BACHELOR OF COMPUTER APPLICATIONS

SEMESTER 6

DCA3245

SOFTWARE PROJECT MANAGEMENT

Unit 5

Project Scheduling

Table of Contents

SL No	Topic	Fig No / Table / Graph	SAQ / Activity	Page No
1	Introduction	-	-	3
	1.1 Objectives	-	-	
2	Scheduling Techniques	-	1, 2	4-22
	2.1 Program Evaluation and Review Technique (PERT)	1, 2, 3, 1	-	
	2.2 Gantt Chart	4, 5, 6	-	
	2.3 Critical Path Method (CPM)	7	-	
	2.4 Automated Tools	-	-	
3	Summary	-	-	23
4	Terminal Questions	-	-	23
5	Answers	-	-	23-24

1. INTRODUCTION

Dear student, in the last unit you have studied about budgeting and cost estimation. In this unit, you are going to study about project scheduling.

Scheduling is an exercise in which the tasks of the project are associated with the resources who will be working on the tasks. By scheduling, the tasks are arranged by the date by which each task will be worked on. It is like predicting the future when the project will be over. While it is impossible to tell exactly when the project will be completed, there are several techniques using which you, as a project manager, can schedule a project as close as possible to actual execution. The accuracy of the scheduling depends on how accurate your planning and estimation of the project. If you have an accurate schedule, you will have better control on monitoring the project and adapting to the changes that may come up during the course of the project.

In this unit, we will be discussing the scheduling techniques and their uses.

1.1 Objectives:

After studying this unit, you should be able to:

- *Explain various scheduling techniques*
- *List out various automated tools for scheduling*

2. SCHEDULING TECHNIQUES

The goal of the scheduling is to predict and plan how the tasks of the project individually or as a group will be executed over a period of time. The basic principle used in scheduling is the WBS (Work Breakdown Structure). Using the WBS, the functionalities to be delivered are broken down to manageable chunks of tasks or group of activities. These tasks are then allocated with appropriate resources and start and finish dates for these tasks are recorded to plan when each activity can be carried out. As you will be applying the WBS, the scheduling can be used for whole project or parts of the project at varying levels of details.

Scheduling is an activity that can be perfected over the experience of the past projects. Experience in project execution will always help in preparing a better schedule. In every organization there will be knowledge base recording the learning and experiences of the past projects executed in the company. There will also be the records of the standard practices and procedures followed in the industry. Before starting with the scheduling activity project manager can refer to these available resources that will help in scheduling activity.

While preparing the schedule you should also consider the external dependencies the system might have. Project manager should allocate appropriate buffer to such external dependencies. Resource allocation is also another important aspect to be considered. Further, you should pay attention to the skill set needed for the tasks to be completed and the skill levels of the resources available to you. Accordingly the schedule has to be adjusted as per the varying skill levels of resources available in the project.

A schedule includes the following:

- The tasks to be executed as defined in Work Breakdown Structure
- Estimates of how long each task will take
- Arrangement of the tasks considering the dependencies between tasks
- Estimates of effort for each task those are initially independent of the resources that will work on the task. The Estimating technique explains how to develop estimates for the tasks in a Work Breakdown Structure.

Project Manager needs to allocate resources to the tasks and possibly modify the estimates depending on the skill level (or proficiency) of the resources available. PM also needs to

confirm or define the dependencies between the activities. With the resource allocation and dependencies finalizes the PM can then develop and analyze the schedule. The following sections 5.2.1, 5.2.2 and 5.2.3 describe a number of individual techniques that are designed to do this.

Duration Compression:

Duration compression, in the context of project management, refers to the techniques and strategies used to shorten the overall duration of a project without compromising its quality or scope. It's a response to situations where a project is taking longer to complete than initially planned, and there's a need to accelerate the schedule to meet deadlines or respond to changing circumstances. Duration compression techniques are employed to "compress" the project schedule, reducing the time required for project completion.Duration compression helps to cut short a schedule if neededIt can adjust the set schedule by making changes without changing the scope in case, the project is running late.

- Two methodologies that can be applied: fast tracking and crashing

1. Fast-tracking is another way to use CPM.Fast-tracking finds ways to speed up the pace at which a project is being implemented by either simultaneously executing many tasks or by overlapping many tasks to each other.

   CPM helps us identify activities that can be used to speed up the pace of the project. Although it is an appealing technique, it has its own share of risks too.

   As many activities will be simultaneously implemented, it is highly to make mistakes and compromise on quality.

2. Crashing: Crashing deals with involving more resources to finish the project on time. For this to happen, you need spare resources to be available at your disposal. Moreover, all the tasks cannot be done by adding extra resources. Need to add new team members to a project and limited divisibility of tasks leads to increase communication and is the basic reason behind it. The crashing technique can also be used by adding time, paid overtime, but it should stay within the decided deadline.

Simulation:

Science, engineering, business, and computer science are just few of the disciplines that make use of simulation to model and analyse real-world processes and systems by constructing a digital or mathematical representation of them. The basic goal of simulation is to study, analyse, and predict the behaviour of complex systems or events without the need for costly, time-consuming, or impracticable real-world experiments. Science, engineering, business, and computer science are just few of the disciplines that make use of simulation to model and analyse real-world processes and systems by constructing a digital or mathematical representation of them. The basic goal of simulation is to study, analyse, and predict the behaviour of complex systems or events without the need for costly, time-consuming, or impracticable real-world experiments.

Steps to Create a Project Schedule

- Create the schedule plan for your project
- Define who has authority over the schedule
- Identify start and end dates for project activities and tasks
- Figure out task dependencies
- Sequence activities and tasks chronologically to create a project calendar
- Estimate needed resources and resource availability
- Determine duration of activities and tasks
- Build project schedule
- Monitor and control throughout the project life cycle

2.1 Program Evaluation and Review Technique (PERT)

PERT is a technique to analyze the tasks listed for execution for the completion of a given project. PERT focusses on time needed for each task and in the process identifies the minimum time needed for the completion of the entire project.

PERT charts are visualization tools commonly used by project managers to control and administer the tasks required to complete a project.

The **Program Evaluation and Review Technique** or Project Evaluation and Review Technique commonly abbreviated **PERT** is a model for project management to analyze and represent the tasks involved in completing a given project.

This model was invented by Booz Allen Hamilton, Inc. under contract to the United States Department of Defense's US Navy Special Projects Office in 1958 as part of the Polaris mobile submarine-launched ballistic missile project.

PERT was invented, basically to manage the planning and scheduling of large and complex projects in a simpler way. By incorporating the uncertainty and volatility of a typical project, PERT technique was able to schedule a project not knowing precisely the details and durations of all the tasks involved in a project. It is more of an event-oriented technique rather than start- and completion-oriented.

One of the main features of PERT is the "PERT network". PERT network or PERT chart is a graph of interconnected timelines. PERT is intended for very large-scale, one-time, complex, non-routine projects. The PERT chart provides a graphical display of Critical Path on a project. Most scheduling tools highlight the activities on the Critical Path. PERT chart commonly includes following details:

Duration, Float Start date, End date, Resources Float – The Float represents for the amount of additional time and leeway allowed in scheduling tasks so that the critical path on the network is maintained on schedule.

Example: Figure 5.1 shows an example for PERT chart.

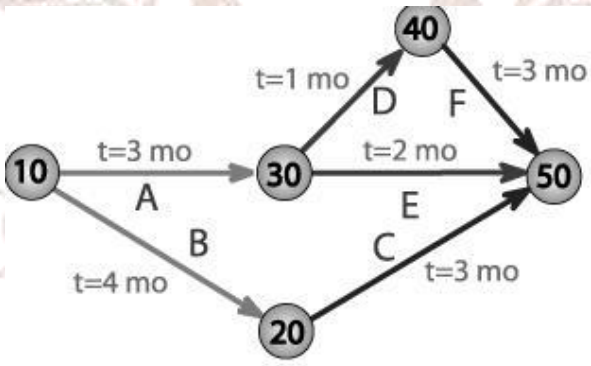

Fig. 5.1: PERT network chart for a seven-month project with five milestones (10 through 50) and six activities (A through F).

Features of a PERT chart:

Following are the salient features of PERT chart depicted in figure 5.1.

- A **PERT chart is** a tool that **helps in** decision making. As a practice in the first draft of the chart, the event numbers are maintained sequentially in 10's. As we can see from the figure the events are numbered as 10, 20, 30 etc. This will help in inserting additional events if needed as we refine the chart.
- The arrows in the diagram represent the **activity.** The activity links two consecutive events in the PERT chart.
- The arrangement of the events in the chart represents the logical sequencing of the events. An event cannot commence unless the preceding event has completed.
- The planner decides which milestones should be PERT events and also decides their "proper" sequence
- A PERT chart may run into multiple pages depending on the events and sub-tasks included in the chart.
- A *PERT activity:* represents the actual execution of the task. A PERT activity requires resources like developer, material, space etc. and consumes time. PERT activity in essence represents the time, effort, and the resources needed for moving from one event to another. A PERT activity cannot be completed until the event preceding it has occurred.
- *PERT event:* this does not require any time or resource. PERT event represents the start or completion of one or more tasks. A PERT event is not considered as "occurred" until all the tasks leading to that event have been completed.
- *Critical Path:* represents the minimum time needed to execute the project. It is the maximum path that we can take from initial event in the chart to the terminal event. Critical path is very important for project monitoring and completion as any delay in the tasks on the critical path will affect the overall schedule of the project.
- *A predecessor event:* an event (or events) that immediately precedes some other event without any other events in between.
- A *successor event:* an event (or events) that immediately follows some other event without any other events in between.

- *Slack*: the **slack** of an event represents the excess time and resources available in achieving this event. **Positive slack (+)** would indicate ahead of schedule; **negative slack** would indicate behind schedule; and **zero slack** would indicate on schedule.

Example: Consider a sample project, planting flowers and trees. This project could involve 8 tasks; when diagramed it would look like Figure 5.2.

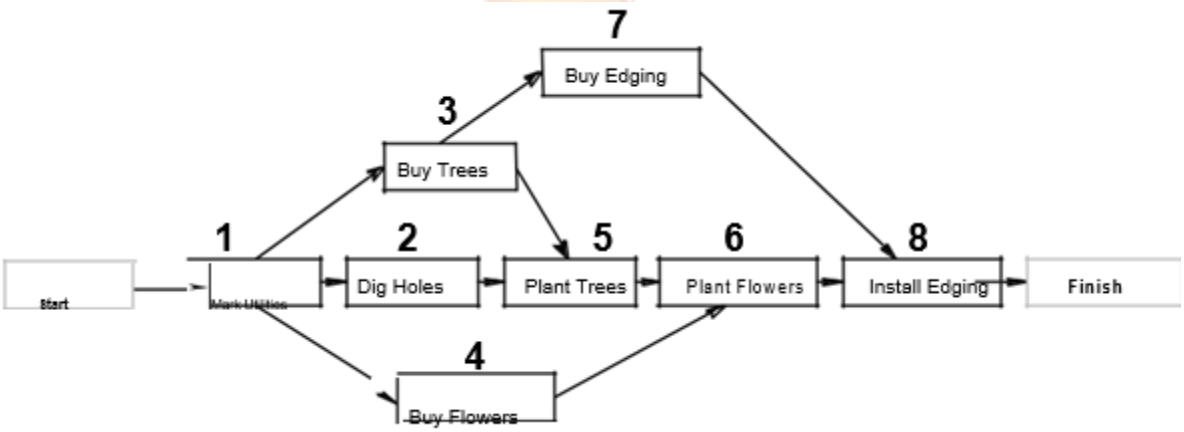

Fig. 5.2: PERT diagram for sample project

Drawing PERT Chart:

The project manager or the leader has to list all the activities required for the completion of the project and estimate how long each activity will take. Then one must determine the dependency of the activities on each other. Clearly, the techniques does not help in deciding, which activities are necessary or how long each will take. Just by looking at the PERT chart the duration of each activity cannot be determined. It simply forces the project manager to take the necessary planning steps.

Example: In this example, we will be representing a PERT chart for the same example of compiler project, which we have discussed earlier in unit 3. So, the WBS for this project along with estimated time for completion of activity is given in Table 5.1.

Table 5.1: WBS of Compiler Project

WBS Number	Task Description	Estimated Time
1.0	Design	45
2.0	Code	
2.1	Scanner	20

2.2	Parser	60
2.3	Code Generation	180
3.0	Integrate and Test	90
4.0	Write Manual	90

Now, based on the dependencies decided by the project manager, the PERT chart is drawn as follows:

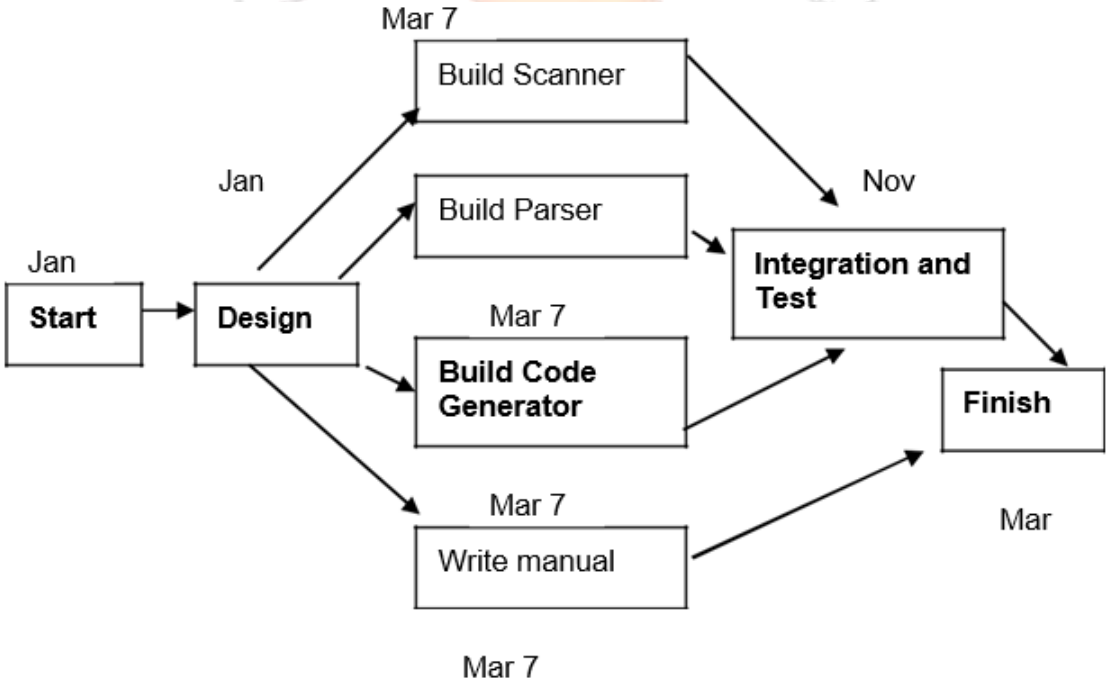

Fig. 5.3: PERT Chart for a simple compiler project.

In this example, it is assumed that the project work will start on January 1st and the design work will start on Jan 3rd. On the first day, some of the startup works are initiated and the actual design work begins on Jan 3rd. The design requires 45 days. So, the design should complete as per estimate by Feb 17th. Considering the delays, the activities that follow the design may start on March 7th at the earliest. (Time gap of 17 days is being taken into consideration to handle the unforeseen situations). The dependency arrows help us to compute these earliest start date on the basis of our estimates of the duration of each activity. These dates are shown in the figure 5.3. We could also compute the earliest finish dates, latest finish dates depending upon the kind of analysis we perform.

Identifying the critical path:

Among the different paths available to reach the finish point, the maximum time taken is by the Design, build & Code generator and Integrate and Test. So, this is considered as the critical path of this project. Any delay in the activities in this path, will cause a delay in the entire project. So, the manager must monitor the activities on the critical path much more closely.

SELF-ASSESSMENT QUESTIONS – 1

1. A schedule provides the idea about the start and finish dates of key activities or terminal elements of the project. (True / False)
2. PERT stands for _____.
3. _____ in an event indicates ahead of schedule. (Pick right option)
   a) Positive slack (+)
   b) Negative slack (–)
   c) Zero slack
   d) None of the above

2.2 Gantt Chart

Henry Laurence Gantt, A.B., M.E. was an American engineer and management consultant who is most famous for developing the Gantt chart in the 1910s. Over the past century the Gantt charts have been used in major Civil engineering projects including the famous Hoover Dam project and interstate highway projects in US. Gantt charts are now standard way to document software project schedules.

A Gantt chart allows

- Graphical representation of a schedule
- Helps in accurate and easy communication
- Resource allocation
- Tracking of the schedule
- Gather the history of the project

Example: Figure 5.4 shows an example for Gantt Chart.

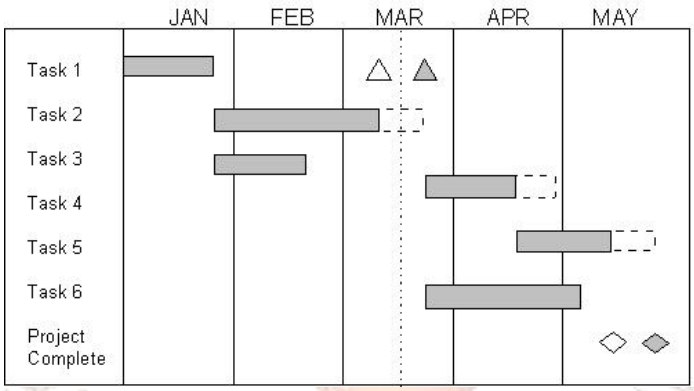

Fig. 5.4: Gantt Chart example

Gantt chart is named after the inventor Henry L Gantt. It is a type of a bar chart drawn against the time on a horizontal scale. Gantt chart represents the start date, duration, and completion of every task of the project. Additionally, the chart will also represent any dependencies among the tasks giving the overall graphical representation of the activities of the project.

Along with representation of the dependencies, the Gantt chart also represents the milestones of the project. Milestones are used to show the important events like Requirement Freeze, Design completion etc. After the schedule is reviewed and finalized, the baseline version of the schedule in the form of the chart is created. Any further tracking of the project is done against the baseline version. Gantt chart provides annotations to communicate the progress of the project.

After the schedule in the form of Gantt chart is set for a project, the period of the project should be monitored periodically against the baseline schedule and plotted on the chart. Also if the schedule need to be separated out based on the functional area, we can do so and can be linked back to the master schedule. Further, each task in the Gantt chart should be assigned to an individual so that proper ownership on the activity can be established and accountability can be set.

Example: Draw a Gantt Chart for the tasks identified in the WBS of compiler project, given in the table 5.1. The chart is shown in Figure 5.5.

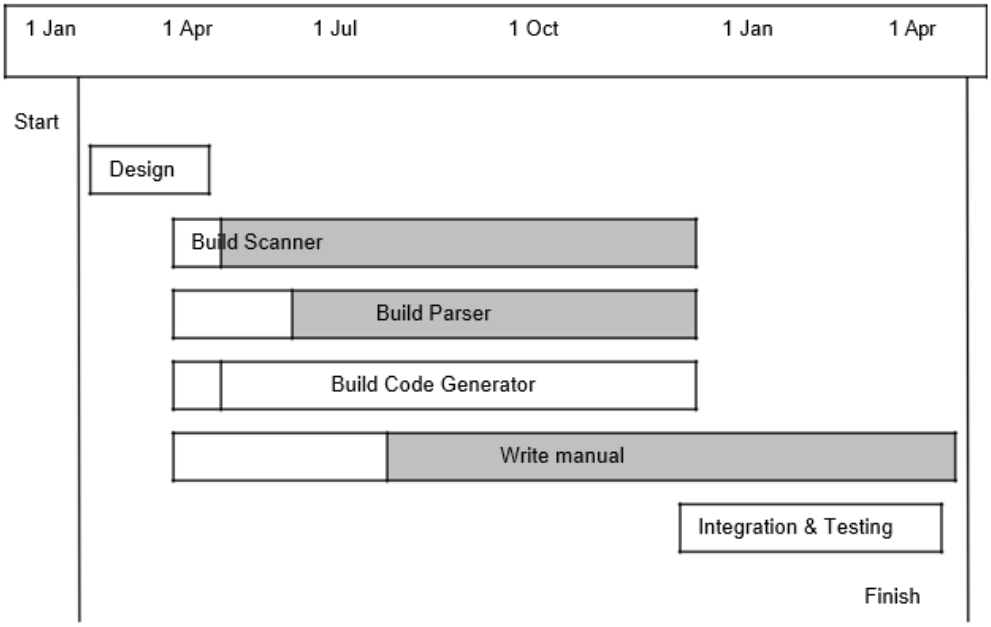

Fig. 5.5: Gantt Chart for simple compiler project

The white part of the bar shows the length of time each task is estimated to take. The grey part shows the slack time – i.e. the latest time by which a task must be finished. Slack time in essence tells us the amount of time we can delay the execution of the task without disturbing the overall schedule. For example, we have the freedom to delay the start of building the scanner to as late as Oct 17th and still have it finished in time to avoid delay in the integration and testing activity. The chart shows clearly that the result of the scanner and parser tasks can be used only after the code generator task is completed. A bar that is all white, such as representing the code generator task, has no slack and must be started and completed on the scheduled dates if the schedule is to be maintained. From the figure, we can see that the tasks Design build & Code generator and Integrate and Test have no slack. It is these tasks, then that determine the total length of time the project is expected to take.

Resource Leveling

Resource allocation is very important activity to be carried out as part of the project scheduling. Project manager has to ensure that each task is assigned to resource with appropriate skill set needed for the task execution. This is a great challenge to ensure that right resources are available to the project at appropriate time for timely completion of the project. In other words the project has to often confront with time (required resource not available when needed) and organizational constraints (for e.g. Company policy won't allow

hiring of new resources for current quarter) to obtain the human resources needed for the project.

Hence resource allocation is a highly challenging exercise. The project plan should have the mitigation plans for the scenarios where obtaining the right resources for the task is difficult. The alternate plan can be to hire temporary staff on contract basis for the duration of the project through consulting firms or the work plan can be adjusted with modified timeline in cases where same resource has to be worked for one or more tasks etc. Such mitigation plans to meet resource requirement is often termed as Resource leveling. Resource leveling typically covers the actions like making arrangements for temporary work force, maintaining redundancy of critical resources, training plan of resources on bench, maintenance of bench strength etc.

Most of the popular project management software packages enable the project resource planner to assign staff to project tasks, display resource requirements profiles, and adjust the schedule of slack tasks so resource requirements more closely fit those available in the organization. Some packages can display multiple project resource requirements to facilitate organization-wide resource management, optimization, and leveling. Individual project requirements may be adjusted by manipulating schedule slack in tasks not on the critical path. This can facilitate allocation and leveling of staff throughout the organization.

"Crashing" the schedule

In some cases we may have to complete project or some parts of the project ahead of the originally planned schedule. This scenario might happen because of customer request to deliver the project earlier than planned date, or because that some previous parts of project execution delayed the current tasks of the project. Accelerating the project schedule is often termed as "Crashing" the schedule. Figure 5.6 illustrates this concept. Following are some of the common approaches that can be used to "crash" the schedule

1) Add people to the schedule. For additional resources added to the project to be useful in shortening the schedule, these resources must be included at the early stage of the project. Otherwise much of the time would be spent in training and monitoring the new resources rather than these additional resources being productive in shortening the schedule.

2) Improve productivity and work longer hours. Working long hours has to be adopted only in extreme cases of urgency. Otherwise the Project manager might lose the trust of team members and this might also result in attrition.
3) Review schedule dependencies and look for opportunities to overlap tasks or make serial tasks concurrent or parallel activities. This requires greater coordination and sometimes involves increased risks, which need to be managed carefully.
4) Review the project scope and remove or delay features or functionality from the project critical path.
5) Consider innovative approaches such as a different development methodology, alternative technologies, or out-sourcing options.

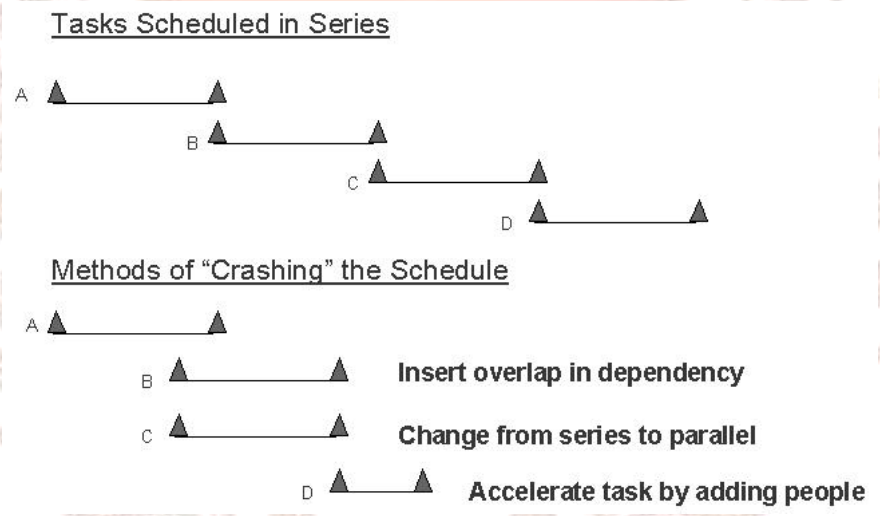

Fig. 5.6: "Crashing" the schedule

2.3 Critical Path Method

A PERT chart shows a series of 'product paths' through a set of project activities. If all the activities must be carried out in sequence, there is only one path, and the total time for the project is the sum of all the times for the activities. If there are multiple paths, with activities being carried out in parallel, the situation is more complex.

Where there are several 'product paths', the path with the longest total time is called the 'Critical Path'. It is critical, because if any of these activities take longer than scheduled, the completion date of the project will be delayed

The total time for any single non-critical product path is less than the Critical Path. This means that the activities that are not on the critical path could take longer with no affect on

the project completion time. It also means that the start of these non-critical activities could be delayed. The amount of time that an activity can be delayed without affecting the project completion is called 'float'. Figure 5.7 shows the critical path method.

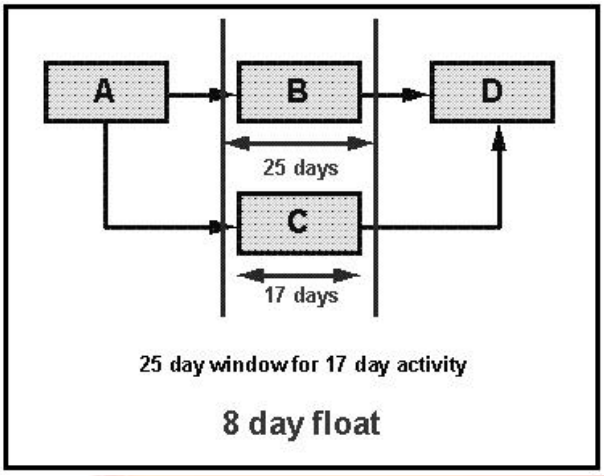

Fig. 5.7: Critical Path Method

Activities A, B and D are on the Critical Path. Activity C is not on the Critical Path. There are 8 days of float for activity C (25 - 17). This means that the start of activity C can be delayed for up to 8 days without affecting the overall project schedule.

2.4 Automated Tools

There are many automated scheduling tools available, for example, Microsoft Project, ABT's Project Workbench for Windows, Symantec's Timeline, etc. These tools combine text, numbers and graphics within a Graphical User Interface to provide excellent tools for a Project Manager. The tools provide a series of views of a schedule - tabular, Gantt, and PERT.

Such multipurpose tools will often consist of a number of individual parts. Due to the need for data sharing, a centralised database server is required. tools use the same means of team communication (such as the Internet, an intranet, an exchange server, electronic mail, or a client/server architecture). Information (such as team names, task lists, email addresses, and distribution lists) can be automatically transferred to other tools or, ideally, kept in a single location, and the system's efficiency and effectiveness are bolstered by features like automated messaging and workflow management.

The project management toolset either needs to have been invested in prior to the project or dedicated resources need to focus on that area while the Project Manager and team are engaged in the mainstream priorities.Most projects use automation tools to support at least some of the Project Office functions, although there is still an alarmingly large number of projects doing everything by spreadsheet. It is easy to see why spreadsheets are still so common. Having an integrated set of project management tools in place and operational takes time and effort. That effort inevitably coincides with the launch of the project when everyone is focused on mainstream activities rather than supporting functions.

By the time the project management team has time to look for a smart toolset it is too late to displace the ad hoc spreadsheets that have sprung up.

- On-going use of Tools and Data: Some data and tools may be required for the on-going support and maintenance of the system, eg user and system documentation, configuration management, issues management, change requests, etc. Some of the project tools will be wound up at the end of the project. Final status reports should be produced. Data should be archived for any future reference. Heuristic information should be captured for future use in project planning and estimation. Re-usable knowledge and materials should be transferred into knowledge management systems as appropriate. Some of the project tools will be wound up at the end of the project. Final status reports should be produced. Data should be archived for any future reference. Heuristic information should be captured for future use in project planning and estimation.
  - extraction and cleansing of content,
  - obtaining appropriate software licences, and
  - training the permanent support team.

Scoro Tool

Project management, customer relationship management, billing, reporting, and more can all be streamlined and automated using Scoro, a powerful company management software. It's a system that intends to help organisations manage their processes, tasks, and customer relationships in one place. Scoro is popular among SMEs and service enterprises since it provides a unified system for overseeing multiple parts of operations. Its ultimate goal is to

simplify operations by eliminating the need for many programmes to accomplish the same task.If you want the most up-to-date information on Scoro's product features and capabilities, I suggest checking out their website or getting in touch with their support team.

Scoro helps to streamline your entire work progress, so you don't need to use a lot of different tools for every task. All your important information is stored in one central place. Some of the features of this tool is discussed below:

- Projects with sub-tasks and deadlines
- Real-time KPI dashboard
- Shared team calendar & meeting scheduling
- Contact management
- Time tracking and billing for work
- Detailed reports on project progress and finances
- Quoting and invoicing with pre-set templates

Proof Hub features:

To aid organizations and teams in better managing their projects, tasks, and communications, ProofHub is a web-based project management and team collaboration software. It has a number of tools that make teamwork easier and expedite processes. It offers a replacement for conventional emailing and many other tools, integrating multiple project management features under one roof.

- Assigned user roles
- Online team discussions and chats
- Task delegating and assignments
- Reporting and tracking project history
- Secure file storage

Basecamp:

Basecamp is a well-known project management and team collaboration platform that facilitates efficient communication and organisation within a team. Basecamp is a great option for small to medium-sized enterprises and teams due to its ease of use and intuitive design. Basecamp is the preferred tool for thousands of project management teams, who enjoy its modern social media-like interface and carefree team collaboration features.

- Projects to manage multiple users' work
- Message boards for discussing new projects or ideas
- In-app collaboration with the team
- Reporting on project performance
- Separate dashboard for showing to clients
- Email and desktop notifications

Asana :

Asana is a well-liked web-based project management and team communication application that facilitates the coordination of tasks, the management of projects, and the monitoring of progress. Its goals are to increase output, simplify interaction, and reveal hidden processes in project management. Asana's popularity has led to its adoption by organisations of all sizes, from solopreneurs to multinational conglomerates.Asana combines elements of project management, file storage, and collaboration and helps to manage projects across a team without email.Asana is a really easy-to-use tool with a simplistic layout ideal for small teams with simple projects. Some of its features as are follows:

- Tasks and team assignment
- Projects roadmaps and timelines
- Milestones and team progress
- File and track bug reports and sprints.
- Project dashboards to get a quick overview

Workzone:

- Workzone was built by experienced ad executives who wanted to help agencies and creative teams get visibility into all of their workDesigned to help teams and businesses manage their projects, tasks, and processes more effectively, orkzone is a web-based project management and collaboration application. It has several useful functions that can improve teamwork and efficiency in project management. It is recommended that you visit the official Workzone website or get in touch with their support team to get the most up-to-date information on the features and capabilities of
  - Workzone, as these may change over time.
  - Personalized, individual to-do lists
  - Create subtasks and task dependencies

- Set permissions for specific users (including clients) to access projects, tasks, and files
- Quickly see statuses with Gantt charts
- Assign people to more than one task

JIRA :

Atlassian's Jira is a widely used system for managing projects and tracking problems. Its primary use case is the lifecycle management of tasks, projects, and issues in the software development and project management industries. Jira's flexible design and extensive feature set make it ideal for organisations of all shapes and sizes working on a wide range of projects. Software development teams frequently utilise Jira for project management, issue tracking, and release preparation. Its adaptability and versatility make it useful in a wide range of other contexts, such as IT operations, project management, marketing, and customer service.

JIRA is a cross-platform issue and bug tracking software with advanced project management capabilities and features

- Create user stories and issues, plan sprints
- Distribute tasks across your software team.
- Prioritize and discuss your team's work
- Centralize your team communication
- See real-time reporting on your team's work

Notion: Notion will give you a completely different take on project management. It helps plan and discuss projects, share everything with the team, and keep track of all the ideas.

- Keep a personal weekly checklist and take notes
- Build a task board with a flexible drag-and-drop editor
- Nest pages inside each other – like an infinite knowledge base

Trello: Trello is known for visualizing project tasks on a cardboard-like dashboard that's great for managing short and quick everyday assignments.

- Organizing lists by dates or priority
- Commenting and collaboration Simple task management on a cardboard
- Creating unlimited task lists
- Image and file sharing

ActiveCollab: It is a project management software helping your team stay organized while you outgrow email.ActiveCollab is a project software helping your team stay organized while you outgrow email

- Time tracking and invoicing
- Gantt-like timeline for planning
- Kanban cards
- A shared team calendar for collaboration

Redmine: Redmine is an open-source project management tool, made highly flexible by its volunteer community.

- Gantt charts and calendar for planning
- Newsfeed + document & file management
- Features for planning product roadmaps
- Email notifications
- Simple time tracking

Zoho: Zoho Projects is one of the best-known tools for simple project management that can help teams streamline their upcoming work and tasks.

- Task lists with multiple tasks and milestones
- Time tracking and timesheets
- Gantt charts to oversee project progress
- Document and file management

Function Fox: It has many helpful project management features, such as milestone tracking and budget comparison. It also has a friendly user interface, making it pleasant to use.

- Scheduling unlimited tasks and meetings
- Interactive real-time reporting
- Projects with sub-tasks and milestones
- Budget estimations
- To-do lists and time-tracking

Nutcache Features: Nutcache is an all-in-one project management tool that includes time tracking and invoicing features. It was built for small teams that bill their clients on a project basis.

- Project management and tasks
- Time tracking and time billing
- Expense management
- Linking projects and finished tasks to clients

SELF-ASSESSMENT QUESTIONS – 2

4. Booz Allen Hamilton, Inc. has developed Gantt chart. (True / False)
5. _____, _____, _____, are examples of automated scheduling tools.
6. Accelerating the project schedule is often termed as _____ of the schedule. (Pick right option)
   a) Breaking
   b) Crashing
   c) Speeding
   d) None of the above

3. SUMMARY

Let's recapitulate important concepts covered in this unit:

- Scheduling is an essential activity for the development of the software project.
- Scheduling can be resource scheduling, time scheduling and development scheduling.
- PERT charts and Gantt charts are primary scheduling techniques.
- Gantt chart is derived automatically from the PERT chart. Each kind of chart has its own place. Gantt charts helps in planning the utilization of resources, while the PERT chart is better for monitoring the timely progress of activities.

4. TERMINAL QUESTIONS

1. What is project scheduling? Explain different techniques for project scheduling.
2. What is PERT? Explain.
3. What are the various automated scheduling tools available?

5. ANSWERS

Self Assessment Questions

1. True
2. Program Evaluation and Review Technique
3. a) Positive slack (+)
4. False
5. Microsoft Project, ABT's Project Workbench for Windows, Symantec's Timeline
6. b) Crashing

Terminal Questions

1. The goal of the scheduling is to predict and plan how the tasks of the project individually or as a group will be executed over a period of time. The basic principle used in scheduling is the WBS. Using the WBS, the functionalities to be delivered are broken down to manageable chunks of tasks or group of activities. (Refer Section 5.2)
2. The Program Evaluation and Review Technique or Project Evaluation and Review Technique commonly abbreviated PERT is a model for project management to analyze and represent the tasks involved in completing a given project. (Refer Section 5.2.1)

3. There are many automated scheduling tools available such as Microsoft Project, ABT's Project Workbench for Windows, Symantec's Timeline, etc. (Refer Section 5.2.4)