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Step wise Proj Planning Project Planning Steps

- * Select the Proj
- * Identifying goals and objectives
- * Identifying the infrastructure
 - => framework in which dev proj will fit
 - => project slr
 - => Collaboration b/w components
- * Identifying the characteristics
 - => identify steps, procedure, approp method.
 - => resource estimate
 - => Effect of internal & external enviro effect.
- * Identify the project prod and activities
 - => Planning o f individual activity
 - => Identifying the prod to be delivered
 - => Objects
- * Estimate effort for each activity
- * Identify activity risk
- * Allocate Resources
- * Review / Feedback
- * Execute Plan

Q) Calculation of F.P.

Consider proj with following functional units

$$\text{No of FIP} = 50$$

$$\text{No of OIP} = 40$$

$$\text{No of enquiries} = 35$$

$$\text{No of files} = 06$$

$$\text{No of interface} = 04$$

Assuming all Complexity Adj Factor (CAF) and Weighing Factor as average, what is functional points for the proj
(F.P)

$$\text{Ans} \Rightarrow F = 14 * \text{Scale}$$

$$F = 14 * 3 = 42$$

$$\Rightarrow CAF = 0.65 + (0.01 * F)$$

$$= 0.65 + (0.01 * 42)$$

$$= 1.08$$

Scale

- 0 - No Influence
- 1 - Influence
- 2 - Moderate
- 3 - Avg
- 4 - Significant
- 5 - Essential

$\Rightarrow U.F.P$ unadjusted F.P

$$UFP = (50 \times 4) + (40 \times 5) + (35 \times 4) + (06 \times 10) + (04 \times 7)$$

$$= 628$$

$$\Rightarrow F.P = CAF + UFP$$

$$= 1.08 + 628$$

$$= 629.08$$

	Low	Avg	High
3	4	6	
4	5	7	
3	4	6	
7	10	15	
5	7	10	



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Q COCOMO Model

Constructive Cost Model

⇒ used for analysis of development time, cost of effort for development of software, size of staff and cost of other resources.

Types

Basic COCOMO Model

Intermediate " "

Complete / Detailed "

Classes

COCOMO applies to three classes in Software Project

(i) Organic

(ii) Semi-detached

(iii) Embedded

Basic CoCoMo Model

provides estimate size of software projects

Expressions for cocomo model estimate

$$\text{Effort} = a_1 * (\text{KLOC})^{a_2}$$

$\therefore \text{KLOC} = 1000 \text{ lines of code}$
 $\therefore a_1, a_2 \text{ constants}$

$$T_{dev} = b_1 * (\text{effort})^{b_2}$$

Intermediate CoCoMo Model

Intermediate CoCoMo Model refines the initial estimate obtained by Basic CoCoMo Model by using diff cost drivers that are based on various software engineering principles.

\Rightarrow Cost Drivers & their attributes

\Rightarrow Product attribute

\Rightarrow Size of project \Rightarrow complexity of Project

\Rightarrow Hardware attribute

\Rightarrow Run-Time constraints \Rightarrow Memory Constraints

\Rightarrow Personnel attribute



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Personal Attribute

Analyzing capability

Software Engineering Capability

Detailed Cocomo Model:

Detailed cocomo model uses various effort multipliers for each cost driver.

In detailed cocomo, the whole software is divided into multiple modules, then we apply Cocomo in various modules to estimate effort and then sum the effort.

~~Project~~

Organic { 2-50Kloc, small proj, small scope, E.g. Payroll, Inventory }

Semi-detached { 50-300 Kloc, Medium proj, Intermediate scope, E.g. A Traffic M

Embedded { greater than 300 Kloc, Large Proj, Large Scope, E.g. Real time sysy

LOC estimation

In LOC estimation, we count the total no of line of code

Units $(KLOC) = \text{KS of LOC}$

$(NLOC) = \text{Non-comments line of code}$

$(KDSI) = \text{KS of delivered source instructions}$

LOC of new system is compared with LOC of existing system of same kind

Function Point

No of functions and feature supported by a software are counted to find the FPC (function point count).

=> Count the no of function proposed by S/p

=> Find total degree of influence

=> Compute unadjusted function points

=> Find Function Point Count



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ROI & PayBack

ROI

=> Return over given investment

Example: Deposited 100\$ and getting 5\$ interest
you get 5\$ per year profit

PayBack Period

=> time period to recover your investment

Example

invested 10,000\$ and getting 1000\$ margin every year.

so payback period will be 10 years

$\leftarrow \rightarrow$ 10,000\$ / 1000\$

Q Change Management & Configuration Management System

- ⇒ Projects enviro. is dynamic & changes are constant
- ⇒ Changes divided into two groups
 - * Change Management ⇒ (includes change in steps, process, planning etc)
 - * Configuration Management ⇒ (includes changes in scope, maintenance, quality etc)
- ⇒ Change Management
 - includes identifying, analyzing, documenting and changing a project plans or its baselines.
 - Ex ⇒ if ran out of budget for proj development, you would ask for change in budget plan
 - ⇒ Your request for change will be first analyzed, and checked if disturbing other activities and then approved or rejected

Change Management Activities

- * Identifying the change
- * Documenting " "
- * Analysis & make decision to reject change
- * Implementation of change.



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Configuration Management

Configuration Management is the process of controlling changes in the software configuration.

Software configuration includes project scope, features, services provided, quality management.

For Example:

Suppose you are developing software, the client requests a change in a feature or request for an additional feature.

⇒ Since, the client requested a change in configuration so you will have to use change configuration system to deal with changes.

Configuration Management Activities

- (i) Identification of change
- (ii) Baseline
- (iii) Change control
- (iv) Configuration Status
- (v) Configuration review

Version Control

is the process of managing and documenting the changes in the source code of a system. This will help the developer to identify the current iteration of S/w and its diff from previous version.

- ⇒ VCS systems are software tools that helps developer to manage changes occurs to the source code.
- ⇒ As dev env is growing rapidly, VCS helps dev to work faster and increase efficiency.
- ⇒ VCS keeps tracks of modification that are made in S/w in special kind of DataBase.

Version Control Activities

Version Tracking

Documenting change and analyzing it with prev version

Coordinating Teams

S/w development is result of team work and coordinations. Individual team members can consult with others regarding issues.



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Q Activities in Software development

S/w dev not only includes writing of code. It also include the document of different fundamental components.

(i) Feasibility Study

process of identifying the proposed proj is worth to start

=> Business View point of proj

=> Gathering info, estimating budget, effort, time

=> developing financial plan

=> Analyzation of res from new developed system.

Large orgs feasibility study is referred as a proj by its self

(ii) Planning

the process of identifying plans, steps, processes, strategies for development & achieving goals and obj's.

=> For large proj, planning is done in phases

=> An overall plan is purposed for whole projects and a detailed planed for first phase

=> later on, more detailed plans are developed as development moves to the next phase.

(iii) Project Execution

=> Finally, Plans are executed for development.

Q Mistakes related to project

Mistakes are bad practices carried out by Developers that effects the development of software project.

Catogories

* People Mistakes

Lack of Motivation

Lack of skills

Problem related to employees

Lack of communication

* Product Mistakes

Requirement mistakes

Developers Gold Plating

↳ Adding techs that are not necessary

* Process Mistakes

↳ Risks in management

Risk Management

Contractor Failure

Code like hell programming

* Technologies Mistakes

Silver Bullet Syndrome

↳ Thinking of a problem solving approach will remove problem which has never been used by developer

Switch tools

↳ Switching developing technologies in middle of Proj.



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Q: Risks that causes delays in Proj Develop

Def of Risk

Risk in Proj Develop

- (i) Expansion of functionality
- (ii) Gold-Plating
- (iii) Divided Intention (working on 2 or more proj)
- (iv) Quality Control
- (v) Poor Design
- (vi) Selection of valuable Members
- (vii) Customer fails to fall agreement
- (viii) Tension b/w customer & company
it affects the trusts
- (ix) Research oriented proj

~~Port~~ Q: Portfolio Management

Def:

Portfolio Management is the centralized way of management of portfolio to achieve strategic objectives

Included

experiences, skills, domain of works past projects and success, education and training

Aspects in Portfolio Management

Successful portfolio management consists of 3 basic components

* Project Selection

- ⇒ Selecting proj that is in your domain
- ⇒ Complete reject proj of same type
- ⇒ having expertise in certain Domain

Benefits (Quality, experience, efficiency)

* Project Resources

- ⇒ After selection, next component is Identifying resources, necessary for develop

⇒ Gathering Real

Includes

HR, Cost of proj, Equipments

* Proj Info

- ⇒ Success relies on updated info, valid info. on the basis of which proj & develop
- ⇒ info forms include audio, video, data collected through surveys, questionnaires, etc.

Network Diagram



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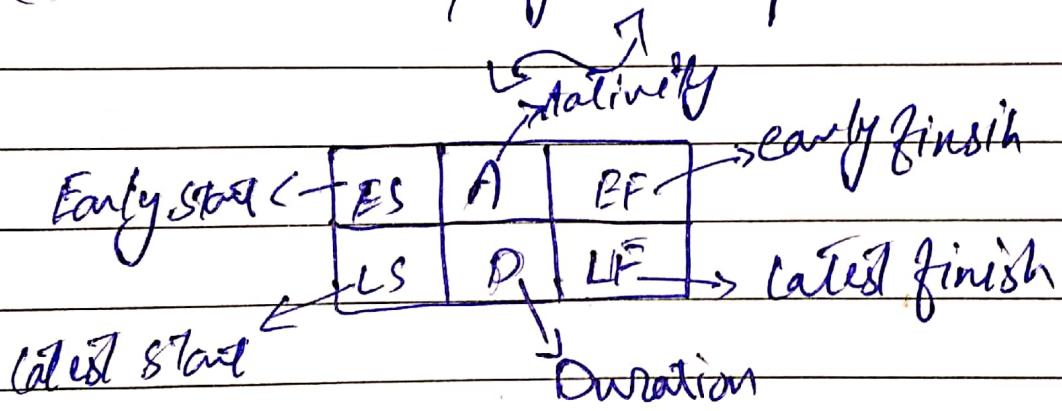
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~~Ques~~ Consider the following



- (i) Draw the project network diagram
- (ii) Develop project Schedule (EST, EFT, LST, LFT)
- (iii) What are critical activities and critical path?
- (iv) What is project completion duration.

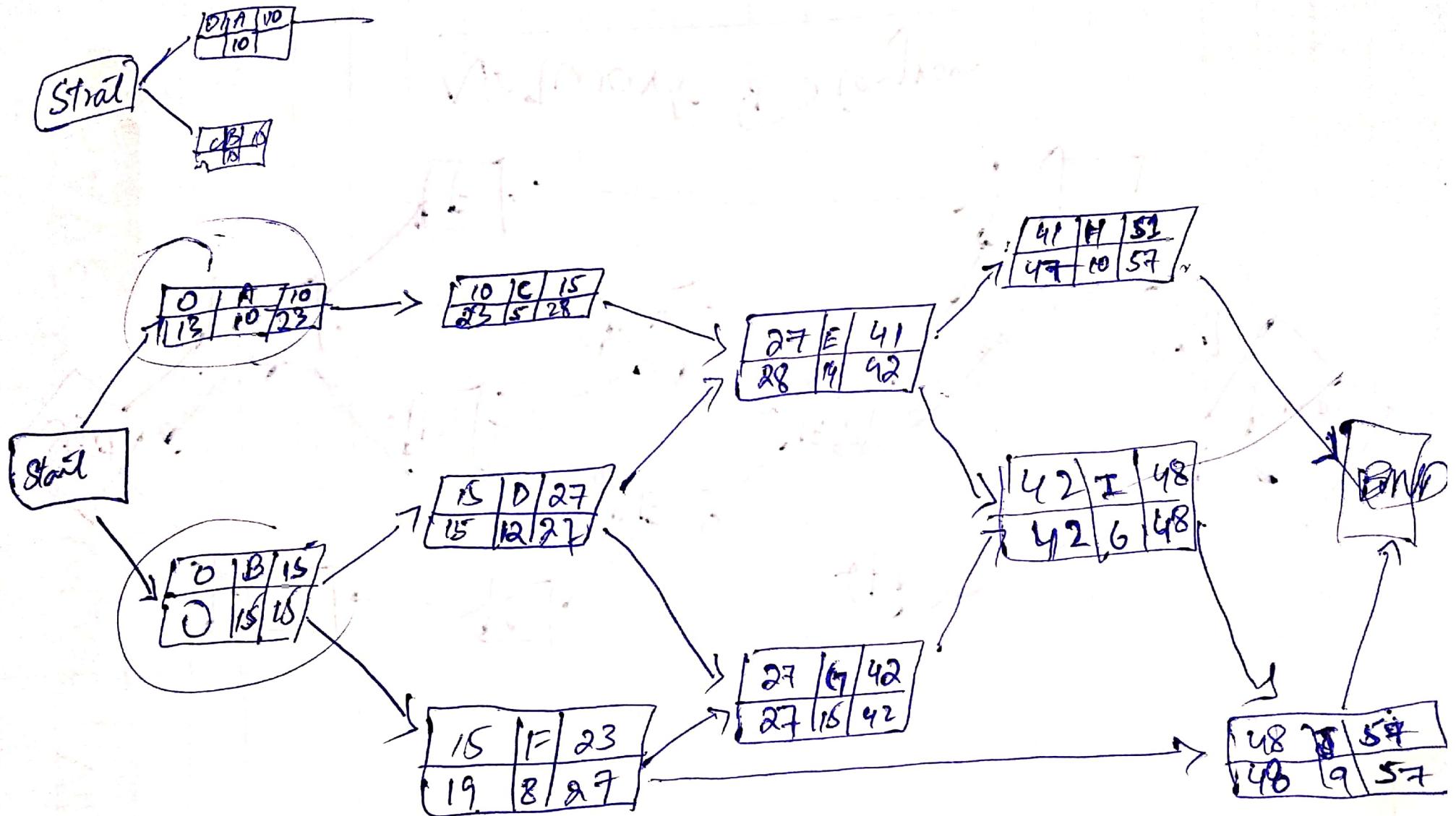


$$\text{Slack} \Rightarrow LF - EF$$

OR

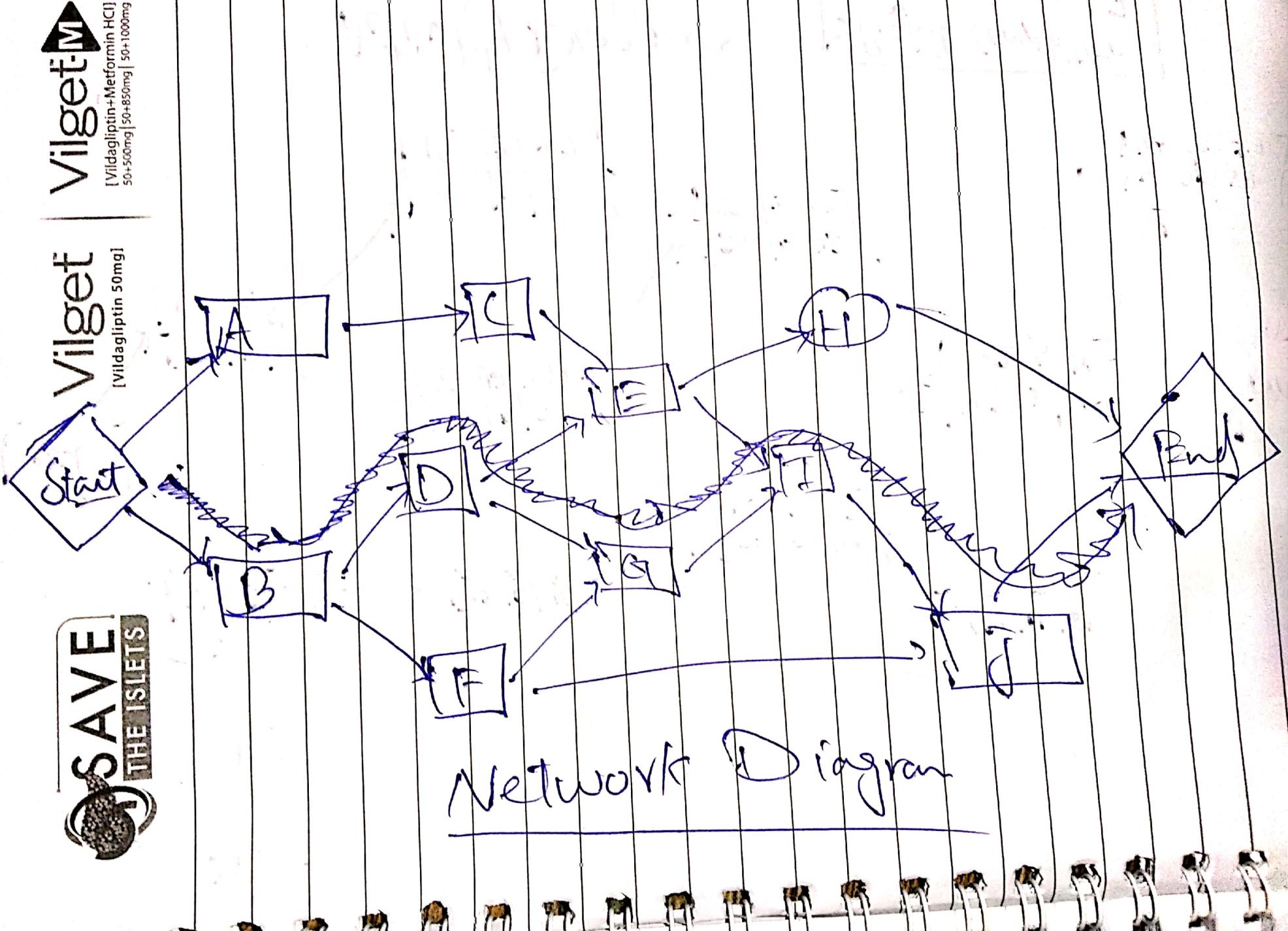
$$\Rightarrow LS - ES$$

\therefore Slack shows critical path



Activity Diagram

Project Completion
Duration = 57



Table

<u>Activities</u>	<u>Predece</u>	<u>Duration</u>	<u>EST</u>	<u>EFT</u>	<u>LST</u>	<u>LFF</u>	<u>(LFT-EFT)</u> Slack
A	-	10	0	10	13	23	13
B	-	18	0	18	0	15	0
C	A	5	10	18	23	28	13
D	B	12	16	28	23	27	0
E	C,D	14	27	41	28	42	0
F	13	8	15	23	19	27	4
G	D,F	15	27	42	27	42	0
H	E	10	41	51	47	57	16
I	E,G	6	42	48	42	48	0
J	F,I	9	48	57	48	57	0