Swar Mhatre
T1-3
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SEPM Assignment - 2

Q1 Differentiate between PERT and CPM.

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PERT	CPM
1) PERT stands for project Evaluation and Review Techniques.	1) CPM stands for Critical Path method.
2) PERT is a technique of project management which is used to manage uncertain activities of any project.	2) CPM is a technique of project management which is used to manage only certain activities of any project.
3) It is event oriented technique which means that network is constructed on the basis of event	3) It is activity oriented technique which means that network is constructed on the basis of activities
4) It is a probability model	4) It is a deterministic model.
5) It majorly focuses on time as meeting time target or estimation of percent completion is more important.	5) It majorly focuses on time-cost trade off as minimizing cost is more important.
6) It is appropriate for high precision time estimation.	6) It is appropriate for reasonable time estimation

Q2 Explain the difference between-
1) Total Slack and Free Slack.

→

Total Slack	Free Slack
1) The amount of time a task can be delayed without delaying the overall project completion	1) The amount of time a task can be delayed without delaying the start of its immediate successor.
2) Affects the project deadline if exceeded	2) Affects only the next task in the sequence.
3) Total slack = latest start - earliest start	3) Free slack = Earliest start of next task - Earliest finish of the task.
4) Depends on both preceding and succeeding activities	4) Depends only on succeeding activities
5) Allows for more flexibility in project scheduling.	5) Provides limited flexibility only for adjusting the next task.

2) AON vs AOA Diagrams.

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AON (Activity on Node)	AOA (Activity on Arrow)
1) Activities are represented as nodes.	1) Activities are represented as arrows.
2) Focuses on the activities themselves.	2) Focuses on the sequence and dependencies.
3) No dummy activities required	3) Dummy activities are often used to show dependencies
4) Easier to understand Commonly used in modern project	4) More complex due to the need for dummy activities.

Q3 Explain Risk identification, risk projection, RMMM plan in detail.

⇒ Risk Identification is the process of recognizing potential threats that may impact a project's success. It involves systematically analyzing various factors that could lead to delays, budget overruns or failures. Common techniques for identifying risk include Brainstorming sessions, checklist, scenario analysis and using a Risk Breakdown Structure (RBS) to categorize risk systematically. Early identification allows project managers to prepare strategies to address these risks before they become major issues.

Risk projection involves assessing the probability of identified risk occuring and their potential impact on the project. This helps in prioritizing risks, focusing on those that could cause significan disruptions. A Risk Assessment Matrix is commonly used, plotting risks based on their likelihood and severity to visualise which ones require imediate attention.

The Risk Mitigation, Monitoring and Management (RMMM) Plan is a comprehensive approach to handling risks throughout a project's lifecycle. Risk Mitigation focuses on reducing the likelihood or impact of risks through preventive measures. Risk Monitoring ensures that risks through preventive measures. Risk ~~Monitoring~~ ~~ensur~~ Management involves implementing contigency plans if a risk materializes, ensuring minimal disruption.

Q4 Consider a XYZ company under take a project to computerized working of ABC City Bank. then -

i) Develop WBS for the same project
ii) Develop responsibility matrix

⟹ A Work Breakdown Structure (WBS) is a hierarchical decomposition of the tasks required to complete the project. Below is a structured WBS for Computerizing the bank.

1) Project Initiation.
1.1 Feasibility Study
1.2 Requirement Gathering
1.3 Stakeholder identification.
1.4 Risk Assessment.
2) System Design & Planning
2.1 Define System Architecture
2.2 Develop Database Design
2.3 Identify Hardware & Software Requirements
2.4 Develop Security & Compliance Plan.
3) System Development
3.1 Software Development
3.1.1 Core Banking Module
3.1.2 Customer Management Module
3.1.3 Loan & Credit Processing module
3.1.4 Internet & Mobile Banking module
3.2 Integration with Existing Systems
3.3 Testing & Quality Assurance.

4) Infrastrutine Setup
4.1 Procurement of Hardware & Network Devices
4.2 Server & Database Configuration.
4.3 Installation of Software.
5) Training & Documentation
5.1 Employee Training Sessions
5.2 User Manuals & Guides Development.
5.3 IT Support Team Training.
6) Deployment & Implementation
6.1 Pilot testing in Selected Branches
6.2 System Rollout Acerross All Branch
7) Maintainance & Support
7.1 Post - Development Monitoring
7.2 Bug Fixes & updates
7.3 technical Support
7.4 System Enchancements.

ii) Responsibility Matrix (RACI) For Computerizing ABC City Bank

Task	Project Manger	Bosiness Analyst	Developers	IT Teams	QA Team	End users
Requirement Analysis	R	A	C	C	I	I
System Design	A	R	C	C	I	I
Database Setup	C	C	A	R	I	I

Software Development	C	C	R	C	I	I
Security & Compliance	R	A	C	R	I	I
Testing & Quality Assurance	C	I	C	C	R	I
Deployment & Data Migration	R	I	C	A	I	I
Training	R	A	C	C	I	R
System Maintainance	R	I	C	A	I	R

Key :

R = Responsible

A = Accountable

C = Consulted

I = Informed.

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Q5 Explain Software Configuration Management detail

⇒ i) Software Configuration Management is a systematic process of tracking and Controlling Software changes to ensure integrity, consistency and reliability throughout the software development lifecycle. It helps teams manage revisions, updates and versions of Software components effectively.

objectives -

- Ensure Software integrity and Consistency.
- Manage changes systematically to reduce errors and Conflict
- Maintain a historical record of software Changes.
- Improve collaboration among development teams.

Key Activities.

- Configuration Identification : Define Software components & versions.
- Configuration Control : Manage & approve changes systematically.
- Status Accounting : Track and document changes.
- Configuration Auditing : Ensure compliance and correctness.

Tools -

(1) Version Control - Git, SVN
(2) Build Automation - Jenkins, Maven
(3) Issue Tracking - Jira Bugzilla
(4) CI/CD : Github Actions, Gitlab CI

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Benefits of SCM:

- Improved Collaboration: Developers can work smoothly without Conflicts.
- Better traceability: Changes can be tracked and reverted if needed.
- Enhanced Security: Only autorized changes are applied.

Importance:

(1) Replicability - Software version control (SCM) makes ensure that a software system can be replicated at any stage of its development.

(2) Identification of Configuration - Source code, documents and executable files are examples of configuration elements that SCM helps in locating and labelling

(3) Effective Process of Development: By automating monotonous processes like managing dependencies, merging changes and resolving disputes, SCM simplifies the development process.

Q6 Explain the Significance of Gantt-chart in project Management.

⇒ A Gantt chart is a visual project management tool that represents a project schedule using horizontal bars. It shows tasks, durations, dependencies and progress over time.

Key Significance of Gantt Charts:

1) Clear Project Timeline:
- Display start and end dates for tasks.
- Helps in understanding tasks duration and deadlines.
- Ensure teams stay aligned with project schedules.

2) Task Dependencies & Sequencing.
- Show which tasks depend on others
- Helps avoid scheduling conflicts and ensures smooth workflow.
- Assists in managing parallel tasks efficiently.

3) Resource Management
- Helps assign tasks to the right team members.
- Prevents resource overload and ensures balanced work distribution.

4) Progress Tracking.
- Visualise which tasks are Completed, ongoing or pending
- Helps managers quickly assess if the project is on track.

- Allows for adjustments in case of delays.

5) Better Communication & Collaboration
- Provides a Clear roadmap that all stakholders can Follow.
- Ensures team members understand their responsibilities

6) Milestone Identification
- Highlights important checkpoints in the project
- Helps teams focus on achieving critical goals

7) Risk Mangement & Issue Resolution
- Identify potential delays
- Allows proactive scheduling adjustments to minimize risk.
- Helps in contingency planning by visualizing task dependencies.

Q7 Draw AON and AOA network diagram for the following project and show the Critical path.

Activity	time	Immediate Predecessor
A	2	-
B	5	A
C	2	A
D	5	B
E	5	B
F	5	C
G	1	D
H	1	D
I	2	G
J	1	E, F, H, I

Identify Paths and Calculate Duration.

- A → B → C → D → F → J = 2+5+5+5+1+1 = 19
- A → B → C → D → G → I → J = 2+5+5+5+1+2+1 = 21
- A → B → E → J = 2+5+5+1 = 13
- A → B → C → D → H → J = 2+5+5+5+1+1 = 19

~~Ef~~ Identify the critical path

longest Path is A → B → C → D → G → I → J total day = 21
Critical path is A → B → C → D → G → I → J

Drawing the diagram

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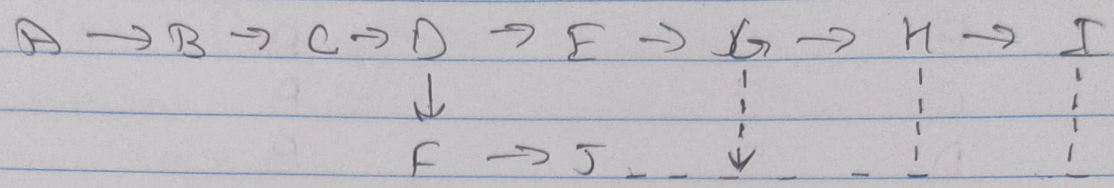
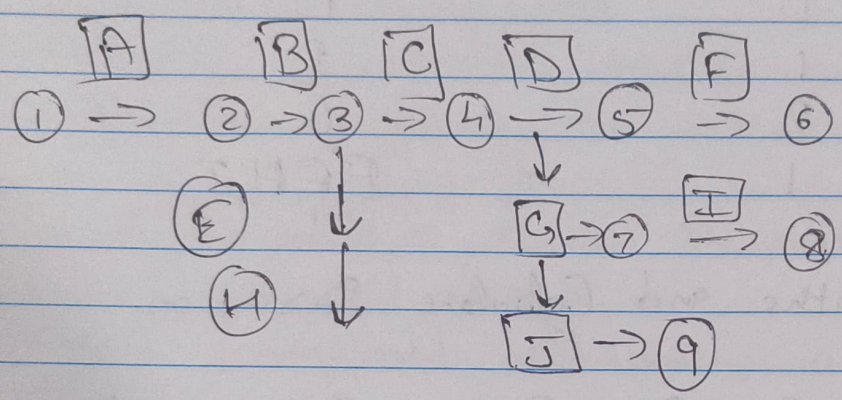
AON Diagram:



AOA diagram