Unit – 06: Software Project Management

- Project Management Concepts.
- Project scheduling:
  - ➢ Basic Principles,
  - ➢ Work Breakdown Structure,
  - ➢ Activity Network
  - ➢ Scheduling techniques (CPM, PERT).
- Configuration and Release Management.
- Version Control and its tools.
- Release Planning

Questions to be discussed:

1. Define the term project. Explain software project management in brief.
2. What is project scheduling? Explain different project scheduling techniques in brief.
3. Explain CPM & PERT with suitable example.
4. Differentiate between CPM & PERT.
5. Explain in details Version control and its tool.
6. Write short notes on:
   a. Work breakdown structure(WBS)
   b. Activity network

What is Project?

- A project is a group of tasks that need to complete to achieve a specific result.
- A project also defines as a set of inputs and outputs which are required to achieve a goal.
- Projects can vary from simple to difficult and can be operated by one person or a large team.
- Projects usually described and approved by a project manager or team executive.

Software Project Management (SPM):

- SPM is an art of planning and supervising software projects.
- It is a proper way of planning and executing software projects.
- In this, software projects are planned, implemented, monitored, and controlled.
- In SPM, the client and the developers need to know the length, period and cost of the project.

Aspects of Software Project Management:

7. Planning
8. Execution
9. Monitoring
10. Control
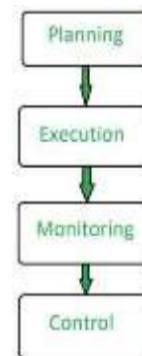
Project scheduling:

- A project scheduling is the sequence of activities.
- It is important for project that are needed to be delivered under a given period of time.
- A project scheduling decide which functions would be taken up and when.
- Effective project scheduling leads to success of project, reduced cost & increase customer satisfaction.
- The most common and important form of project schedule is Gantt chart.

Project scheduling techniques:

1. Gantt chart
2. WBS
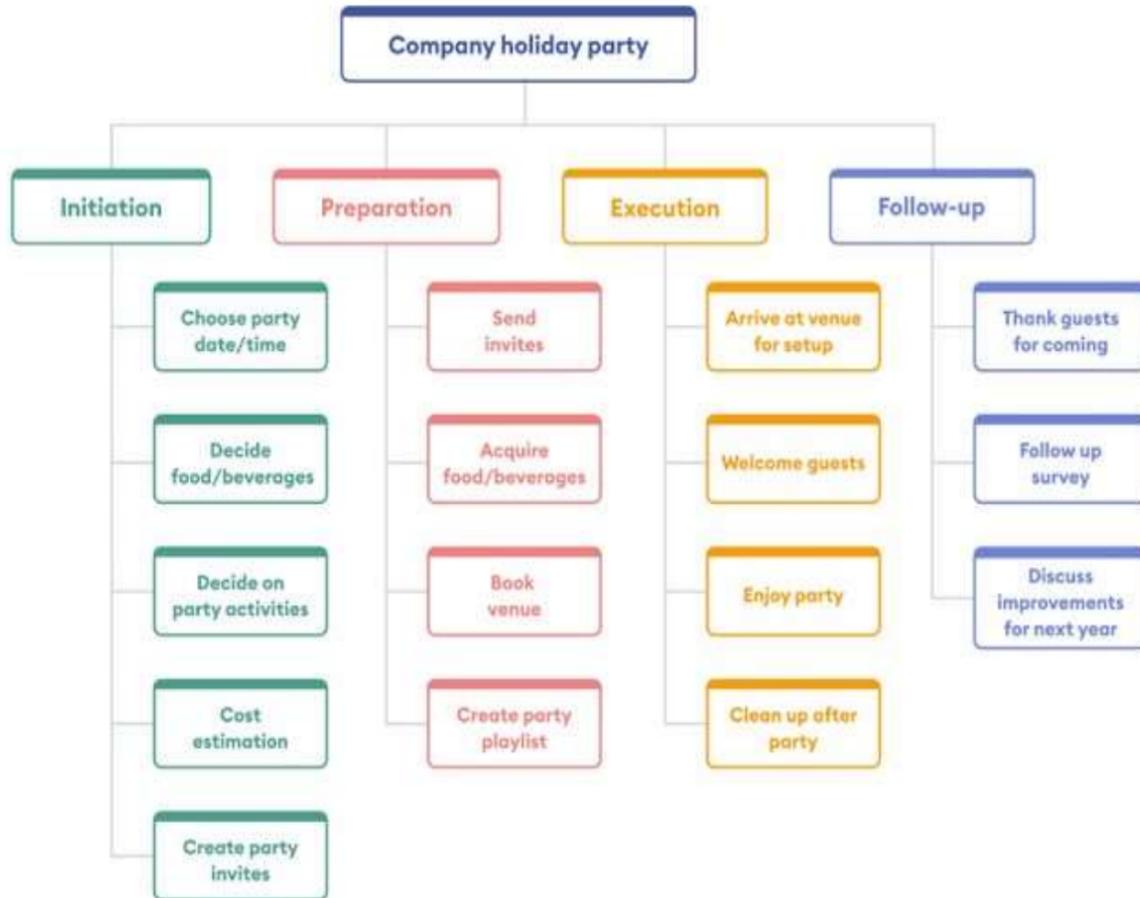3. Activity network
4. CPM & PERT

Basic principle of Project Scheduling:

1. Identify all the functions required to complete the project.
2. Break down large functions into small activities.
3. Determine the dependency among various activities.
4. Establish the most likely size for the time duration required to complete the activities.
5. Allocate resources to activities.
6. Plan the beginning and ending dates for different activities.
7. Determine the critical path. A critical way is the group of activities that decide the duration of the project.

CTH EDUCATION

## Work Breakdown structure(WBS):

- It is a project management tool that takes a step-by-step approach.
- It breaks large project in several pieces to complete projects efficiently.
- By breaking down the project into smaller components, a WBS can integrate into a single tool.
- A Work Breakdown Structure is a hierarchical outline of the tasks required to complete a project.

What is an Activity Network Diagram(AND)?

- An Activity Network Diagram (AND) is also called an Arrow Diagram or a PERT.
- It is used for identifying time sequences of events that are pivotal to objectives.
- AND helps to find the specific event sequences driving time requirements for objective achievement.
- There are four symbols extensively used for the activity network diagram.
  1. Rectangle with rounded Corners.
  2. Arrow.
 3. Diamond.
  4. Rectangle Box.

CTH EDUCATION
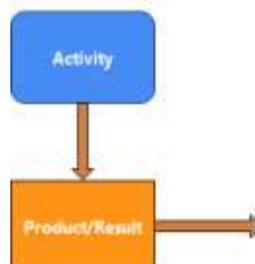
Project management techniques:

There are two types of project management technique:

1. PERT
2. CPM

Project Evaluation and Review Technique (PERT):

- PERT stands for Project Evaluation and Review Technique.
- It is a project management tool which is used in project planning.
- It is used to estimate the total time of the project where time is uncertain.
- It was developed by the US Navy in 1950 to manage the Polaris submarine missile program.
- Using PERT a project manager can estimate the minimum amount of time required to complete the project.
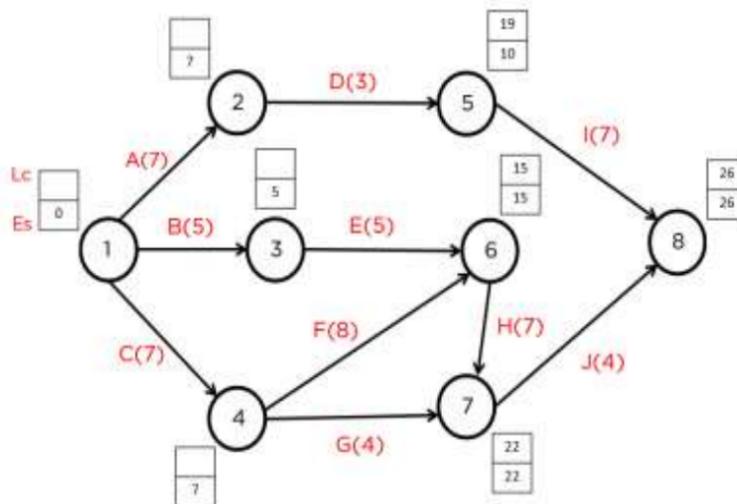
Critical Path Method (CPM):

- CPM stands for Critical Path Method.
- It is a project management tool which is used in project planning.
- It is used to estimate the total time & cost of the project where time is certain.
- It was developed by Morgan R. Walker and James of DuPont in 1957.
- Using CPM a project manager can estimate the minimum amount of time & cost required to complete the project.
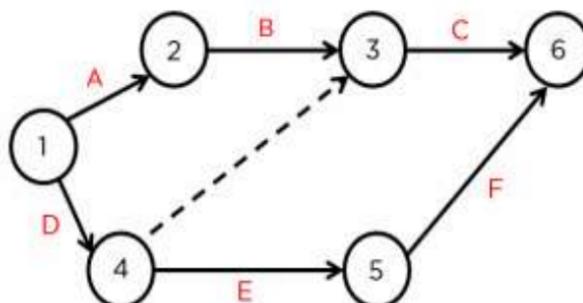
Difference between PERT and CPM:

PERT	CPM
PERT is a project management technique which is used to manage uncertain activities of project.	CPM is a project management technique which is used to manage only certain activitiesof project.
Here, time is not known.	Here, time is known.
PERT was developed in 1950 by US Navy.	CPM was developed in 1957 by DU PONT.
It is a probability model.	It is a deterministic model.
PERT is used for research & development.	CPM is used for construction work.
PERT analysis does not consider cost.	CPM analysis consider & minimize the cost.

What is Configuration Management?
- CM is a software engineering discipline consisting of standard processes and techniques.
- It is used by organizations to manage the changes introduced to its software products.
- CM helps in identifying individual elements and configurations, tracking changes, and version selection, control, and baselining.
- It precisely answers who, what, when & why for all the configuration items in the configuration management database(CMDB).

What is version control?
- Version Control is a Source Code Management Tools.
- It is the practice of tracking and managing changes to software code.
- VC systems are software tools that help software teams manage changes to source code over time.
- Version control software keeps track of every modification to the code in a special kind of database.
- If a mistake is made, developers can turn back the clock and compare earlier versions of the code to help fix the mistake while minimizing disruption to all team members.

Version Control Software Tools
1. Global Information Tracker(Git)
2. Concurrent Versions System (CVS)
3. Subversion(SVN)
4. Mercurial
5. Monotone
6. Bazaar

CTH EDUCATION

What is Release Planning?

- Release planning is the planning process that surrounds the release of a software product.
- A software release plan is an accurate timetable of the various stages of the SDLC.
- This plan involves monitoring software through the development, testing, deployment, and delivery stages.
- It is critical to ensuring smooth migration from internal testing to a customer use environment.
- Release planning also facilitates a holistic view of how various product factors – such as scope, resources, time and quality – should be addressed during a product's life cycle.