

GOVERNMENT POLYTECHNIC PUNE

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Batch : A

Software Engineering

IT4101

PRACTICAL 9

Aim :-

Use CPM (Critical Path Method)/PERT (Programme Evaluation and review technique) for scheduling the assigned project.

Topic:- Resume builder

Theory :-

CPM (Critical Path Method) :-

Critical Path Method (CPM) is a method used in project planning, generally for project scheduling for the on-time completion of the project. It actually helps in the determination of the earliest time by which the whole project can be completed. There are two main concepts in this method namely critical task and critical path. Critical task is the task/activity which can't be delayed otherwise the completion of the whole project will be delayed. It must be completed on-time before starting the other dependent tasks.

Critical path is a sequence of critical tasks/activities and is the largest path in the project network. It gives us the minimum time which is required to complete the whole project. The activities in the critical path are known as critical activities and if these activities are delayed then the completion of the whole project is also delayed.

Major steps of the Critical Path Method :-

- Identifying the activities(tasks).

- Identify dependencies.
- Create a network diagram.
- Estimate task duration
- Create/Identify critical path

The table given below contains the task label, its respective duration (in days) and its task id. We will use the critical path method to find the critical path and activities of our project(Resume builder).

Tasks:-

Task id	Task	Duration in days
A	Create screen designing	6
B	write code for screen design	4
C	Edit and create final design	3
D	Add backend code	4
E	Test the backend code	3
F	edit and write final backend code	10

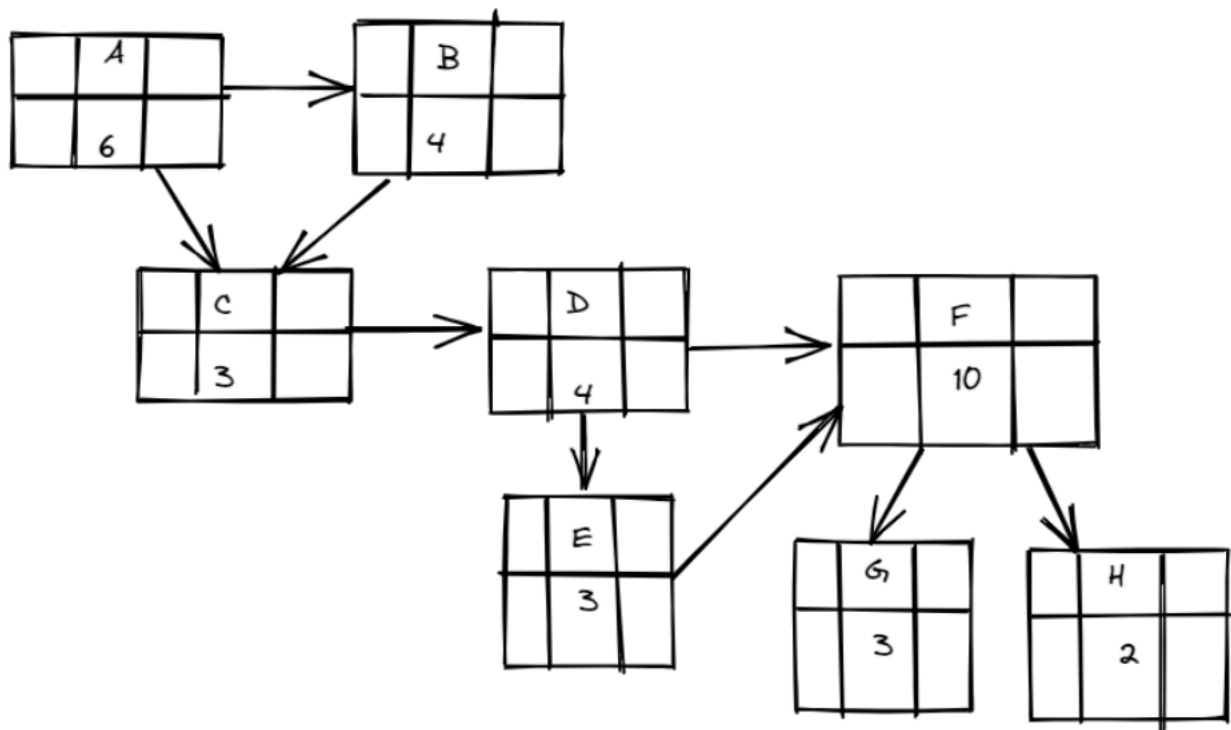
G	Test the project	3
H	Finalize the project	2

Identify dependencies:-

Here are the task dependencies based on the table :-

- Task B is dependent on A
- Task C is dependent on B,A
- Tasks C and D can run in parallel
- Task E is dependent on D
- Task F is dependent on D, and E
- Task G and H depend on F.

Network diagram :-



Estimate task duration :-

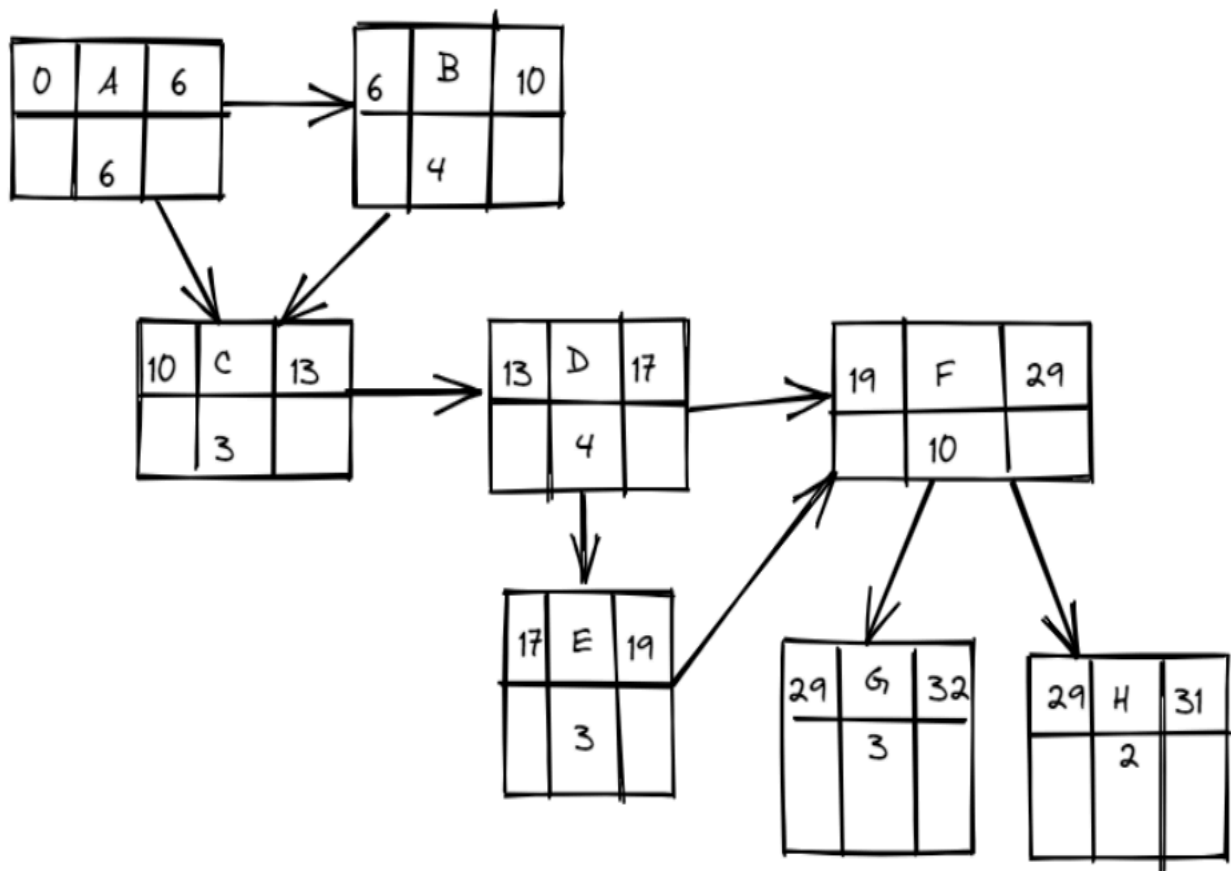
To calculate the critical path, the longest sequence of critical tasks, you first need to estimate the duration of each activity.

To estimate the duration, try :-

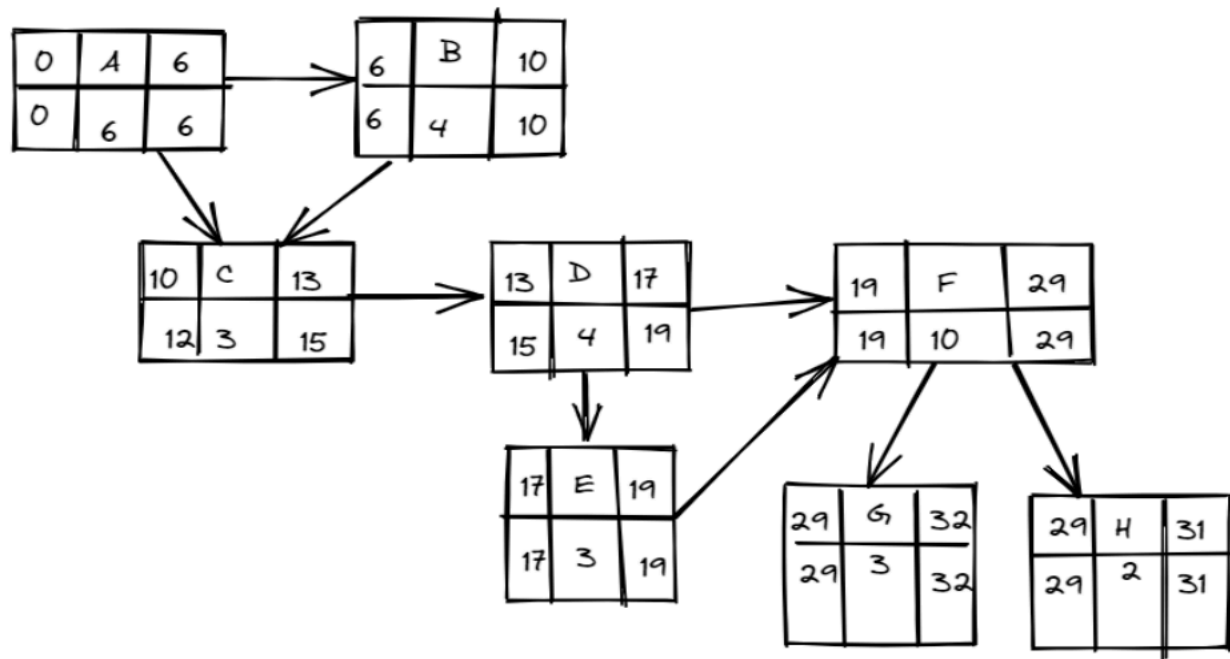
- Making educated guesses based on experience and knowledge
- Estimating based on previous project data
- Estimating based on industry standards

Alternatively, try using the forward pass and backward pass technique :-

Forward Pass :-



Backward pass:-



Identifying Critical Path :-

Critical path is the path which gives us or helps us to estimate the earliest time in which the whole project can be completed. Any delay to an activity on this critical path will lead to a delay in the completion of the whole project. In order to identify the critical path, we need to calculate the activity float for each activity.

So, following tasks are under a critical path:-

Task E :- Test the backend code.

Task F :- edit and write final backend code.

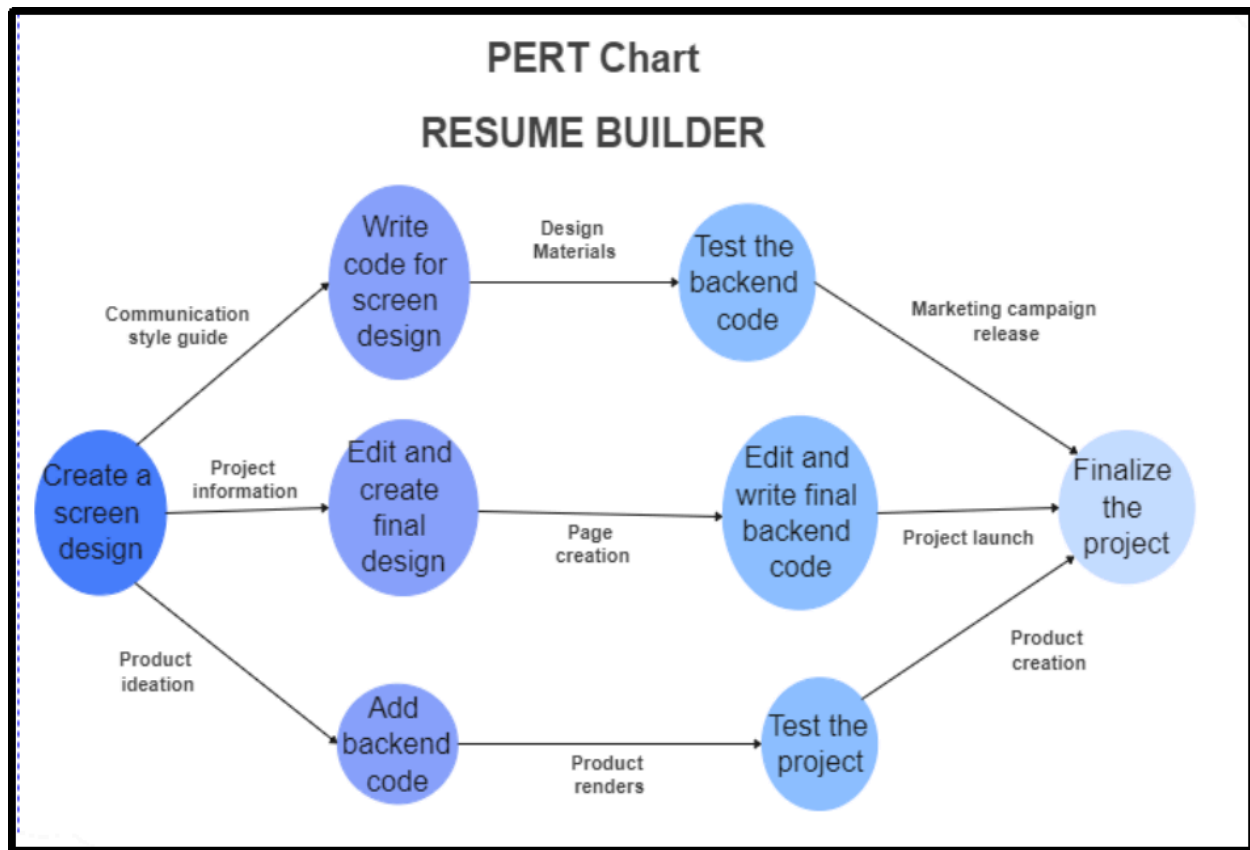
Task G :- Test the project.

Task F :- Finalize the project.

If any one of them is late then it will directly impact final delivery on the project.

PERT (Programme evaluation and review technique)

Project Evaluation and Review Technique (PERT) is a procedure through which activities of a project are represented in its appropriate sequence and timing. It is a scheduling technique used to schedule, organize and integrate tasks within a project. PERT is basically a mechanism for management planning and control which provides a blueprint for a particular project. All of the primary elements or events of a project have been finally identified by the PERT.



Conclusion :-

Hence we have used CPM (Critical Path Method)/PERT (Programme Evaluation and review technique) for scheduling the assigned project(Resume builder).

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