.25 prompt. Press [→] to see the remaining intervals.

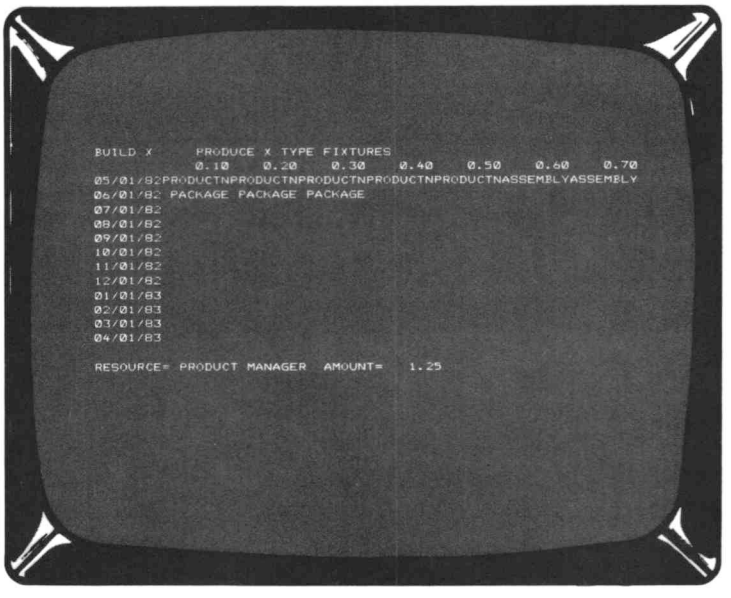


Figure 23.

Experiment with different resources, time intervals and chart multipliers until you are familiar with this feature of Project Manager. You will use it often as you begin planning large projects.

Type [/] [L] [R] and [Z] for Laborer, with an amount of [4] , press [ENTER] , and a multiplier of [1] , press [ENTER] . The overlapping resources indicate that the number of laborers is insufficient for the amount of work to be done.

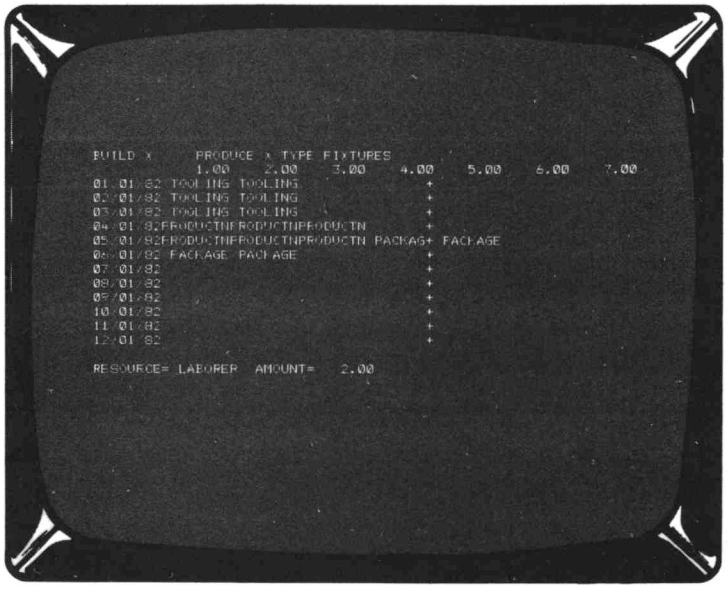


Figure 24.

Type [/] [L] [D] to return to the Detailed Data mode.

Forecasting

The ability to make copies of any project you have on disk allows you to use Project Manager to create permanent records of projects as they develop. You can create history files for later comparison and analysis by retitling the copies. If your projects change in time as deadlines slip or shortages occur, you can date and save the project status for comparison, analysis or insight into the changes in your planned and achieved goals.

This capability also provides a powerful forecasting tool. You can create a copy of a project schedule, modify the copy and see the effect of a future change. This "what if" exploration of possible shortages, catastrophies, windfalls and similar real-world experiences can demonstrate in detail how any change would affect your projects.

Forecasting based on performance history or possible future events provides a dynamic perspective of your projects, showing agreements, deadlines and allocation of resources. The addition of another employee can be examined in terms of the effect this additional resource would have on completion dates or productivity.

Creating Project Histories

The Replicate command (/ R) instantly creates a copy of the project or task indicated by the pointer (>), including all lower level tasks. The copy can then be saved as a record or modified to show any effects of a change.

Crisis Management

A forecast can illustrate how alterations in your projected time durations and completion dates would affect a project. This program provides a model of a project that you can adjust and modify as you create possible solutions. To see what would happen if a task fell behind schedule, you could change the task's duration time, calculate a new critical path and display the effects.

The effects of a slipping schedule can be difficult to anticipate for a large project with many tasks. In these situations, Project Manager can graphically illustrate problems and possible solutions.

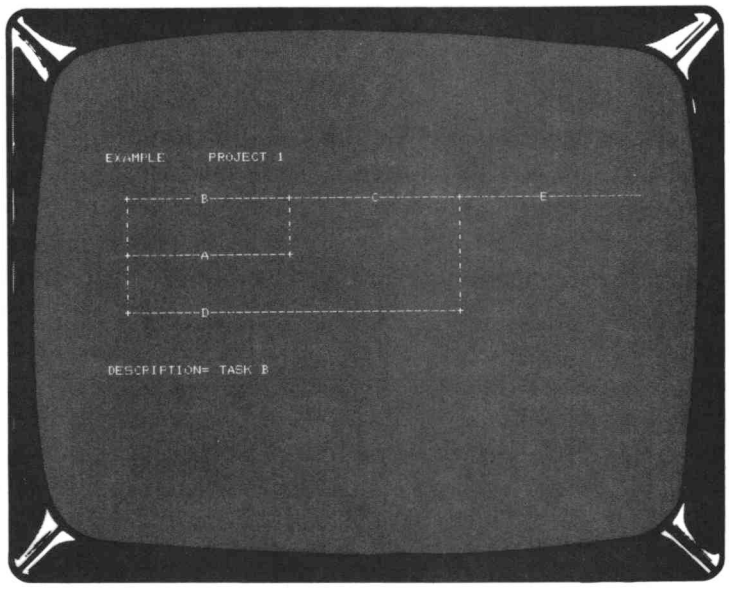


Figure 25.

Figure 25 shows a PERT chart of EXAMPLE: PROJECT 1 on your Data diskette. Task B, C and E are on the critical path. The duration time for each task is displayed in Figure 26.

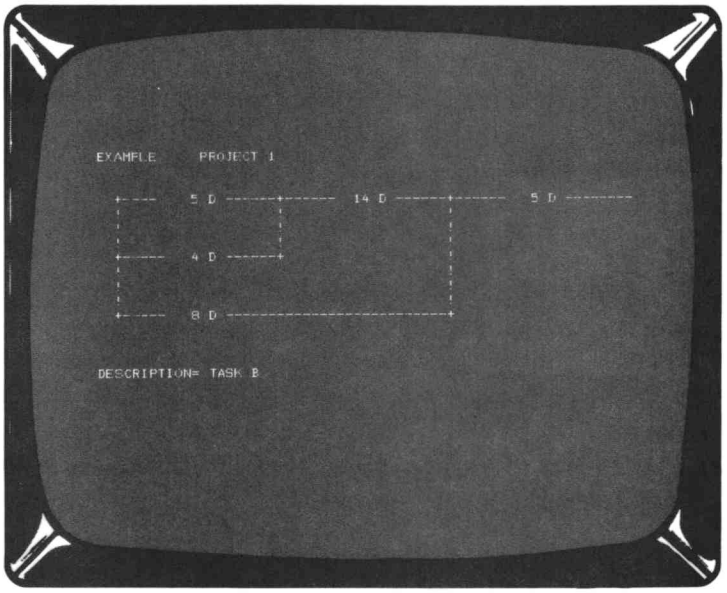


Figure 26.

If Task A were to take five days instead of four, the critical path would not change because A is parallel with B, which has a five day duration. If Task A extended beyond five days to complete, the critical path would change and the total time for completion would be extended. In that event, the original completion date would be met in two ways: by reducing the duration of Task C or by reducing the duration of Task E.

Printing and Plotting

Use Project Manager's printing and plotting capabilities to create hard copies for worksheets, meeting handouts, exhibits, production charts or proposals.

These features are possible only if you have an appropriate printer interfaced and on-line with your computer.

Screen Printing

Print a copy of a Project Manager screen by pressing three keys: [SHIFT] , [↑] and [P] . Three keys are used for this function to reduce the possibility of printing by accident, or of locking the program if the printer is off-line.

If your printer is disconnected, turned off or out of paper, the program will stop at this point and the message PRINTER NOT READY will be shown. The program will resume printing when the printer is on-line.

Press [CLEAR] to cancel a printout.

Examples of commonly printed screens short enough to fit on one screen are the Resource Codes Table, individual task details and Gantt charts. The Gantt chart for the project EXAMPLE fits on one screen and is shown in Figure 27.

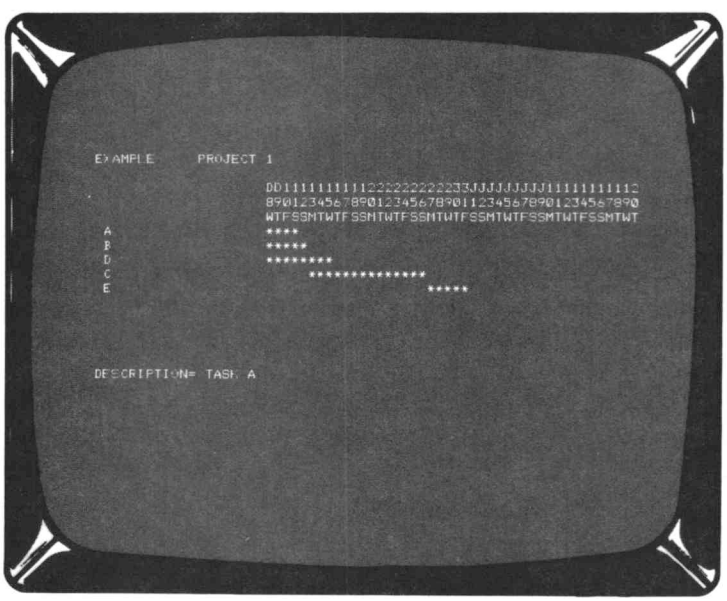
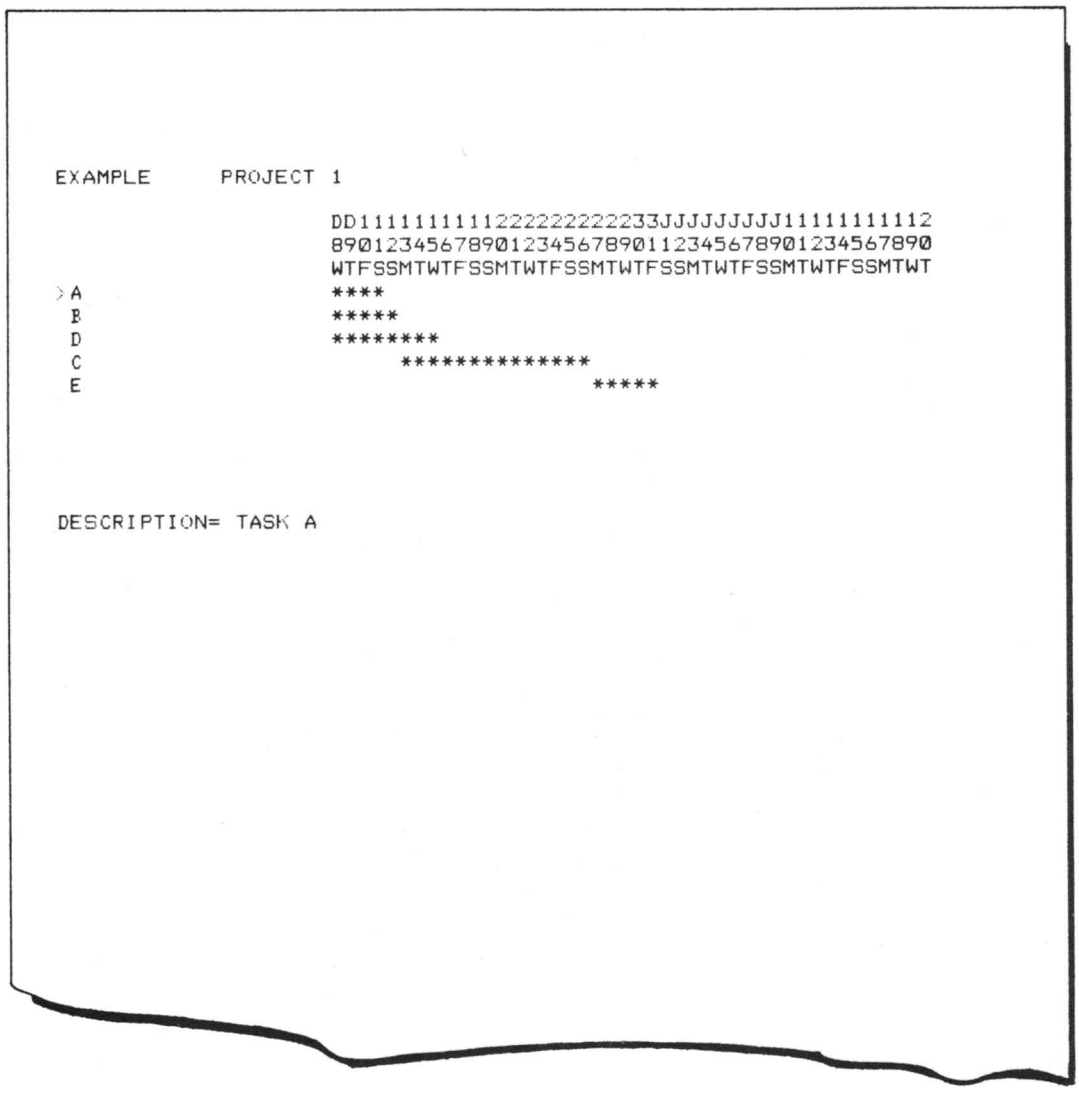


Figure 27.

Print this screen following these commands:

1. Move to the Task Level for EXAMPLE.
2. Type / C if no schedule is displayed.
3. Type / L G (List Gantt).
4. Hold down both SHIFT and ▼ , and press P .

You will obtain a copy of the Gantt chart if your printer is on-line.



Printing Reports

Use the / P command to print reports that are longer than one screen. The printer will advance to the top of the next page and continue printing.

For example, print the detailed report for the project CATALOG by doing the following:

1. Move to the Top Level Projects.
2. Type C A T A L O G and press ENTER .
3. Press ENTER to move to the Task Level.
4. Set the printer to the top of the page.
5. Type / P .

After printing the detailed report, the printer spaces down to the top of the next page.

You can also use / P to print a report which does not fit on the screen horizontally.

1. Go to the Top Level Projects.
2. Move pointer to BUILD X.
3. Press ENTER to display the DESIGN task.
4. Type / C if schedules are not calculated for each task.
5. Type / L G to display the Gantt chart.
6. Set the interval to days by typing / I D if the day interval does not appear automatically.
7. Type / P and four pages will print. These pages can be connected to form one long, horizontal report which can be used as a production chart or meeting exhibit.

Reports which extend off the screen both vertically and horizontally can also be created with / P .

Move to the Top Level Projects with the pointer at project CATALOG. Press ENTER to move to the Task Level. Type / C to calculate the critical path. Type / L M to see the Time report. Type / P to obtain two long "swaths" of the report. These can be taped together to form a large chart or work spread. Project Manager will accommodate large reports such as this, using standard paper.

Plotting Reports

You can plot the various reports if you have a Radio Shack printer with graphic capabilities. Type [/] [Q] . This command is similar to the [/] [P] command with the following exceptions:

1. All lowercase letters on your screen are converted to uppercase.

2. When PERT or Task reports are being printed, tasks are connected with straight lines for improved readability.

3. When Gantt charts are printed, the asterisks are replaced with solid bars.

Figure 28 shows the Gantt chart for the project, EXAMPLE, using the [/] [Q] command.

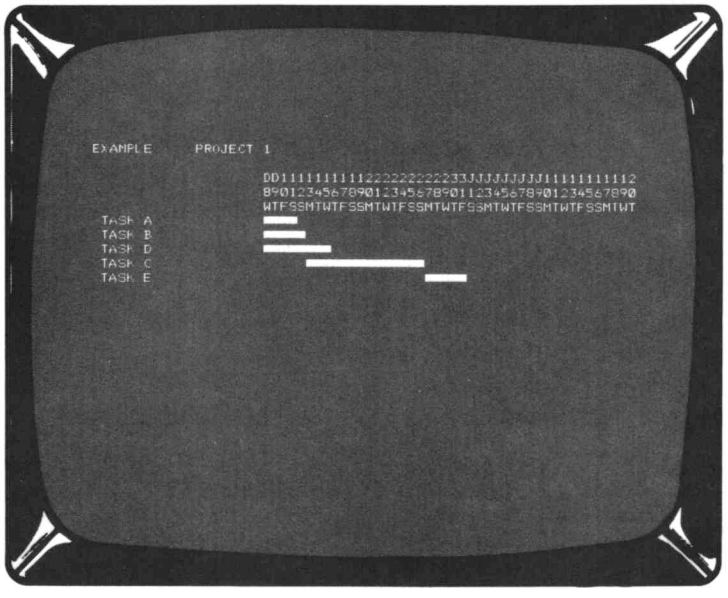


Figure 28.

Data Link Within The Manager Series

A significant feature of Project Manager is its ability to communicate information to other programs in The Manager Series via Time Manager.

A two-way flow of information is established with the transfer (/ T) and update (/ U) process. The / T command transfers the information from Project Manager to Time Manager. The / U command works in reverse; it updates information changes from Time Manager to Project Manager.

As you update and transfer your Project Manager and Time Manager information, each project and task will become fixed in time. The dates given to the project will then be logged in the Data Diskette for Time Manager and a reminder of the project dates will appear on your daily list of "things to do."

A further exchange of information is possible using the Personnel Manager program. Time Manager's daily calendar will display each project and the person responsible for its completion based on data received from Project Manager. This information can then be transferred from Time Manager to each individual's file in Personnel Manager.

While learning to work with the transfer procedures and interactions of the programs of The Manager Series, you will need:

1. A backup copy of your Time Manager Data Diskette dated for the current year.

2. A backup of the latest TRSDOS version diskette (MOD III 1.3, Mod I 2.3) labeled "EMPTY".

To understand some of the directions you will encounter in this section you will need to have an understanding of "time" as it affects these examples.

Later in this chapter you are instructed to use Time Manager and Project Manager by first entering a specific date as the current day. To change the system date for Model I or III, go to TRSDOS Ready (Mod III) or DOS READY (Mod I) and type D A T E ☐ M M / D D / Y Y and press ENTER . The examples and demonstrations contained in this section will provide you with the proper dates.

Transferring Schedules to Time Manager

Project Manager is designed to construct project "blueprints" around project-related dates. These "blueprints" can be transferred to Time Manager using the transfer (/ T) commands to become part of your daily schedule. You can transfer all of the project schedules on the Data Diskette, a single project and its related tasks or a single task.

Project Manager will insert two entries for each project or task that is transferred to Time Manager.

The first entry, placed on the day your project (or task) is to begin, will contain the word START and the title of the project or task. (Notice that BEGIN in Project Manager and START in Time Manager mean the same thing.)

The second entry, placed on the project's (or task's) scheduled completion date, will contain the word END and the name of the project or task.

In subsequent transfers, Project Manager will write new (current) information over projects and tasks that had previously been transferred. "Old" information will be deleted and Project Manager's new dates will appear in Time Manager.

Note:

1. You must perform a Critical Path Analysis (/ C) to set schedules for your projects. The Critical Path Analysis will assign "today's date" (use January 1 for this example) as the beginning date for all projects without a predefined Begin date. (See Section 3, "Critical Path Method," for further information.)

2. All projects and tasks *must* have unique titles in order to transfer. Duplicate titles will delete any previous information under that title and begin a new file with the same title.

3. A task deleted from a project that had been previously transferred to Time Manager will need to be deleted manually from the Time Manager Data Diskette.

4. A title change of a project or task made *after* the project has been transferred to Time Manager will not be on your Time Manager DataDiskette. The previous title will be lost and the Transfer command will not find or delete those entries from Time Manager; you will have to manually change those entries on your Time Manager Data Diskette.

Transferring All Schedules

The / T A command will transfer all projects on the DataDiskette to Time Manager. Begin or End dates beyond the range of time on the Time Manager Data Diskette will not transfer; nor will projects or tasks that do not have schedules.

If you have a Model I computer:

1. At DOS READY, type [P] [R] [J] [M] [G] [R] and press [ENTER]. You will see:

```
P R O J E C T   M A N A G E R

INSERT DATA DISK IN DRIVE #1
AND PRESS <ENTER>

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```

2. Press [ENTER] and the date prompt will appear.

3. Enter January 1 as "today's date." Press [ENTER]. The Top Level Projects will appear on the screen with the pointer on project CATALOG.

4. To continue the data link withinThe Manager Series, refer to number four of the instructions below for Model III.

If you have a Model III computer:

1. At TRSDOS Ready, type [D] [A] [T] [E] [ ] [M] [M] [/] [D] [D] [/] [Y] [Y] and press [ENTER]. Enter January 1 as "today's date."

2. Type [P] [R] [J] [M] [G] [R] and press [ENTER]. You will see:

```
P R O J E C T   M A N A G E R

INSERT DATA DISK IN DRIVE #1
AND PRESS <ENTER>

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```

3. Press [ENTER] and the Top Level Projects will appear on the screen with the pointer on the project CATALOG.

4. Type [/] [T] and you will see:

```
TRANSFER: A P
```

5. Press [A] to select All. You will see:

```
SELECT TIME MANAGER CATEGORY (A–Z):
```

You may choose any Time Manager category code for the projects; the code you choose now will be the category for all of the projects you are transferring. For this example use J, Job Accounting.

6. Type [J] and you will see:

PLACE 'EMPTY' SYSTEM DISK IN DRIVE Ø
AND PRESS <ENTER>

7. Remove the Project Manager Program Diskette from Drive Ø and insert the backup TRSDOS Diskette you named "Empty." Press [ENTER].

   All projects with schedules are analyzed and loaded for transfer.
   You will then see:

PLACE TIME MANAGER DATA DISK IN DRIVE 1
AND PRESS <ENTER>

8. Remove the Project Manager Data Diskette from Drive 1 and insert the Time Manager Data Diskette. Press [ENTER].

   After reading the months on the Time Manager Diskette, the screen will show:

PLACE PROJECT MANAGER DATA DISK IN DRIVE 1
AND PRESS <ENTER>

9. Follow the instructions in the prompt. You will see:

PLACE PROJECT MANAGER PROGRAM DISK IN DRIVE Ø
AND PRESS <ENTER>

This prompt signals the completion of the transfer process.

The schedules for your projects have now been transferred to Time Manager. To confirm the transfer, load Time Manager following the directions in your Time Manager manual and enter January 1 as "today's date." Then move to the calendar level. One of the entries for "today" is CATALOG START with a priority level of 1 and category code J. Another project, OUTLINE, is also displayed. To check other dates for the CATALOG project move through the daily calendar to see all the entries for the project. The final entry, February 19, reads CATALOG END.

Transferring Selected Schedules to Time Manager

Any project and its tasks can be transferred to Time Manager using the Transfer Project (/ T P) command. As with the / T A command, a project without a schedule or with a schedule beyond the time range of the Time Manager Data Diskette will not transfer.

The procedures and prompts for the / T P command are exactly the same as those explained in the Transferring All Schedules section *except*:

When at the Top Level Projects, use the ↑ and ↓ keys to move the pointer to the project you wish to transfer.

At the prompt, TRANSFER: A P, select P to indicate you are transferring only that project, and not all projects.

Your selection of a category code at the prompt, SELECT TIME MANAGER CATEGORY (A –Z), will be used for this project only.

Transferring a Single Task's Schedule

It is also possible to transfer a single task's schedule to Time Manager using the / T P command.

For future reference, the Begin and End dates of the task PASTE-UP are ϕ1/31/82 through ϕ2/ϕ2/82. These dates must always be kept in sync with the current year for transference to work. This task has been transferred to Time Manager during the Transfer All (/ T A) command section. Before transferring this task with / T P you will alter it by changing the duration.

1. Place the Project Manager Program Diskette in Drive ϕ and press ENTER .

2. Press ENTER again.

3. Move to the task PASTE-UP in the project CATALOG.

4. Change the duration of the task to two days. Type / E N , change the duration to ϕ ϕ ϕ 2 , then press ENTER .

5. Type / E B to change the Begin date, type ϕ ϕ / ϕ ϕ / ϕ ϕ , then press ENTER .

6. Type / E E , to change the End date, type ϕ ϕ / ϕ ϕ / ϕ ϕ , then press ENTER .

7. Recalculate the critical path, type [/] [C] .

Once you have changed the duration period of any task or project, you must do a new Critical Path Analysis to check your information for possible conflicts and to construct a new schedule.

8. With the pointer still indicating PASTE-UP, type [/] [T] [P] . You will see:

SELECT TIME MANAGER CATEGORY (A – Z)

9. As in the previous example, enter [J] for Job Accounting. Then you will see:

PLACE TIME MANAGER DATA DISK IN DRIVE 1
AND PRESS <ENTER>

Follow the directions in the prompt. As each month is scanned, the schedule for PASTE-UP will be transferred to Time Manager. The prompt:

PLACE PROJECT MANAGER DATA DISK IN DRIVE 1
AND PRESS <ENTER>

is your signal that the transfer of the schedule has been completed.

Remember:

1. [/] [T] [P] transfers only the project and its underlying tasks, or the task indicated by the pointer.

2. [/] [T] [A] transfers all projects and their related tasks.

3. Special care must be taken to give each project and task a different title; duplicate titles will erase any information given to the previous title.

4. Deletions and title changes made after the project has been transferred to Time Manager must be manually changed on the Time Manager Data Diskette.

5. Projects extending beyond the time frame of the Time Manager Data Diskette will not transfer.

Updating

Once a project has been transferred to Time Manager, you can alter schedule information on the Time Manager DataDiskette and then update your Project Manager DataDiskette. This enables you to make daily changes in Time Manager, and then update Project Manager at convenient time intervals.

The Update (/ U) command searches all past entries in Time Manager for the key words START , END and the title of the project or task. The title can appear at the beginning, the middle or the end of the Time Manager entry.

For every entry that is found, the computer will check the date in Time Manager against the date in Project Manager. If the dates are different, the Project Manager date will be changed to show the actual date the project began or ended. Other dates in the project will also be updated to reflect the new information.

Note:

1. All project and task titles must be unique.

2. Once a mandatory BEGIN or END date has been assigned or updated in Project Manager, it must be removed manually if time changes occur.

3. Make sure that any START or END entries before today in your Time Manager Data diskette are accurate. If the dates do not correspond to the mandatory Begin and End dates in Project Manager, incorrect dates will be inserted with the update command.

4. Any change in a mandatory (BEGIN or END) date requires a new Critical Path Analysis when the information is updated to the Project Manager Data diskette.

Updating a Single Project in Project Manager

There are times when only a project needs to be changed. This is done with the Update Project (/ U P) command. Use of the / U P command at this level will update the project and all its tasks. Normally you would enter the changes on your Time Manager Data Diskette as you move through the week, and then update your Project Manager Data Diskette at convenient intervals. This example uses dates contained on the Data Diskette.

If you have a Model I computer:

1. At DOS READY, type [D] [A] [T] [E] [ ] [M] [M] [/] [D] [D] [/] [Y] [Y] and press [ENTER] . Use February 5 as today's date.

2. Type [P] [R] [J] [M] [G] [R] and press [ENTER] . You will see:

P R O J E C T M A N A G E R

INSERT DATA DISK IN DRIVE #1
AND PRESS <ENTER>

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3. The Top Level Projects will appear on the screen with the pointer on the project CATALOG.

4. To continue the data link within The Manager Series, refer to number four of the instructions below for Model III.

If you have a Model III computer:

1. At TRSDOS Ready, type [D] [A] [T] [E] [ ] [M] [M] [/] [D] [D] [/] [Y] [Y] and press [ENTER] . Use February 5 as" today's date."

2. Type [P] [R] [J] [M] [G] [R] and press [ENTER] . You will see the next prompt on the screen.

3. Press [ENTER] and the Top Level Projects will appear on the screen with the pointer on the project CATALOG.

4. Press [ENTER] to move to the Task Level of the project CATALOG. Then use the [↑] and [↓] keys to move the pointer to the task PASTE-UP.

5. Type [/] [E] [N] to change the duration of PASTE-UP to 5 days.

6. Change the Begin and End dates for all tasks by using [/] [E] [B] and [/] [E] [E] , and change the dates to [Ø] [Ø] [/] [Ø] [Ø] [/] [Ø] [Ø] .

7. Type [/] [C] to recalculate the critical path.

8. Type [/] [U] at the Top Level Projects for CATALOG. You will see the prompt:

UPDATE: A P

9. Press [P] to indicate that only this section of information will be updated. The screen will display the prompt:

PLACE 'EMPTY' SYSTEM DISK IN DRIVE Ø
AND PRESS <ENTER>

Follow the instructions on the screen.

The months on the Time Manager Data Diskette will display as the program reads entries for CATALOG. When the update of information is complete you will see:

PLACE PROJECT MANAGER DATA DISK IN DRIVE 1
AND PRESS <ENTER>

This prompt signals that the update has been completed.

Updating All Projects

There may be times when you need to update information for all of your projects. The [/] [U] [A] command will change information throughout all of the projects contained on the Data Diskette at the time of the update.

The procedures and prompts for the [/] [U] [A] command are exactly the same as for the [/] [U] [P] commands *except* that at the prompt, UPDATE: A P, type [A] to indicate the change is to affect all of the projects on the Data Diskette.

Remember:

1. [/] [U] [P] updates only the selected project and its related tasks or the task indicated by the pointer.

2. [/] [U] [A] updates all projects on the Data Diskette.

3. Your projects and tasks must have unique titles. Duplicate titles will not update and may cause you to lose information.

4. The entry in Time Manager may contain the title at the beginning, the middle or the end of the text.

5. Once a mandatory date (BEGIN or END) has been assigned or updated, it must be changed manually if time slippages occur.

6. Anytime a change is made in a mandatory date (BEGIN or END), a new Critical Path Analysis must be computed after the information is updated onto the Project Manager Data Diskette.

Transferring and Updating Personnel Manager

Time Manager Codes are used to record the initials (or other identifier) of the person responsible for a particular project or task. When a TM Code is entered in Project Manager, it can be transferred to Time Manager with the / T command.

TM Codes can also be transferred from Time Manager to Personnel Manager using the same update process (/ U) using the Personnel Manager program. Within Personnel Manager is a Project Report Level which contains project descriptions with Begin and End dates, for every person in the file. TM Codes followed by the letter P update Personnel Manager's Project Report Level. TM Codes followed by the letter R update Personnel Manager's Resume Report Level.

When TM Codes are transferred from Project Manager to Time Manager, the program automatically places a P after each code. This prepares the data for updating the Project Report Level of Personnel Manager.

Through the use of TM Codes you can keep an accurate and complete history of projects and personnel by exchanging data within the Project, Personnel and Time Manager programs.

Entering and Editing TM Codes

When initially defining a project or task (using / B), you will come to the prompt, TM CODE. Type the initials (or identifier) of the person responsible for that project or task and press ENTER . You can leave the TM Code field blank or change the information later with / E M (Edit TM command).

Position the pointer next to CATALOG at the Top Level Projects. The TM Code, C.T., indicates that Carol Turner is responsible for this project.

If you have already used the / T command to transfer this project to Time Manager, move to the CATALOG entry in Time Manager on January 1. You will see C.T.P CATALOG START. This entry can be transferred to Personnel Manager's Project Report Level if a file exists for Carol Turner and the file contains a matching TM Code.

The key to using TM Codes effectively is to maintain consistency of use in the Project, Time and Personnel Manager programs.

The Manager Series

Use Project Manager to review, modify, update and manage the schedules for your projects.

Use the / T command to make these changes part of your daily schedule for Time Manager.

Use the / U command to update any project or resume changes noted in Time Manager during the past week.

Use this combined power of The Manager Series frequently to serve you as an outstanding management tool.

How to Backup Your Diskettes

Use this procedure **exactly:**

1. Turn on your system. If you are not familiar with the equipment, please refer to your Disk Owner's Manual for System Start Up (Power Up Sequence).

2. Insert a blank diskette in Drive 1 and close the door.

3. Insert the diskette containing TRSDOS you wish to copy in Drive Ø and close the door. (The Program Diskette in this package contains TRSDOS.)

4. Press the [RESET] button.

Model I:

The screen shows:	**You type:**
DOS READY	[B] [A] [C] [K] [U] [P] and press [ENTER]
SOURCE DRIVE NUMBER?	[Ø] and press [ENTER]
DESTINATION DRIVE NUMBER?	[1] and press [ENTER]
BACKUP DATE (MM/DD/YY)?	[Ø] [1] [/] [Ø] [1] [/] [8] [2] and press [ENTER] (Example for January 1, 1982)
HIT 'ENTER' TO CONTINUE	Press [ENTER] and you will be returned to DOS READY

Model III:

The screen shows:	**You type:**
Enter Date (MM/DD/YY)?	[Ø] [1] [/] [Ø] [1] [/] [8] [2] and press [ENTER] (Example for January 1, 1982)
Enter Time (HH:MM:SS)?	Press [ENTER]
TRSDOS Ready	[B] [A] [C] [K] [U] [P] [ ] [:] [Ø] [ ] [:] [1] and press [ENTER]
SOURCE Disk Master Password?	[P] [A] [S] [S] [W] [O] [R] [D] and press [ENTER]

Note: If you are using a new diskette, the system formats the diskette for you. If you are using an old diskette, one or two additional questions may appear, depending on the previous contents of the diskette. You may see:

Diskette contains DATA. Use Disk or not?
or
Do you wish to RE-FORMAT the diskette?

If the questions appear, type [Y] and press [ENTER] for each question. When the process is completed, the screen shows:

Backup Complete

Model I/III:

Check to see if the "Backup" procedure was successful.

1. Remove the original diskette from Drive ∅.

2. Take the Backup diskette out of Drive 1. Place the Backup copy in Drive ∅ and close the door.

3. Press the [RESET] button. If the screen shows: DOS READY (Model I) or TRSDOS Ready (Model III), your Backup was successful.

How to Format Your Data Diskettes

This process prepares blank diskettes for use on the disk system. All Data Diskettes must be formatted before being used. Here's how you do it:

1. Turn on your system. If you are not familiar with the equipment, please refer to your Disk Owner's Manual for System Start Up (Power Up Sequence).

2. Insert a diskette containing TRSDOS in Drive Ø and close the door. (The Program Diskette in this package contains TRSDOS.)

3. Insert a blank diskette in Drive 1 and close the door.

4. Press the [RESET] button.

Model I:

The screen shows:	**You type:**
DOS READY	[F] [O] [R] [M] [A] [T] press [ENTER]
WHICH DRIVE IS TO BE USED?	[1] press [ENTER]
DISKETTE NAME?	[D] [A] [T] [A] [8] [2] press [ENTER]
CREATION DATE (MM/DD/YY)?	[Ø] [1] [/] [Ø] [1] [/] [8] [2] press [ENTER] (Example for January 1, 1982.)
MASTER PASSWORD?	[P] [A] [S] [S] [W] [O] [R] [D] press [ENTER]
DO YOU WANT TO LOCK OUT ANY TRACKS?	[N] [O] press [ENTER]
HIT 'ENTER' TO CONTINUE	Press [ENTER]

Model III:

The screen shows:	**You type:**
TRSDOS Ready	[F] [O] [R] [M] [A] [T] press [ENTER]
Format Which Drive?	[1] press [ENTER]
Diskette Name?	[D] [A] [T] [A] [8] [2] press [ENTER]
Master Password?	[P] [A] [S] [S] [W] [O] [R] [D] press [ENTER]

If you are reusing an old diskette, the computer may show: Diskette contains DATA. Use Disk or not? If this question appears, type [Y] and press [ENTER] . The computer starts formatting the diskette in Drive 1.

After the diskette is formatted, you are returned to TRSDOS Ready (Model III) or DOS READY (Model I).

The screen shows:	**You type:**
TRSDOS Ready or DOS READY	[P] [R] [J] [M] [G] [R] and press [ENTER]
PROJECT MANAGER INSERT DATA DISK IN DRIVE #1 AND PRESS <ENTER>	Press [ENTER] or select another drive by typing the appropriate number and press [ENTER].
NOT A PROJECT MANAGER DATA DISK INITIALIZE NEW DISK? (Y/N)	Type [Y]
INITIALIZING DISK FILE STRUCTURE	

The initializing process begins and continues for several minutes. You will then see:

TOPPROJ TOP LEVEL PROJECTS

<CLEAR> <ENTER> <ARROWS> TITLE /

This completes the process. Remove the diskettes from both drives and place in the protective sleeve. Store the original DataDiskette in a safe place.

How to Backup Your Data Diskettes

Use this procedure **exactly:**

1. Turn on your system. If you are not familiar with the equipment, please refer to your Disk Owner's Manual for System Start Up (Power Up Sequence).

2. Insert the Data Diskette to be backed up (the "Source" diskette) in Drive 1 and close the door.

3. Insert a diskette containing TRSDOS in Drive Ø and close the door. (The Program Diskette in this package contains TRSDOS.)

4. Press the [RESET] button.

Model I:

The screen shows:	**You type:**
DOS READY	[B] [A] [C] [K] [U] [P] and press [ENTER]

Wait until the red light on the disk drive goes off. Remove the TRSDOS diskette from Drive Ø and place it in its protective sleeve. Insert a blank diskette in Drive Ø and close the door.

The screen shows:	**You type:**
SOURCE DRIVE?	[1] and press [ENTER]
DESTINATION DRIVE?	[Ø] and press [ENTER]
BACKUP DATE (MM/DD/YY)?	Today's date and press [ENTER]

The computer formats the diskette, and transfers the data to the blank diskette. When it's finished, the screen will show HIT 'ENTER' TO CONTINUE. Don't press the [ENTER] key just yet. Remove the Data Diskette from Drive 1, and place it in its protective sleeve. Remove the new Data Diskette from Drive Ø. Insert the TRSDOS diskette in Drive Ø, close the door and press [ENTER] to continue.

Model III:

The screen shows:	**You type:**
Enter Date (MM/DD/YY)?	Today's date and press [ENTER]
Enter Time (HH:MM:SS)?	Press [ENTER]
TRSDOS Ready	[B] [A] [C] [K] [U] [P] and press [ENTER]

Wait until the red light on the disk drive goes off. Remove the TRSDOS diskette from Drive Ø, and place it in its protective sleeve. Insert a blank diskette in Drive Ø, and close the door.

The screen shows:	**You type:**
SOURCE Drive Number?	[1] and press [ENTER]
DESTINATION Drive Number?	[Ø] and press [ENTER]
SOURCE Disk Master Password?	[P] [A] [S] [S] [W] [O] [R] [D] and press [ENTER]

The computer formats the diskette and transfers the data to the blank diskette. When the backup is complete, the screen shows: Insert SYSTEM Diskette <ENTER>.

Remove the DataDiskette from Drive 1, and place it in its protective sleeve. Remove the new DataDiskette from Drive Ø. Insert the TRSDOS diskette in Drive Ø, close the door and press [ENTER] to continue.

Project Manager Error Messages

You will occasionally see an error message on your screen while using Project Manager. An error message indicates that Project Manager cannot perform the function you requested. These error messages include:

DATA DISK FULL

Indicates that the last command was not executed so that Project Manager's disk capacities would not be exceeded.

CPA STOPPED: ∅ DURATION TASK

Critical Path cannot be completed because a task with no time allocated for its completion has been found in the task structure.

CPA STOPPED: DATE CONFLICT

Indicates a conflict between a schedule and a Mandatory Begin Date or End Date. Occurs when Mandatory End Date is earlier than the earliest possible completion date or if Mandatory Begin Date is earlier than the earliest starting date.

PROJECT TOO LARGE, OR LOOP IN TASK STRUCTURE

Indicates that an attempt to record too many tasks at a level has been made, or a task's successor names a task that is a predecessor to this task.

EDIT ABORTED: WOULD GENERATE TASK STRUCTURE LOOP

Indicates that the attempted edit was not allowed to occur so that a loop in the task structure would not happen. Tasks would have been disconnected from any project.

DOES NOT EXIST

Occurs when a task is entered that does not exist while using the ☐ E S (Edit Succcessor) command, or when a task is entered as its own successor while using the / E S command.

DATE CONFLICT

Displayed on the bottom of the screen if a project's or task's scheduled End Date conflicts with its Mandatory End Date.

NO MORE LEVELS

No more task levels are available.

CODE UNDEFINED

Appears on the bottom of the screen when a resource code is entered and there is no corresponding resource category on the Resource Code Table. Will also appear on the Detail chart. The category can be entered later.

TASK NOT FOUND

You have tried to move to a task that does not exist.

Project Manager Capacities
Disk Space

Each task takes a minimum of one 64-byte block (refer to the Glossary) of disk space. If the number of characters, successors, resources, etc., is large, then the task may require more than one 64-byte block. The detailed data mode shows the number of free 64-byte blocks on the lower right screen.

The Model I stores approximately 1,ØØØ blocks on a single Data Diskette; the Model III stores approximately 2,ØØØ blocks. Diskette space is dynamically allocated. The Model I will store 6ØØ to 8ØØ tasks, while the Model III will store 1,2ØØ to 1,6ØØ tasks.

Internal Memory
Number of Tasks Per Level

The number of tasks at any level that can be loaded into Project Manager at any one time depends on the number of predecessor/successor relationships. The list of these relations is created when typing / C (Critical Path) or when loading projects that have already been computed with / C .

In most cases, it is unwise to create a project level with more than 5Ø tasks.

Number of Levels

Each time you go down a level, Project Manager remembers the task to which the cursor was pointing. Going up a level returns you to the remembered task. Going down several levels builds a task list which corresponds to the path taken into the project structure. Enough space is reserved to allow going down 64 levels into any project structure. At the lowest level, the error message, NO MORE LEVELS, appears.

Other Capacities

1. One hundred years can be handled by Project Manager: any year from 195Ø to 2Ø5Ø can be selected.

2. Titles can be up to 8 characters in length. Characters can be either alphabetic or numeric.

3. Descriptions can be up to 5Ø characters in length on the Detail chart, although only 15 characters will be displayed on the other charts (for example, PERT and Gantt). Characters can be either alphabetic or numeric.

4. Durations cannot exceed 9999 days for the whole project.

5. The Resource Amount cannot exceed 9999.99. Put in decimal points if they are needed.

6. Dates are usually entered as MM/DD/YY, but that format is not required. One numeric character is acceptable for both Month and Day, as in 1/1/82. Though a non-numeric character must separate each of the elements in the date (Month from Day and Day from Year), slashes do not have to be used. The date will be printed with slashes.

7. The amount of space left on the Data Diskette is displayed in the lower right hand corner of the screen. The number represents how many 64-byte blocks of memory are left. Do not build a project on your diskette if the available memory indicator is below 1ØØ. Set up another Data Diskette and use it.

C

chart multiplier—displays resource units on a quantitative scale in selected whole numbers or decimals.

crisis—an unexpected change in a projected time duration, completion date, resource need, or similar occurrence.

crisis management—use of a forecast to show how unexpected changes in project data will affect the project.

critical path—the longest distance in time from start to finish of a project; displayed on the top line of the PERT chart; critical path sequence determines schedule and duration of a project; duration of a project is extended if any task on the critical path is extended.

D

date conflict—a conflict between a schedule and a mandatory Begin or End date; a Date Conflict message is automatically displayed if a mandatory Begin or End date is set earlier than the earliest possible Begin or End date computed by Project Manager.

default duration—the overall unit of time designated for a project, exclusive of unit variations in individual tasks.

default time unit—day interval, the initial time unit automatically displayed at the beginning of the program.

detailed data mode—standard display of project and task information.

duration—the amount of time needed to complete a task or project; computed in days, weeks, months or years.

F

forecast—use of a history file for later comparison, analysis and prediction; accomplished by assigning a new title to a project copy and modifying the copy to see the effect of a future change.

G

Gantt chart—displays a whole project as a bar graph, with each task duration computed by total time for completion and by daily schedule; relationships between tasks and schedules revealed when Gantt and PERT charts are combined.

H

history file—created by renaming project copies with new titles and saving by use of the Replicate function which includes all subtasks for historical comparison and analysis.

P

PERT—acronym for Program Evaluation and Review Technique.

PERT chart—shows task relationships of a complete project in diagram; task descriptions, durations, resources and schedules can be reviewed, compared and analyzed by manipulation of PERT data.

predecessor—a task which must be completed before beginning the current task; defined in conjunction with successors to inform Project Manager of the progression in which tasks are to be completed.

project modeling—use of typical projects to quickly reproduce detailed schedules for similar projects.

projects, parallel—projects composed, in part, of tasks which are performed simultaneously.

projects, sequential—projects composed, in part, of tasks arranged in continuous succession; completion of each task is critical to the scheduled completion of the project.

R

Resource chart—displays four types of information: 1) top horizontal scale indicates volume of each resource unit; 2) vertical resource availability column shows number or amount of resources currently available; 3) date column on left can be set to days, weeks, months or years; 4) prompt line at bottom of screen displays resource currently selected and the number or amount being used.

Resource Code Table—included on original Data Diskette; filled initially with suggested resource applications.

resource codes, changing—codes can be altered to meet individual requirements by first displaying Resource Code Table.

resources, entering amounts—begin process of changing resource codes, select desired code and enter the amount of resource needed.

resource management—this function requires only that you first add a resource code and amount to each task you wish to monitor; Project Manager can then create charts showing how resources are used and how changes will affect the project.

resource overlaps—visibility indicated by a string of task names crossing the vertical resource availability line on the Resource chart; occurs when the selected number or amount of resources is exceeded by the amount of work to be done.

S

slack days—listed with each task schedule; shows how many days a task can extend beyond its planned duration without affecting the critical path and project completion date.

subtask(s)—one or more subdivisions of a task.

successor—a task(s) which cannot begin until the current task is completed; defined in conjunction with predecessors to inform Project Manager of the progression in which tasks are to be completed.

T

task—the second program level; each project can be divided into separate tasks and subtasks.

Task chart—a PERT chart with a vertical format; used when needed to view data vertically.

Time chart—a Gantt chart viewed in a vertical format; reached from Gantt chart display by typing / L M (List Time).

task duration multiplier—time units automatically set to days (default time unit) at beginning of program may be changed by typing /M (task duration multiplier) and selecting D(days), W(weeks), M(months) or Y(years).

TM Code—Time Manager code; used to interface the Time Manager program with other programs in the Manager Series; a TM code ("P" is added automatically) assigned to a Project Manager project or task is added to START and END entries on the Time Manager DataDiskette.

Top Level Projects—the most general level of Project Manager; displays the Detailed Data Mode, a standard display of project information; used to maintain an index of all current projects, along with brief descriptions and tentative schedules.

Project Worksheet

Task Title:	Task Description:	DUR: (D,W,M,Y)	Preceded by:

ADDENDUM TO PROJECT MANAGER (26-1580) VERSION 1.0 TRSDOS 1.3I

To our Customers,

Congratulations for your purchase of Project Manager for the TRS-80 Model III with QWERTY, AZERTY or QWERTZ keyboard. This software will help you evaluating and scheduling projects of all kinds, and will improve the benefits of using your computer.

In order to make Project Manager compatible with the European version of the TRS-80 Model III, one additional diskette (labeled 'PROGRAM diskette (AZERTY/QWERTZ)') is contained in the software and some changes, listed below, have to be made in the manual.

- [SHIFT] [CLEAR] is Upper/Lower case letter toggle switch instead of [SHIFT] [0].

- Plotting of reports (entered by /Q):
  Please do not use the /Q command to plot PERT, task or GANTT reports, all semigraphical characters are printed as the 'undefined' character on the Dot Matrix Printers.

- ICSPRTDR : following characters are printed as the 'undefined' character on the Dot Matrix Printers: â, ê, î, ô, û, ë and ï.

- Operation: Model I - Use Program and Data diskette labeled 'Model I'.
  Model III QWERTY - Use Program and Data diskette labeled 'Model III'.
  Model III QWERTZ or AZERTY - Use Program diskette labeled 'PROGRAM diskette (AZERTY/QWERTZ)' and Data diskette labeled 'Model III'. Whenever the manual refers to 'PROGRAM Diskette', references are to be considered to the 'PROGRAM Diskette (AZERTY/QWERTZ)'.

Since Software by itself, and Software Support is one of the major goals of Tandy Corporation, we encourage you to keep in touch with your Tandy Computer Center or Store on a regular base to allow our people to let you know what improvements have been made to the software from the time of your last visit.

Thank you.

Tandy Corporation
Parc Industriel
B-5140 Naninne
Belgium

SOFTWARE REGISTRATION CARD

IMPORTANT: In order that you can receive notification of modifications or updates of this program you MUST complete this card and return it immediately. This card gets you information only and is NOT a warranty registration.

10091682

Version/Date

Name _____

Company _____

Address _____

City _____

State _____ Zip _____

Cat. No. 1580

Purchase Date _____

CHANGE OF ADDRESS

NOTE: If you move, please fill out this card and return it so that you may continue to receive information regarding this program.

10091682

Version/Date

Purchase Date _____

Cat No. 1580

NEW ADDRESS:

Name _____

Company _____

Address _____

City _____

State _____ Zip _____

OLD ADDRESS:

Name _____

Company _____

Address _____

City _____

State _____ Zip _____

INSTRUCTIONS FOR USE

1. **Register one software package per card only.**
2. **Complete the Software Registration portion of this form and mail it immediately. The Catalog No. may be found by examining the upper-right corner of your diskette.**
3. **For convenience a change of address card has been included. Copy all information from the Registration Card onto it prior to sending the Registration Card.**

PLACE
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Fort Worth, Texas 76113-2910

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