



**PROJECT MONITORING PACKAGE (PMP) .
A PACKAGE FOR PROJECT ACTIVITY MONITORING**

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Reactor Projects Division

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Project Monitoring Package (PMP) : A Package For
Project Activity Monitoring

By

K.N.Vyas, A.Kannan, Susandhi R. and S.Basu

ABSTRACT

A package for preparing PERT/CPM network diagrams has been written for PDP-11/34. The program uses PLOT-10 library calls for device interfacing.

The package is essentially non-interactive in nature, and reads input data in the form of activity description and duration. It calculates the critical path time & performs time scaling of the events. The report gives a brief outline of the logic used, a sample plot & tabular output for reference.

An additional facility for performing project activity monitoring has also been implemented. Activity monitoring generally requires various reports such as feed back reports from various group co-ordinators, information report for project co-ordinator and brief periodical reports for management.

A package "DATATRIEVE"(DTR) on PDP-11/34 system is utilized for generating the above mentioned reports. As DTR can also use normal sequential files, an interfacing program has been written which reformats the files accepted by PERT program acceptable to DTR.

Various types of reports as generated by DTR are included. However this part of the package is not transportable and can be implemented only on systems having DTR.

1.0 INTRODUCTION

A program for drawing PERT charts has been written on PDP-11/34 using PLOT-10 calls in FORTRAN. The output from the program can be obtained on a plotter in the form of a network diagram or, alternatively, on a printer listing various activities, expected start & finish dates, preceding activity list if any. The print out also has a provision for incorporating remarks such as reasons for delay etc.

2.0 GENERAL PROGRAM LAYOUT

The program is split in three major modules, namely,

1. Module for calculating critical path time.
2. Module for plotting and
3. Module for taking a print out.

Critical path time calculation is done by putting all the activities on the stack and then finding the longest possible path.

The program reads data from a file giving details of the activity split and general drawing requirements for the network. For PDP-11/34, it has a facility to take indirect input for a set of files of a particular supervisor. Typical input and output are described in the next section.

3.0 SAMPLE INPUT AND OUTPUT

Fig 1 shows a sample input file. The required data as shown in the figure consists of the title, name of the supervisor, concerned engineers (max 3), starting date given in the form of week, month and year, total no of events, activity details given by starting event, finish event, description & duration.

Other details necessary for proper layout of the diagram is giving the event and activity position codes. Program on its own does not determine how the events are to be placed, but has to be told regarding the relative placement of events. Giving event position codes a value of "0" places the events at the centre of the paper, while giving a positive or a negative value places the events above or below the centre line.

323

USI

'D.M. water system' 'Sh. Patwardhan' TITLE/SUPERVISOR

'Sh. Sharma' 'Sh. Roy' 'Sh. Gupta' CONCERNED ENGINEERS

5 TOTAL EVENTS

1 8 86 START DATE GIVEN AS WW/MM/YY

5 0 DETAILS OF EVENT POSITION CODE (ALL THE 5 EVENTS ARE IN ONE LINE AND AT THE CENTRE)

ACTIVITY DETAILS

START

START	FIN.	ACT. DESCR.	ACT. DURATN.	ACT. POS. CODE
EVENT	EVENT			
1	2	'Review of flow sheet'	2	0
2	3	'Specs for D.M.water'	4	2
2	3	'Specs for HP PUMPS'	4	0
3	4	'Tender document for HP PUMPS'	3	-2
3	4	'Mech. design of tanks'	3	0
3	5	'Process analysis and design basis'	10	-4
4	5	'Market survey'	7	0
4	5	'Tender document for LP PUMPS'	7	1

FIG:1 TYPICAL INPUT FILE

The magnitude of the code determine the extent of shift of an event. The program requires event position codes for all the events. However, it can take a default value of the latest given event.

In a similar fashion, activity position codes are also required as a part of activity details. The action taken for different values of activity position codes is shown in fig-2.

Fig-3 (a&b) show typical printer and plotter outputs for the input file shown in Fig-1.

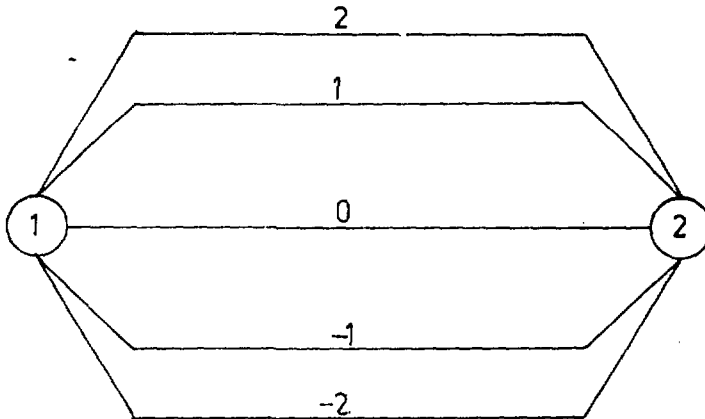


FIG:3A EVENTS WITH SAME POSITION CODE

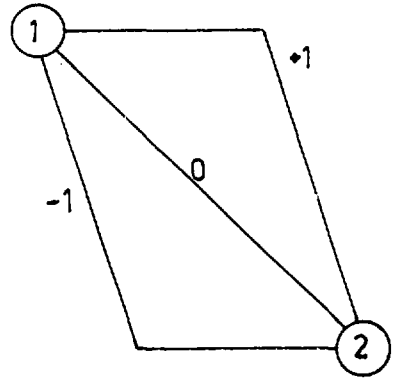
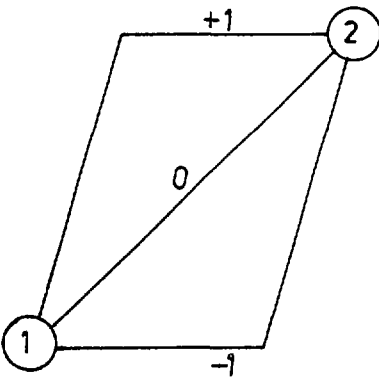


FIG:2B SHIFTED EVENTS

:NOTE:

The numbers indicate the different values of the activity position code

Activity split for : D.M. water system

Supervisor : Sh. Patwardhan

Executor/s : Sh. Sharma

Sh. Roy

Sh. Gupta

Sr. No.	Description	Start	Finish	Preceding Activities
1	*Review of flow sheet	1 Aug, 86	15 Aug, 86	
2	*Specs for D.M. water	15 Aug, 86	15 Sep, 86	1,
3	*Specs for HP pumps	15 Aug, 86	15 Sep, 86	1,
4	Tender document for HP pumps	15 Sep, 86	8 Oct, 86	2, 3,
5	Mech. design of tanks	15 Sep, 86	8 Oct, 86	2, 3,
6	Process analysis and design basis	15 Sep, 86	1 Dec, 86	2, 3,
7	Market survey	8 Oct, 86	1 Dec, 86	4, 5,
8	Tender document for LP pumps	8 Oct, 86	1 Dec, 86	4, 5,

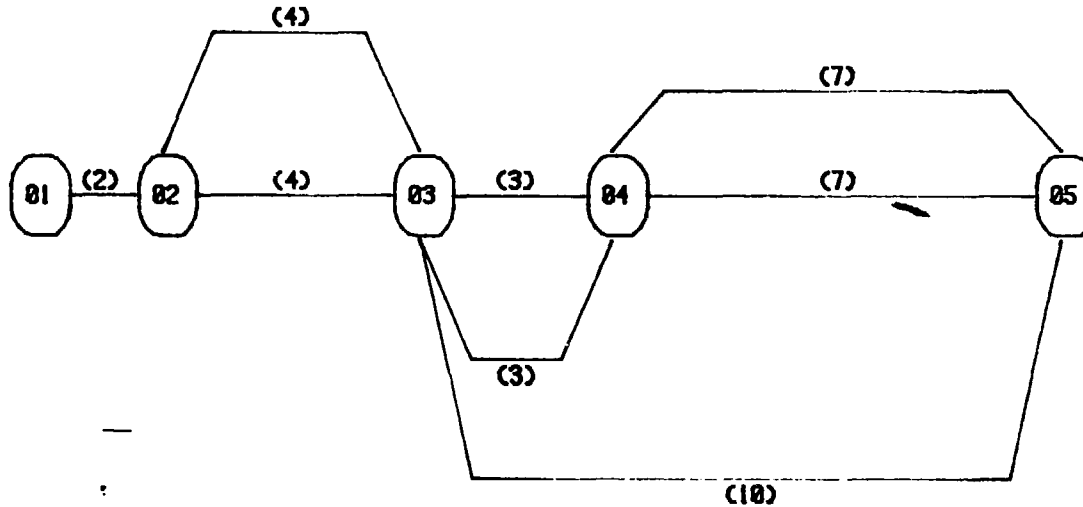
'*' indicates activities to be over by 1 Oct, 86

Critical path time : 16 weeks

DESUG.DAT

FIG:3A PRINTER OUTPUT

- 01-02 Review of flow sheet
- 02-03 Specs for D.M. water
- 02-03 Specs for HP pumps
- 03-04 Tender document for HP pumps
- 03-04 Mech. design of tanks
- 03-05 Process analysis and design basis
- 04-05 Market survey
- 04-05 Tender document for LP pumps



D.M. water system

FIG:3B PLOTTER OUTPUT

4.0 OTHER ADDITIONS BEING CONSIDERED

- (1) The package at present does not have any provision to link with a master pert chart. It is being planned to have a tree structure definition and provide linkins to a higher level pert chart.
- (2) To incorporate a facility to indicate the extent of activities completed by overlayins in a different colour. This is to indicate the current status of the activity.

5.0 INTERFACING TO DATATRIEVE

It has been noticed that for periodic activity monitoring, the tabular output from PERT package is inadequate. Hence the PERT package is linked to DTR utility available on PDP-11/34. DTR is a query language and report generating package. For various types of data fields stored in a data file, DTR can selectively display data in a required format. It also allows data manipulations such as sorting, counting the number of data items etc.

An interfacing program written in FORTRAN reformats and appends the data shown in fig-1 to that required by DTR.

DTR accepts data in the form of fixed length records having fields describing activity number with USI; supervisor; expected start and finish dates; status giving details of activity having been completed, yet to be started, delayed, reasons for delay etc.

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Ref:RPD/TRY/-----/86

Date:-----

7-Oct-86

With respect to your current activities, I have the following information:

Act-No	Description	Expected start	Expected Finish	Act-No	Remarks
323/0001	Review of flow sheet	01-Aug-86	15-Aug-86	323/0001	
323/0002	Specs for D.M.water	15-Aug-86	15-Sep-86	323/0002	
323/0003	Specs for HP pumps	15-Aug-86	15-Sep-86	323/0003	
323/0004	Mech. design of tanks	15-Sep-86	08-Oct-86	323/0004	
323/0005	Process analysis and design basis	15-Sep-86	01-Dec-86	323/0005	
323/0006	Tender document for HP pumps	15-Sep-86	08-Oct-86	323/0006	
323/0007	Market survey	08-Oct-86	01-Dec-86	323/0007	
323/0008	Tender document for LP pumps	08-Oct-86	01-Dec-86	323/0008	

To:

Sh. Patwardhan

(S. Kumar)
Project co-ordinator

Sh. Patwardhan

Note: 1. Please indicate the activity status in the Remarks' column such as completed (with actual completion date) / delayed (with new END-DATE & reasons for delay in brief)/ any other remark.

2. Pl. tear off across the dotted line and send back to Project manager.

FIG:4 REMINDER AND FEEDBACK INFORMATION
FROM SUPERVISOR

6.0 DATATRIEVE REPORTS

Once the data is reformatted as required by DTR, it can be retrieved in the form of various reports and updated as per the feed back information received from group coordinators. In the following section three categories of report generated are presented.

6.1 CATEGORY I REPORT (FEED BACK INFORMATION FROM SUPERVISORS)

A sample print out of the report is as shown in fig-4. As shown, the supervisor can give the feed back, for project monitoring, to the project co-ordinator to update the Database. An identical report sheet is sent to all the supervisors.

6.2 CATEGORY II REPORTS (COMPREHENSIVE INFORMATION TO PROJECT CO-ORDINATOR)

A sample print out of the report is as shown in fig-5. As shown the report gives a sorted information for all the supervisors giving individual activity status, reasons for delays as indicated by the supervisors. This report can be obtained for a required time span viz, one month or a quarter.

6.3 CATEGORY III REPORT (PROGRESS REPORT FOR THE MANAGEMENT)

A sample print out of the report is as shown in fig-6. As shown, it is desirable for the progress report to give information sorted USI wise. Information regarding individual supervisors is also not necessary for the progress report. Hence, the progress report contains information regarding activities completed, continuing and anticipated to be started in a given period.

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Ref:RPD/TRY/-----/86

7-Oct-86

List of activities :

1. Completed between 10-Sep-86 and 7-Oct-86
2. Continuing as on 7-Oct-86
3. To be started between 7-Oct-86 and 29-Dec-86

Act-No	Description	Expected start	Expected finish	Status	Completion date	Remarks	Executors
Sh. Patwardhan							
323/0001	Review of flow sheet	01-Aug-86	15-Aug-86	Completed	15-Sep-86	Delayed due to non-availability of data from other agencies.	Sh. Sharma Sh. Roy Sh. Gupta
323/0002	Specs for D.M.water	15-Aug-86	15-Sep-86	Completed	15-Sep-86		Sh. Sharma Sh. Roy Sh. Gupta
323/0003	Specs for HP PUMPS	18-Aug-86	15-Sep-86	**Delayed		Delayed due to late feed back.	Sh. Sharma Sh. Roy Sh. Gupta
323/0004	Mech. design of tanks	15-Sep-86	08-Oct-86	Continuing			Sh. Sharma Sh. Roy Sh. Gupta
323/0005	Process analysis and design basis	15-Sep-86	15-Dec-86	Continuing			Sh. Sharma Sh. Roy Sh. Gupta
323/0006	Tender document for HP PUMPS	15-Sep-86	08-Oct-86	Continuing			Sh. Sharma Sh. Roy Sh. Gupta
323/0007	Market survey	08-Oct-86	01-Dec-86	Starting			Sh. Sharma Sh. Roy Sh. Gupta
323/0008	Tender document for LP PUMPS	08-Oct-86	01-Dec-86	Starting			Sh. Sharma Sh. Roy Sh. Gupta
Sh. Srinivas							
301/0287	Pipe sizing	15-Jun-86	22-Jun-86	Completed	20-Jun-86		Sh. Roy
301/0288	Deciding control requirements	15-Jun-86	08-Jul-86	Completed	06-Jul-86		Sh. Roy Sh. Paul
301/0289	Completion of flow sheet with instrumentation	8-Jul-86	01-Aug-86	**Delayed			Sh. Roy Sh. Murthy

FIG:5

CONTD..

Act-No	Description	Expected start	Expected finish	Status	Completion date	Remarks	Executors
301/0290	Fixing nozzle location in main tank	22-Jun-86	01-Aug-86	**Delayed		Delayed due to layout modifications	Sh. Rao Sh. Krishnan
301/0291	Preparing piping layout drawings	01-Aug-86	15-Sep-86	**Delayed		Delayed due to layout modifications	Sh. Rao Sh. Nayyar
301/0292	Pressure drop calculation	15-Oct-86	22-Oct-86	Starting			Sh. Ravi Sh. Paul
301/0293	Preparing spec for piping erection & insulation/rubber lining	22-Oct-86	22-Nov-86	Starting			Sh. Rao Sh. Mani Sh. Pandit

**FIG:5 COMPREHENSIVE ACTIVITY INFORMATION TO
THE PROJECT CO-ORDINATOR**

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List of activities :

1. Completed between 10-Sep-86 and 7-Oct-86
2. Continuing as on 7-Oct-86
3. To be started between 7-Oct-86 and 29-Dec-86

Report prepared on : 7-Oct-86

Activities - Completed

- * Review of flow sheet
- * Specs for D.M. Water
- * Pipe sizing
- * Deciding control requirements

Activities - Continuing

- * Specs for HP pumps
- * Mech. design of tanks
- * Completion of flow sheet with instrumentation
- * Fixing nozzle location in main tank
- * Preparing piping layout drawings
- * Process analysis and design basis
- * Tender document for HP pumps

Activities - Starting

- * Market survey
 - * Tender document for LP pumps
 - * Pressure drop calculation
 - * Preparing spec for piping erection & insulation/rubber lining
-

FIG:6 PROGRESS REPORT FOR THE MANAGEMENT

7.0 CONCLUSION

Generally, for any project, information regarding activities is available in the form of preceding and succeeding activity details and individual activity durations. However, persual of activities in this format is not very convenient. This feature can be provided by linking the data to a package like DTR or DBASE-III available on IBM PC's. This type of linking can provide considerable time savings in data compilation for other types of reports necessary for project management.

8.0 ACKNOWLEDGEMENT

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