chapter-1

(*) what is project ?

→ a project is temporary endeavor started with the intention of creating a unique product or service

- (1) one time
- (2) Limited fund / time
- (3) performed by people (single / team)
- (4) planned + controlled
- (5) Resource utilization
- (6) specific deliverables

TT

(*) Define software project management ? SPM

→ process of planning, Organizing, coordinating, and controlling resources and activities to successfully develop and deliver software products / solutions within specific constraints (time, budget, quality)

key aspects of SPM (7)

(1) Define project scope

② set objectives

③ Allocate Resource

④ schedule tasks

⑤ Manage Risks

⑥ Communicate with stakeholders

⑦ ensure that final product meets requirements.

TT

(*) what are the goals of project management?

① Complete project on time

② complete project within budget

③ meet requirements

④ meet expectations

5. Risk Management

6. Effective Resource management

TT

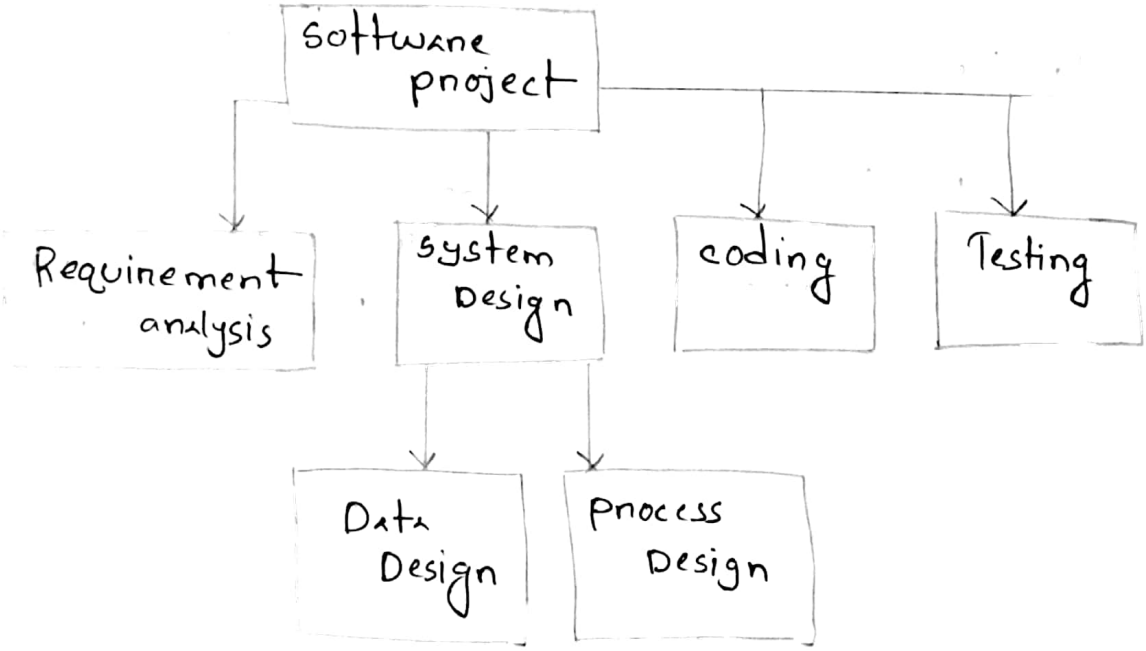
(*) What is work breakdown structure? Show the hierarchical diagram of simple of PBS

A Work Breakdown Structure (WBS) is a project management tool that breaks down a project into smaller, more manageable components. The purpose of the WBS is to organize and define the total scope of the project by decomposing it into detailed tasks and subtasks, making it easier to plan, execute, monitor, and control the project.

→ (1) identify the main tasks

(2) break main tasks into subtasks

(3) subtasks can be broken into lower tasks

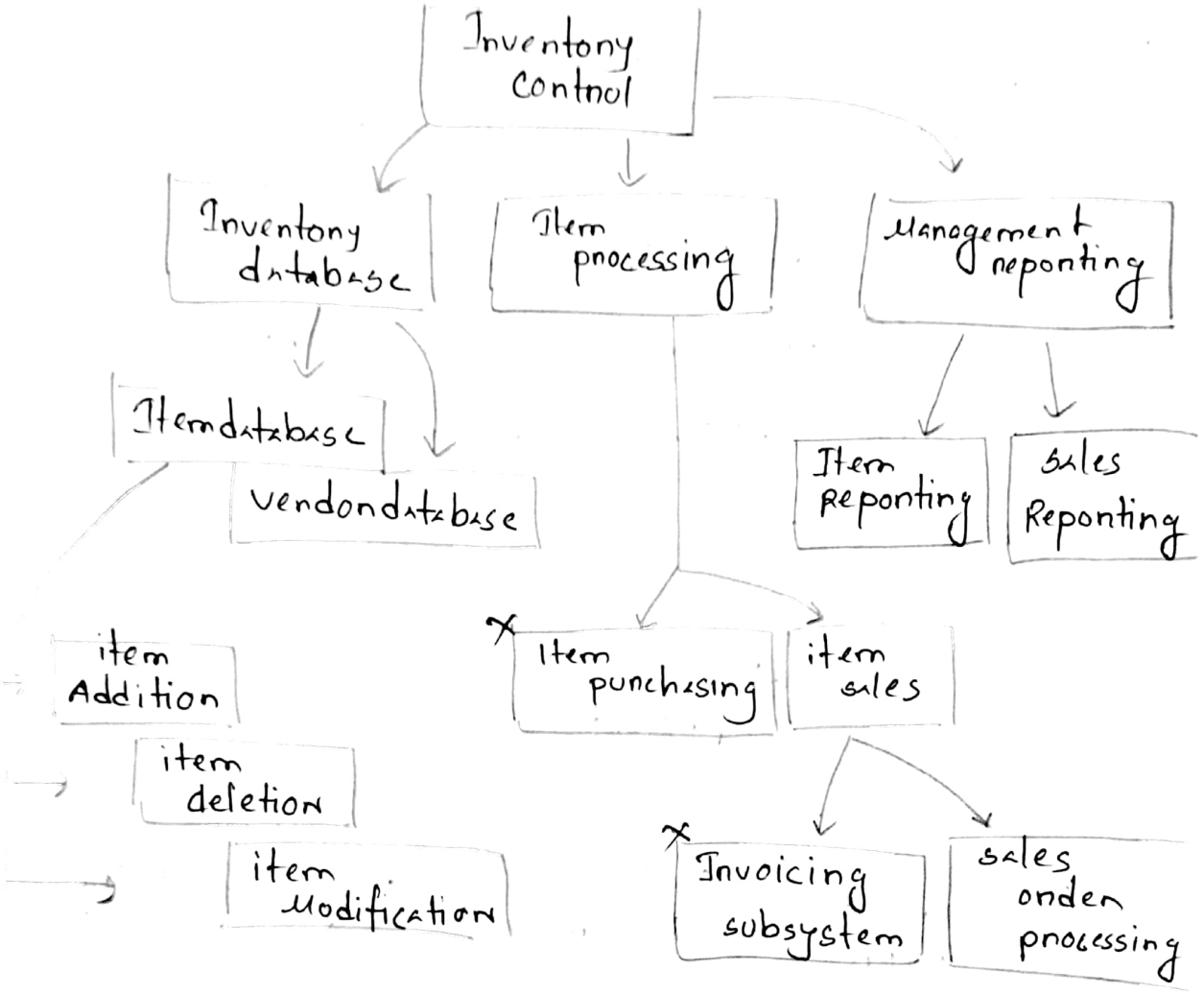


WBS structure

(11)

PBS

Product Breakdown Structure



TT

(*) what are the system Development life cycle phase?

→ 7phases

(1) Requirement Analysis

(2) specification

(3) Design

(4) coding

(5) Verification and Validation

(6) Implementation

(7) Maintenance & support

F

(*) what is phases?

→ a phase is a collection of related activities/tasks that produce a ~~der~~ deliverable or work product

⊛ Project :-

→ is a big task that comprises of smaller short term tasks done to accomplish a predefined objective

⊛ Process :-

→ Provides framework from which a comprehensive plan for sw-development can be established

– is a set of tasks done in chronological order to fullfill one purpose

Final

⊛ Activity :-

– an element of work performed during the course of the project

Two types

- (managing) Product Process → planning, organizing controling monitoring
- Project Process (making) → Describe and organize the work of project

PMI PMBOK

lifecycle used, ASQ

Specify and create the project product

Implementation

Defined by

F

Q. Difference between Product & Project process

F

(*) write any five competencies of project management skills?

1. Documenting plans
2. Estimating cost
3. Estimating Effort
4. Managing Risks
5. Scheduling
6. Tracking process
7. Building a work breakdown structure

F

(*) Five Process of PMI / PMBOK

1. Initiating
2. planning
3. Executing
4. controlling
5. closing

P = Project
M = Mangement
I = Institute
Bok = Body of knowledge

Final

(*) Discuss step-wise project planning with an example!

(1) select project

(2) Identify Project scope & objectives
→ stakeholden analysis
→ Agree with objective?

(3) Identify Project Infrastructure

(4) Analize project characteristic

(5) Identify Project products and activites

(6) Estimate effort ton each activity

(7) Identify activity risks

(8) Allocate Resource

(9) Review plan

(10) Execute plan

11

(*) what are called "Free floats" and "interfering floats" ? How are they calculated ?

Activity float :- Time allowed for activity an allowable delay in task chain that doesn't derail the overall project timeline

3 types
1. Total float
2. Free float
3. Interfering float

Total float (TF) :- without affecting the completion of project

P TF = Latest start date - earliest start date

Free float (FF) :- with affecting the next activity

FF = earliest start date of next activity - latest end date of previous activity

Interfering float (IF) :-

IF = Total float - free float

formulas

CPM :- Critical Path Method

→ planning the project so that it can be completed as quickly as possible

Final

Why? CPM

1. Reduce overall project duration
2. pay more attention to those activities which fall in critical path
3. allocate resource effectively
4. optimize project schedule

Final

Free slack

→ extra time for each task in project

→ delay a task without messing up the next stack

Total slack

→ total amount of extra time for a task

→ not delay entire project

Critical event :- an event that has zero slack

Critical path :- a path joining those critical events

Q:- Total weeks Needed for this project

constructing CPM

ID	Activity	Duration weeks	Precedent	
A	Hardware selection	7		7
B	Software design	4		4
C	Hardware Installation	6	A	7+6 = 13
D	coding	4	B	7+4 = 11
E	Data Preparation	5	B	4+5 = 9
F	User Documentation	9		9
G	user Training	5	E, F	9+5 = 14
H	system Installation	3	C, D	13+3 = 16

Highest 16 weeks

what is slack?

Slack is the amount of time a task can be delayed without affecting the deadlines of subsequent tasks / on the project's final delivery date.

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what is contract management?

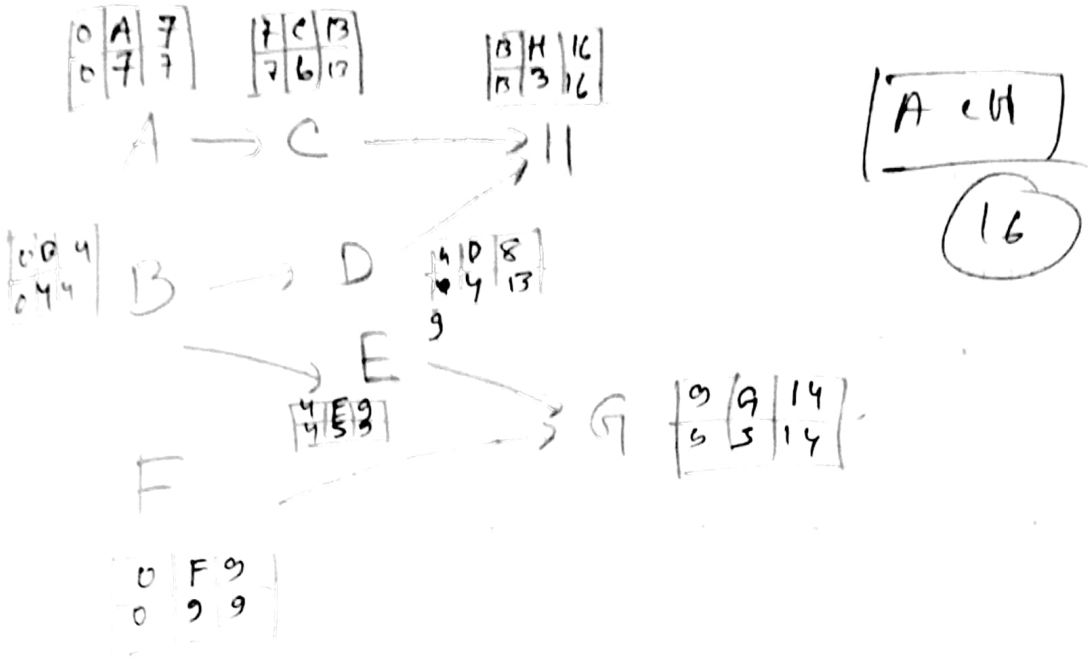
→ is the management of contracts made with customers, vendors, partners and employee which include the process of systematically and effectively mapping contract, creation, execution and ~~mapping~~ analysis for the purpose of maximizing financial and operational performance.

what is contract ?

→ a contract is a written / orally legally binding agreement between the parties identified in the agreement to fullfill the terms and conditions outlined in the agreement.

1. a sales contract
2. purchasing contract
3. patnership agreement
4. trade agreement
5. Intellectual property agreement

* what is project? and 6 points of project (6)
* what is software project management (SPM)? what are the key aspects of SPM? (7)
* what are goals of SPM? (4)
* what is WBS and diagram?
* show the hierarchical design of simple PBS?
* what are the system Development life cycle phases? (7)
* what is phases?
* what is process and its type? (2)
* Different between product & project process? (4)
* write any five competencis of project managenial skills? (7)
* Five process of PMI / PMBOK? (5)



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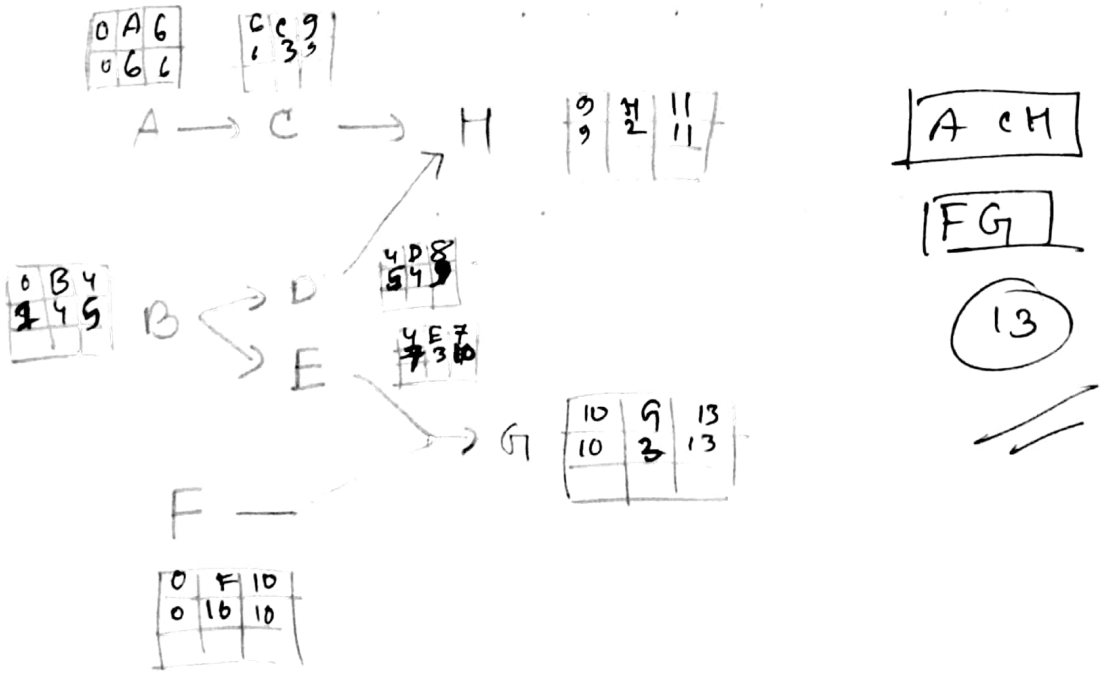

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13

(*) what factors are considered when selecting a development methodology?

1. Project scope
2. Complexity
3. Uncertainty
4. flexibility
5. Collaboration
6. Deliveny

(*) Importance of software scope in project planning?

1. helps start the project on right foot
2. ensure it is delivered in timely manner
3. ensure it is delivered in within budget
4. ensure it meets end user expectations

chapter-3

(1) what are the objectives of activity Planning?

- Feasibility Assesment
- Resource Allocation
- Detailed costing - cost
- motivation
- co-ordination

(2) what are the project scheduling steps?

- Idea Activity plan
- Activity Risk Analysis
- Resource Allocation
- schedule production

(*) what is critical path (CPM) ? → CPM helps to find critical path in network

method

→ A project is made up of sequence of activities that form a network, the path taking longest time through the network of activities is called critical path.

(1) CPM with single Time Estimate → used when activity times are known

→ used to determine time estimate for project

(2) CPM with Three Activity Time Estimates (PERT) → used when activity times are unknown / uncertain

→ same info of single time + probability info.

(3) Time - cost models → used when tradeoff information cost is a major consideration in planning

→ used to determine the least cost in reducing total project time

CPM Limitations

(1) CPM assumes known and certain activity durations, ignoring variability and uncertainty

(2) It assumes project condition are static and remains constant

(3) It focuses only on one critical path neglecting complexities of project with multiple path

(4) Limited Risk Analysis

Forward Pass (FP)

→ FP is a technique to move forward through network diagram to determine project duration and finding critical path / Free float of project

→ Determine → EST → earliest start time of each activity

→ EFT → earliest finish time

→ overall duration of project

→ Identify sequence of activities and their dependency to establish project timeline

Backward Pass

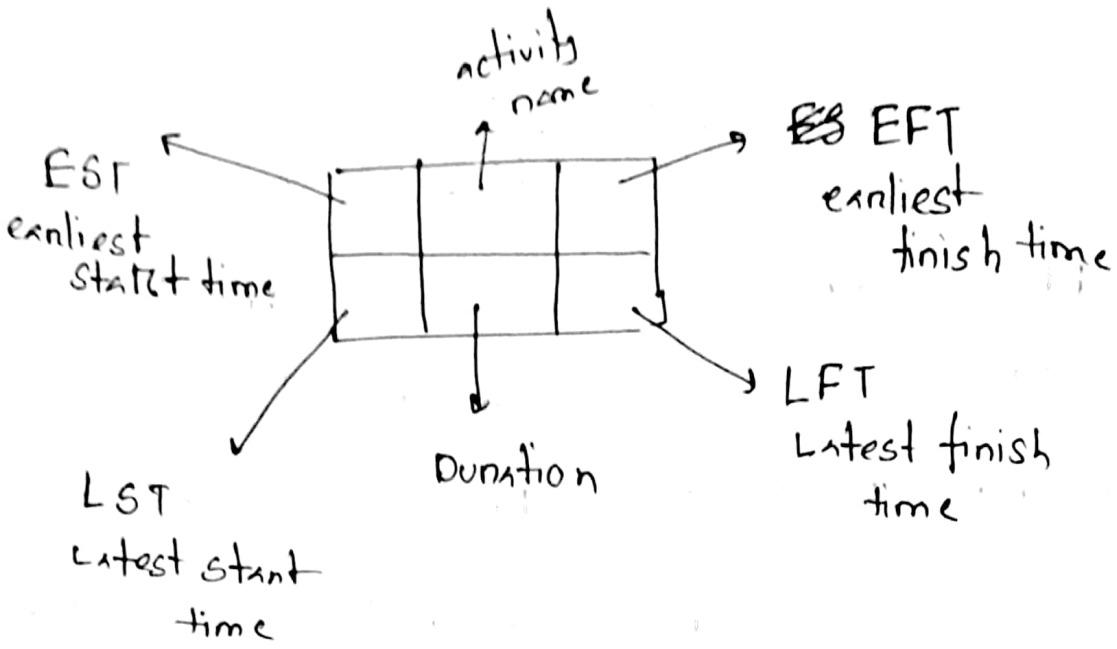
→ how much time each activity can delay without affecting project timeline

Determine → LST → Latest start time

→ LFT → Latest finish time

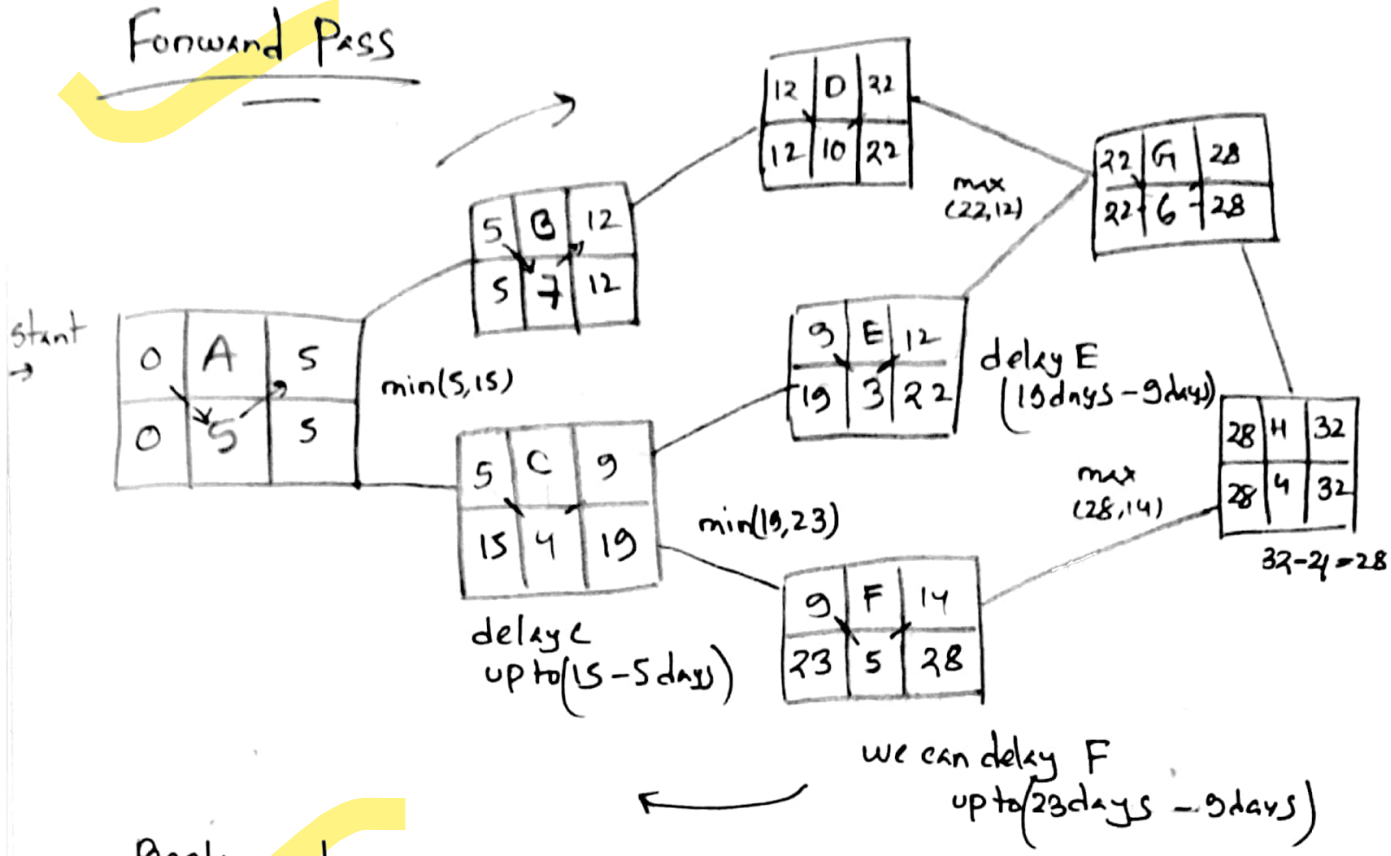
→ determine the amount of slack/float for non critical ~~path~~ activites

→ Identify critical path which with zero slack & determine minimum required time to complete project



Activity	PREDECESSOR	Duration
A	-	5
B	A	7
C	A	4
D	B	10
E	C	3
F	C	5
G	D, E	6
H	F, G	4

Forward Pass



Backward Pass

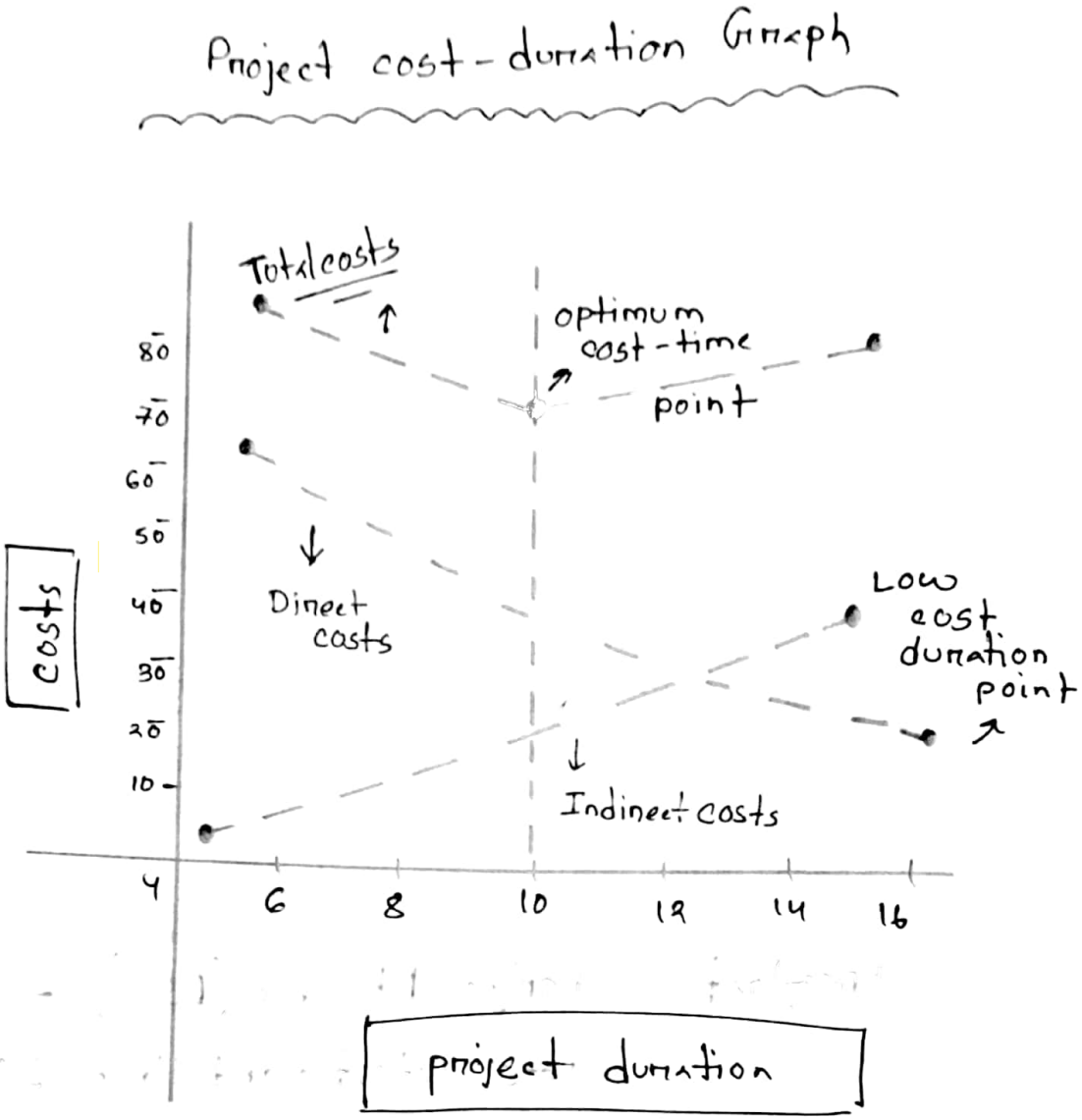
what is free float → the time by which an activity may be delayed without affecting other activity

Freefloat = Early start time (EST) − Latest start time (LST)

critical path → based on free float = 0

A → B → D → G → H

Describe type of project cost with project cost duration graph



These are costs that can be directly attributed to a specific project or activity.

Direct costs

→ assign directly to specific project activity

→ such :- Labour, Materials equipments

→ crashing activities increases direct cost

These are costs that are not directly traceable to a single project but are necessary for overall project execution

Indirect costs

→ cannot be associated with any particular activity

→ supervission, adminstration consultants, interest

→ reducing project time reduce indirect cast

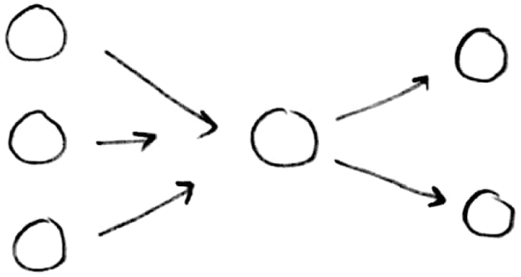
AOA

AON

what is activity on Arrow Network?

→ is a Network diagraming technique in which

- activities are represented in arrow
- start and end node/event is connected by arrow
- represents sequence of activity needed to complete project.



what is Partial AOA koll Network?

→ Partial Representation of project activities and their dependency using both AOA and AON

⊛ why Risk Management is Important?

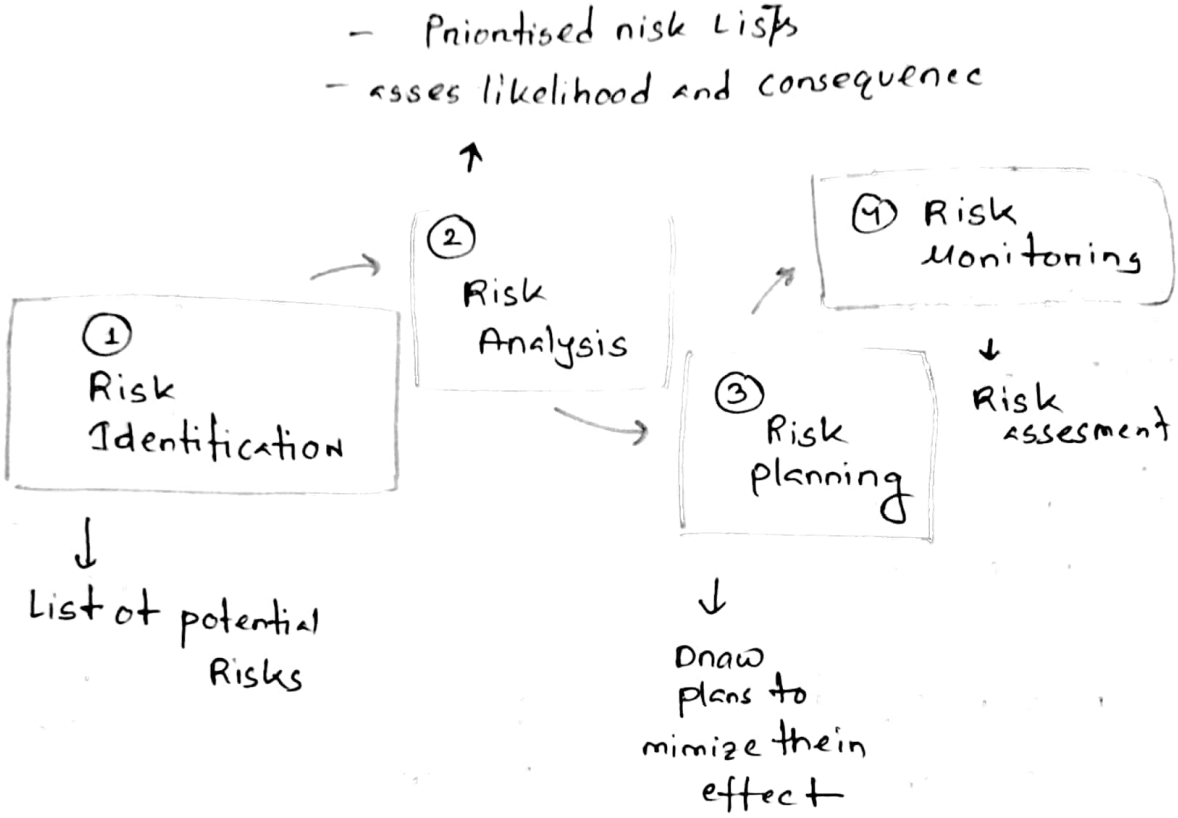
→ It involves risk identification, analysis prioritization, planning, mitigation monitoring and communication

Categories of Risks

① Schedule Risk	② Budget Risk	③ Operational Risk
- Wrong time estimation	→ wrong budget estimation	→ Improper process Implementation
→ Resource are not tracked properly	→ cost overRuns	→ failed to address priority conflicts
→ failed to identify complex functionalities		→ failed to address/resolve responsibilities
→ failed to assume time required		→ Insufficient Resource
→ unexpected project scope expansion	→ project scope expansion	→ No Resource planning
		→ No communication in team
		→ No proper training

⑧ what is Risk Management ?

- is the process of identifying risks and drawing up plans to minimize their effect on a project.



(*) what are the systematic Process in Hazard Identification?

(1) Hazard Identification

(2) Risk assesment

(3) Analyze Risk control measure

(4) Risk controls

(5) Implement Risk control

(6) Follow through and review

(*) what are the common phases of a system life cycle?

(1) conceptual Research

(2) Design (Validation - Verification)

(3) Development

(4) operational Deployment

(5) Termination & disposal

(*) Hazard Analysis Method

(1) Failure Modes & Effects analysis

(2) Risk Assesment code

(3) Fault tree Analysis

(4) operation Hazard Analysis

(5) Project Evalution Tree

(*) Risk Response planning

(1) → Avoid (Eliminate)

(2) → Mitigate (Reduce)

(3) → Accept

(4) → contingency

(5) → Transfer

(*) what will Risk manager do?

(1) regularly assess the impact of each risk

(2) Add any newly identified risks

(3) Update the top 10 risk list

(4) Alert management about issues.