



PROJECT MANAGEMENT

CONCEPTS AND FEATURES

WHAT IS A PROJECT?

Project-

“A **temporary** endeavor undertaken to create a **unique** product, service or result”

How Temporary?

Has a finite duration with a definite beginning and an end

Ceases when objectives have been met

Team disbands on project completion

How Unique?

Produced as a result of the project is different in some way or the other



EXAMPLES OF PROJECT

- Road construction
- Building construction
- Shut down project
- Wedding ceremony
- Moving office to a new location
etc.

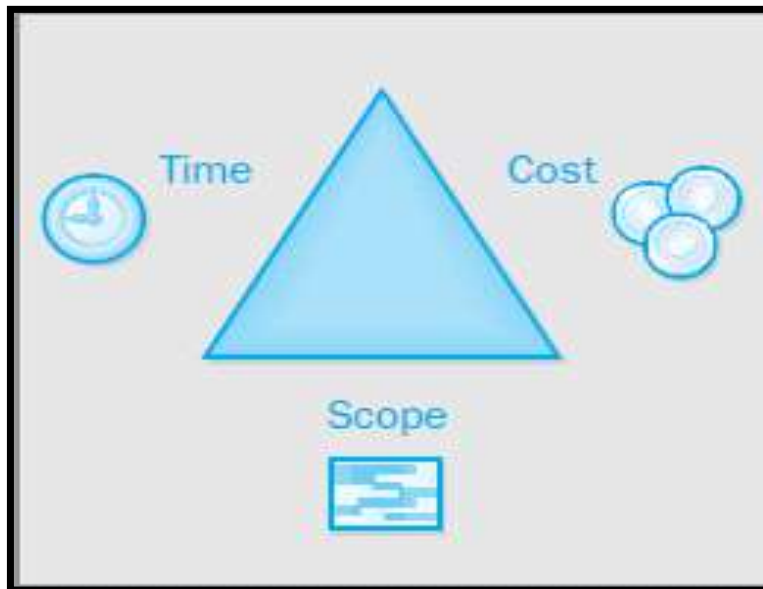


USING PROJECT SELECTION METRICS

- Financial return
- Effect on employees/alignment with corporate culture
- Technical advancement or innovation
- Market value/share
- Public perception
- Alignment with/advancement of corporate planning



TRIPLE CONSTRAINT THEOREM



Evaluate the competing demands of Scope, Time, Cost and their impact on Quality ensuring Customer satisfaction



WHAT IS A PROJECT MANAGEMENT?

“The application of Knowledge, Skills, Tools & Techniques, to project activities in order to meet the Project objectives”



WHAT IS A PROJECT MANAGEMENT?

- ❖ Knowledge — Through subjects and experience
- ❖ Skills — Leadership, communication, motivation, negotiation, problem solving, budgeting etc.
- ❖ Tools and techniques — Equipments, concepts and software. E.g., lathe, excavator, Auto CAD, MS Office Project, Primavera, Jira etc.



ACTIVITY DEFINITION

- Decomposing the work package further into Tasks and Activities
- Decompose the work only up to the level you would like to track it



ACTIVITY SEQUENCING

Identifying the task relationships
and supplying the right sequence

Dependency Types:

- Mandatory – Hard Logic
- Discretionary – Soft Logic
- External

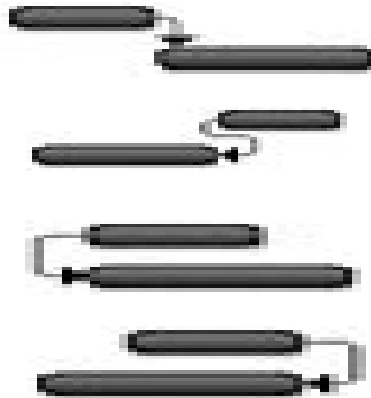
Task Constraints:

- **Inflexible –**
 - ✓ MFO (Must Finish On a Date)
 - ✓ MSO (Must Start On a Date)
- **Semi-Flexible –**
 - ✓ SNET (Start No Earlier Than a Date)
 - ✓ SNLT (Start No Later Than a Date)
 - ✓ FNET (Finish No Earlier Than a Date)
 - ✓ FNLT (Finish No Later Than a Date)
- **Flexible –**
 - ✓ ASAP (As Soon As Possible)
 - ✓ ALAP (As Late As Possible)

TASK RELATIONSHIPS

There exists four types of Task relationships

- **FS** : Finish to Start
- **SF** : Start to Finish
- **SS** : Start to Start
- **FF** : Finish to Finish



DURATION ESTIMATION

PERT - Program Evaluation Review Technique

Three-point analysis:

- Pessimistic (P)
- Optimistic (O)
- Most Likely (M)

$$\text{PERT} = (P + O + 4M) / 6$$

$$\text{Standard Deviation} = (P - O) / 6$$

$$\text{Variance} = \text{Standard Deviation}^2$$

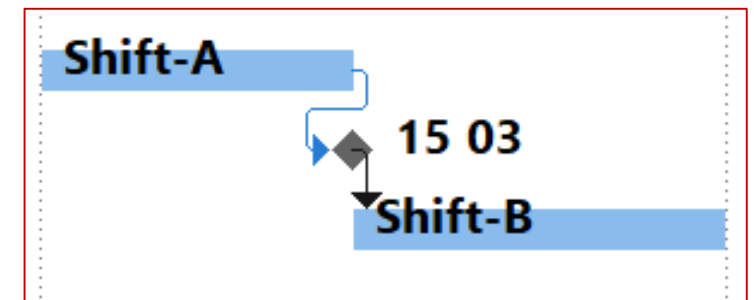


BAR CHARTS AND ACTIVITY NETWORK DIAGRAMS

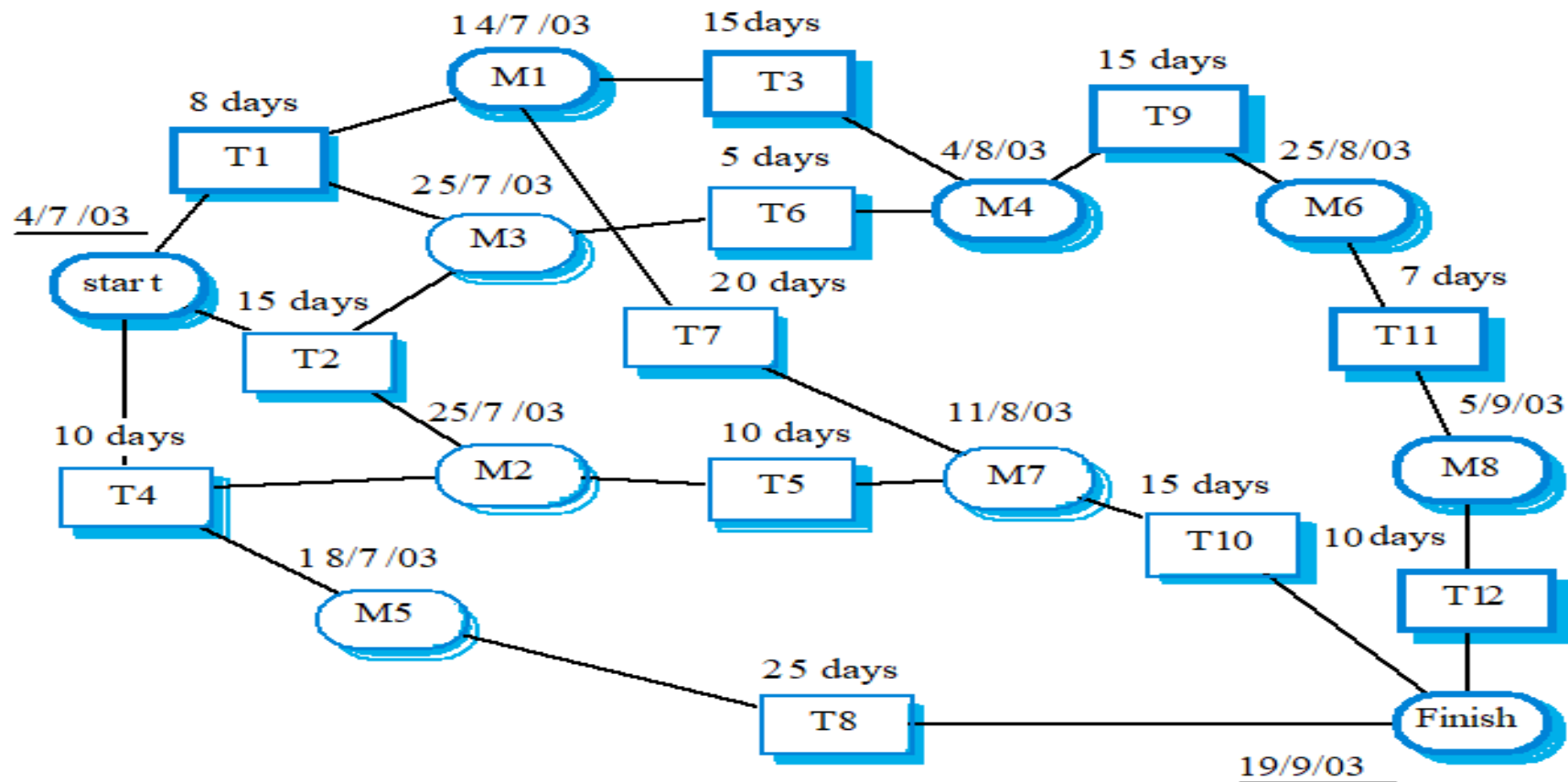
- Graphical notations used to illustrate the project schedule.
- Shows project breakdown into tasks. Tasks should not be too small. They should take about a week or two.
- Activity charts show task dependencies and the critical path.
- Bar charts show schedule against calendar time.

TASK DURATIONS AND DEPENDENCIES

Activity	Duration (days)	Dependencies
T1	8	
T2	15	
T3	15	T1 (M1)
T4	10	
T5	10	T2, T4 (M2)
T6	5	T1, T2 (M3)
T7	20	T1 (M1)
T8	25	T4 (M5)
T9	15	T3, T6 (M4)
T10	15	T5, T7 (M7)
T11	7	T9 (M6)
T12	10	T11 (M8)

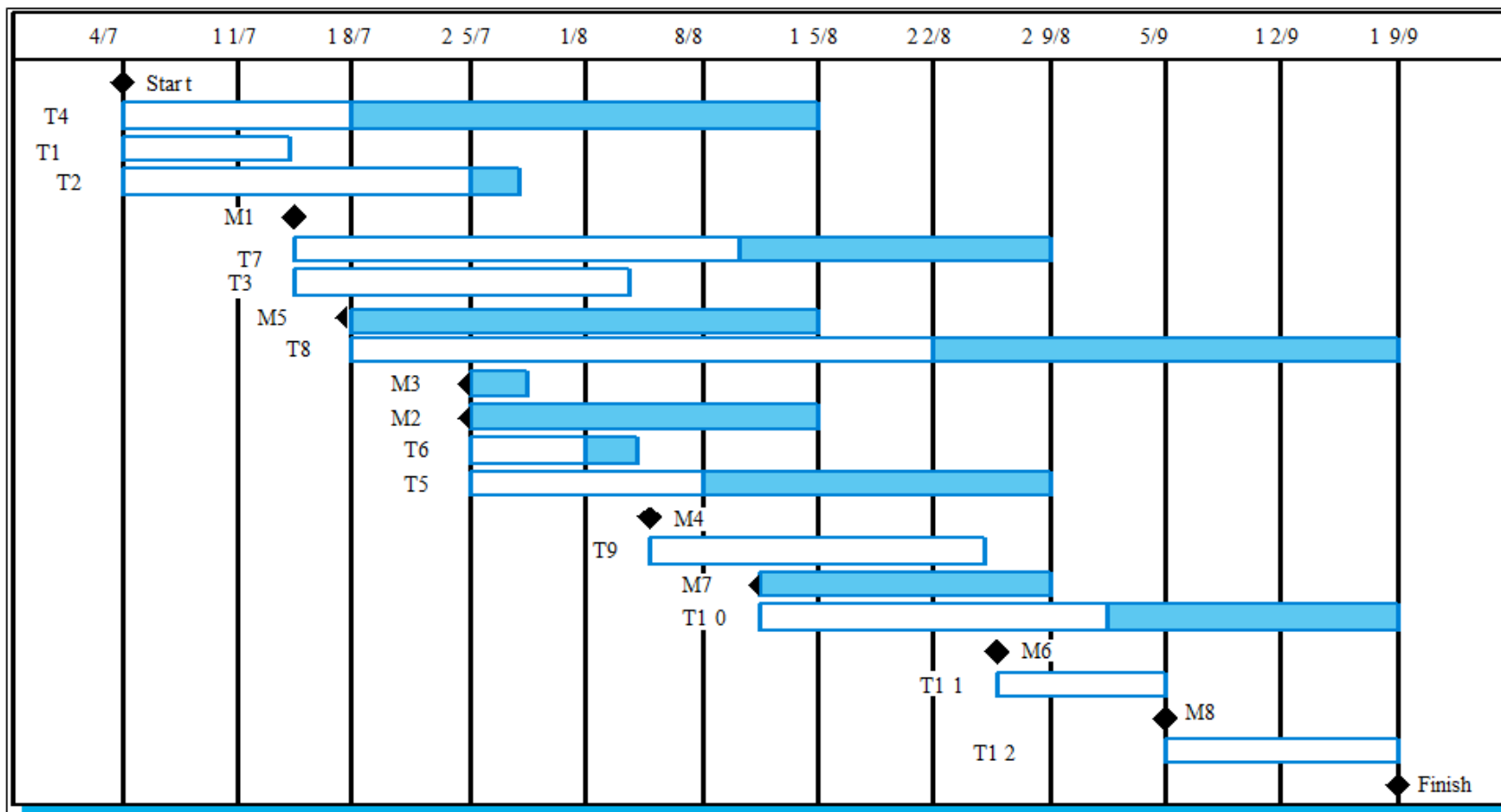


ACTIVITY NETWORK DIAGRAM



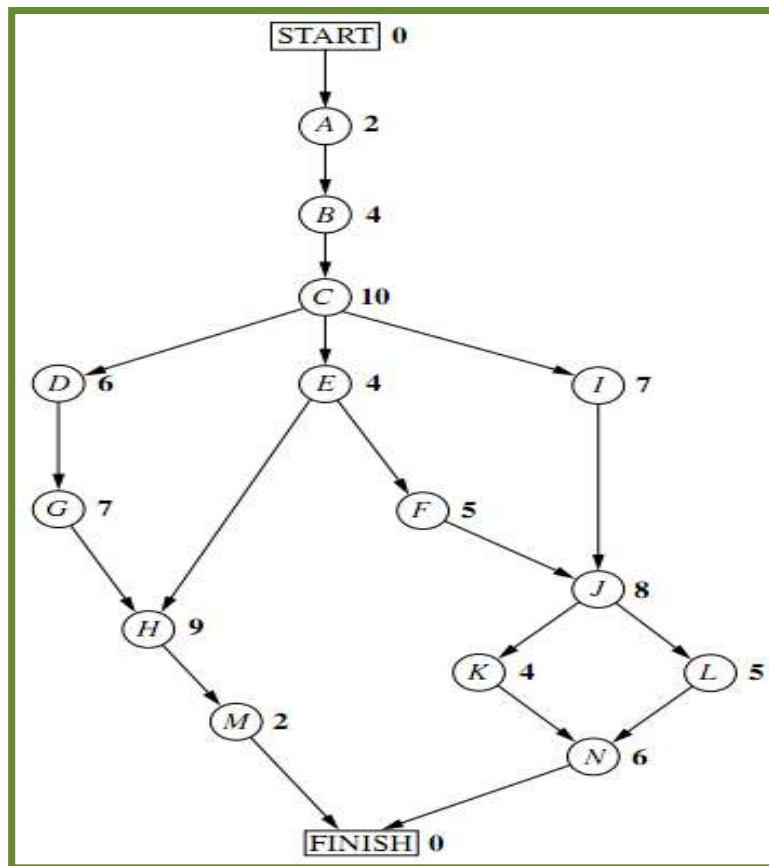
Activity	Duration (days)	Dependencies
T1	8	
T2	15	
T3	15	T1 (M1)
T4	10	
T5	10	T2, T4 (M2)
T6	5	T1, T2 (M3)
T7	20	T1 (M1)
T8	25	T4 (M5)
T9	15	T3, T6 (M4)
T10	15	T5, T7 (M7)
T11	7	T9 (M6)
T12	10	T11 (M8)

BAR CHART OR GANTT CHART



Activity	Duration (days)	Dependencies
T1	8	
T2	15	
T3	15	T1 (M1)
T4	10	
T5	10	T2, T4 (M2)
T6	5	T1, T2 (M3)
T7	20	T1 (M1)
T8	25	T4 (M5)
T9	15	T3, T6 (M4)
T10	15	T5, T7 (M7)
T11	7	T9 (M6)
T12	10	T11 (M8)

THE PROJECT NETWORK FOR THE RELIABLE CONSTRUCTION CO. PROJECT.



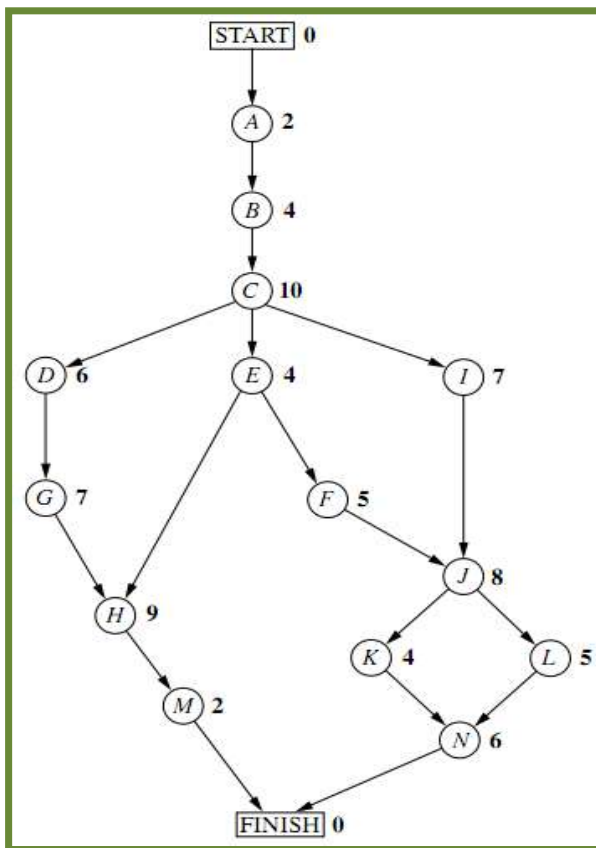
Activity Code

- A. Excavate
- B. Foundation
- C. Rough wall
- D. Roof
- E. Exterior plumbing
- F. Interior plumbing
- G. Exterior siding
- H. Exterior painting
- I. Electrical work
- J. Wallboard
- K. Flooring
- L. Interior painting
- M. Exterior fixtures
- N. Interior fixtures

THE CRITICAL PATH

A path through a project network is one of the routes following the arcs from the START node to the FINISH node. The length of a path is the sum of the (estimated) durations of the activities falling on the path. Such a Path with the maximum duration is called a “**Critical Path**”.

THE PATHS AND PATH LENGTHS THROUGH RELIABLE'S PROJECT NETWORK

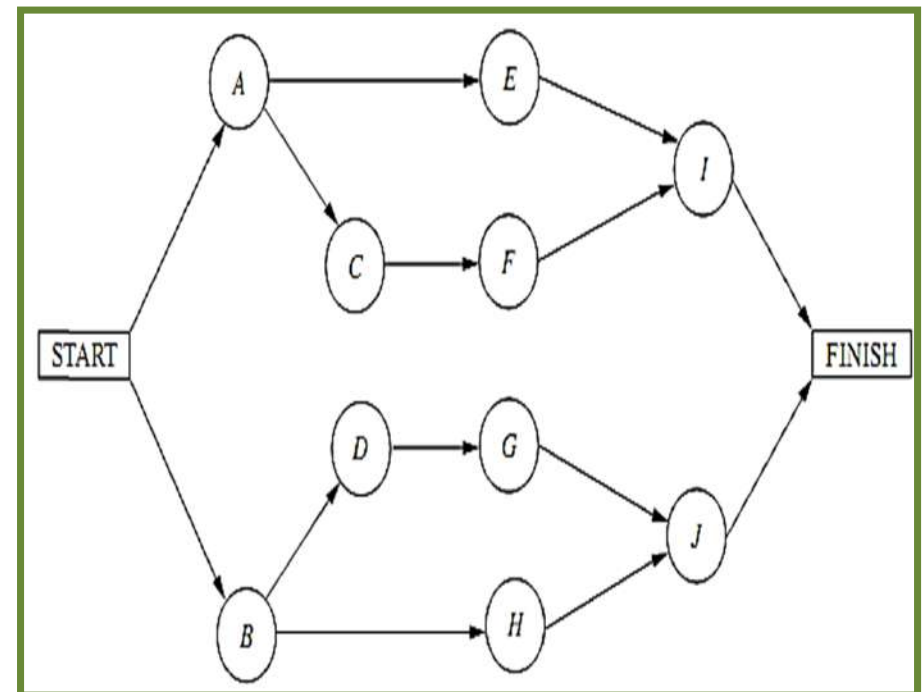


Path	Length
START → A → B → C → D → G → H → M → FINISH	2 + 4 + 10 + 6 + 7 + 9 + 2 = 40 weeks
START → A → B → C → E → H → M → FINISH	2 + 4 + 10 + 4 + 9 + 2 = 31 weeks
START → A → B → C → E → F → J → K → N → FINISH	2 + 4 + 10 + 4 + 5 + 8 + 4 + 6 = 43 weeks
START → A → B → C → E → F → J → L → N → FINISH	2 + 4 + 10 + 4 + 5 + 8 + 5 + 6 = 44 weeks
START → A → B → C → I → J → K → N → FINISH	2 + 4 + 10 + 7 + 8 + 4 + 6 = 41 weeks
START → A → B → C → I → J → L → N → FINISH	2 + 4 + 10 + 7 + 8 + 5 + 6 = 42 weeks

Red color marked path is the **critical path** as with the maximum duration.

CONSIDER THE FOLLOWING TABLE FOR 10 ACTIVITIES.

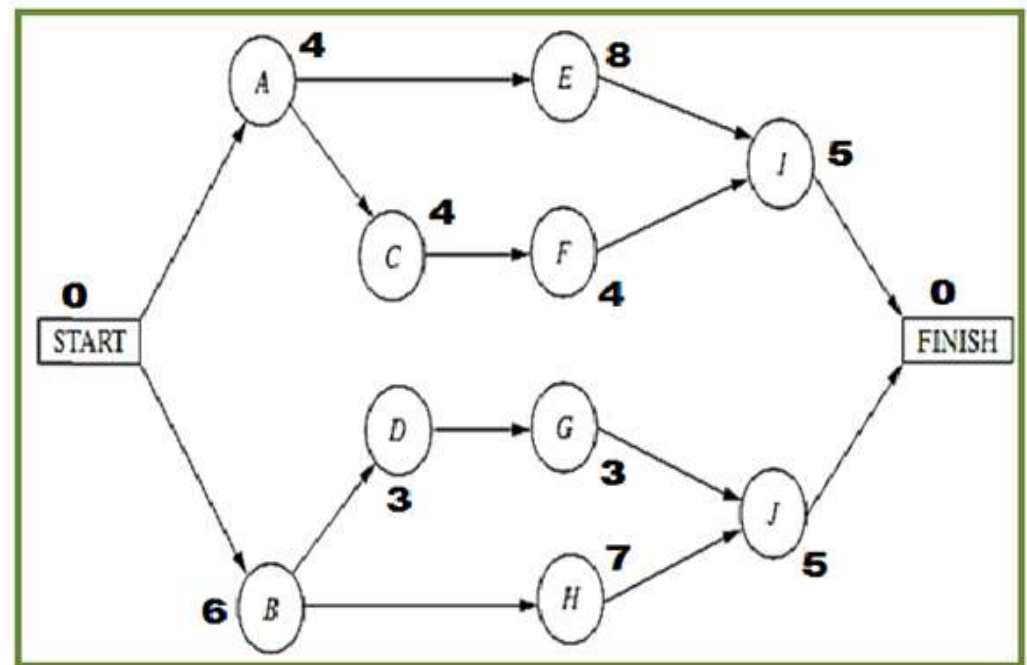
Activity	Optimistic Estimate	Most Likely Estimate	Pessimistic Estimate
A	1.5 months	2 months	15 months
B	2 months	3.5 months	21 months
C	1 month	1.5 months	18 months
D	0.5 month	1 month	15 months
E	3 months	5 months	24 months
F	1 month	2 months	16 months
G	0.5 month	1 month	14 months
H	2.5 months	3.5 months	25 months
I	1 month	3 months	18 months
J	2 months	3 months	18 months



Find the duration of the project.

CONSIDER THE FOLLOWING TABLE FOR 10 ACTIVITIES.

E2						
	A	B	C	D	E	F
1	Activity	Optimistic	Most Likely	Pessimistic	PERT	
2	A	1.5	2	15	4	
3	B	2	3.5	21	6	
4	C	1	1.5	18	4	
5	D	0.5	1	15	3	
6	E	3	5	24	8	
7	F	1	2	16	4	
8	G	0.5	1	14	3	
9	H	2.5	3.5	25	7	
10	I	1	3	18	5	
11	J	2	3	18	5	

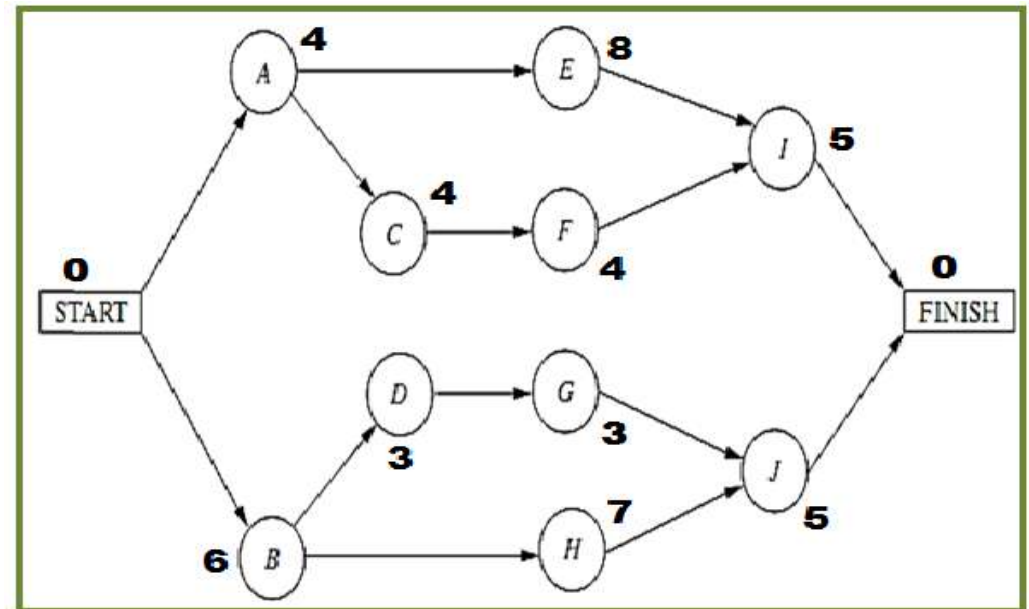


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6	E	3	5	24	8	
7	F	1	2	16	4	
8	G	0.5	1	14	3	
9	H	2.5	3.5	25	7	
10	I	1	3	18	5	
11	J	2	3	18	5	

So the duration of the project = 18 Months



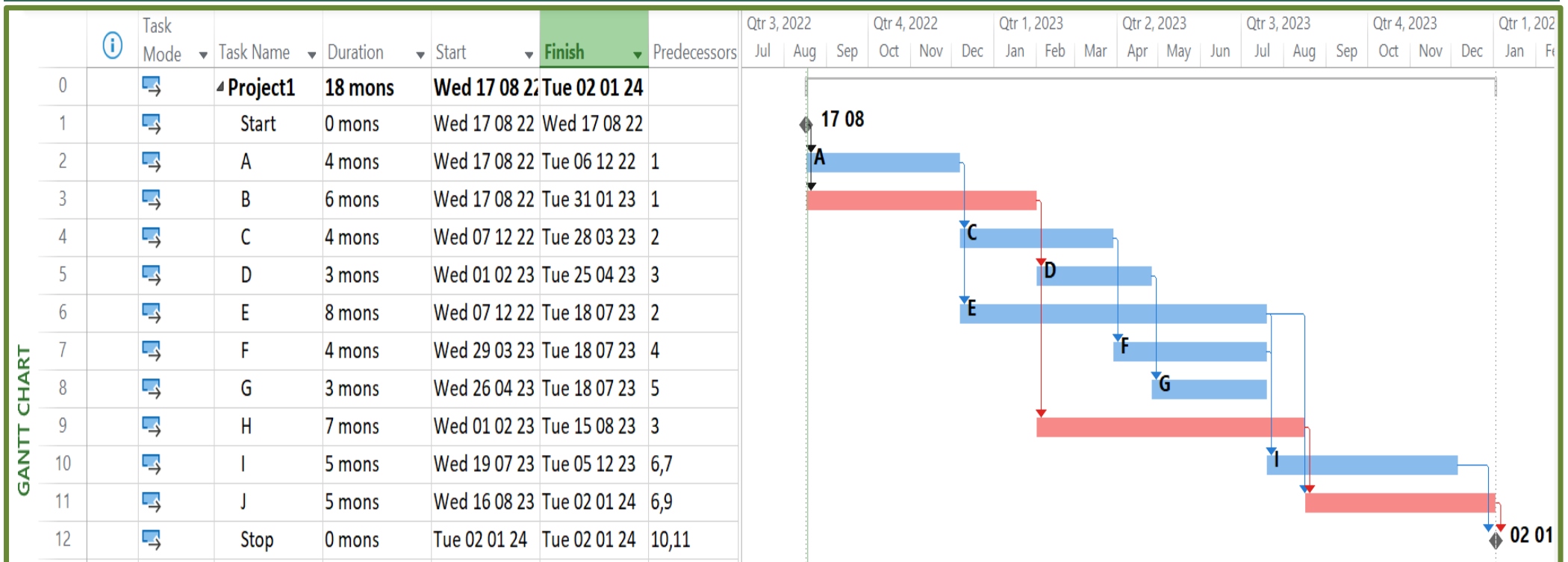
Start - A - E - I - Finish = 0 + 4 + 8 + 5 + 0 = 17

Start - A - C - F - I - Finish = 0 + 4 + 4 + 4 + 5 + 0 = 17

Start - B - D - G - J - Finish = 0 + 6 + 3 + 3 + 5 + 0 = 17

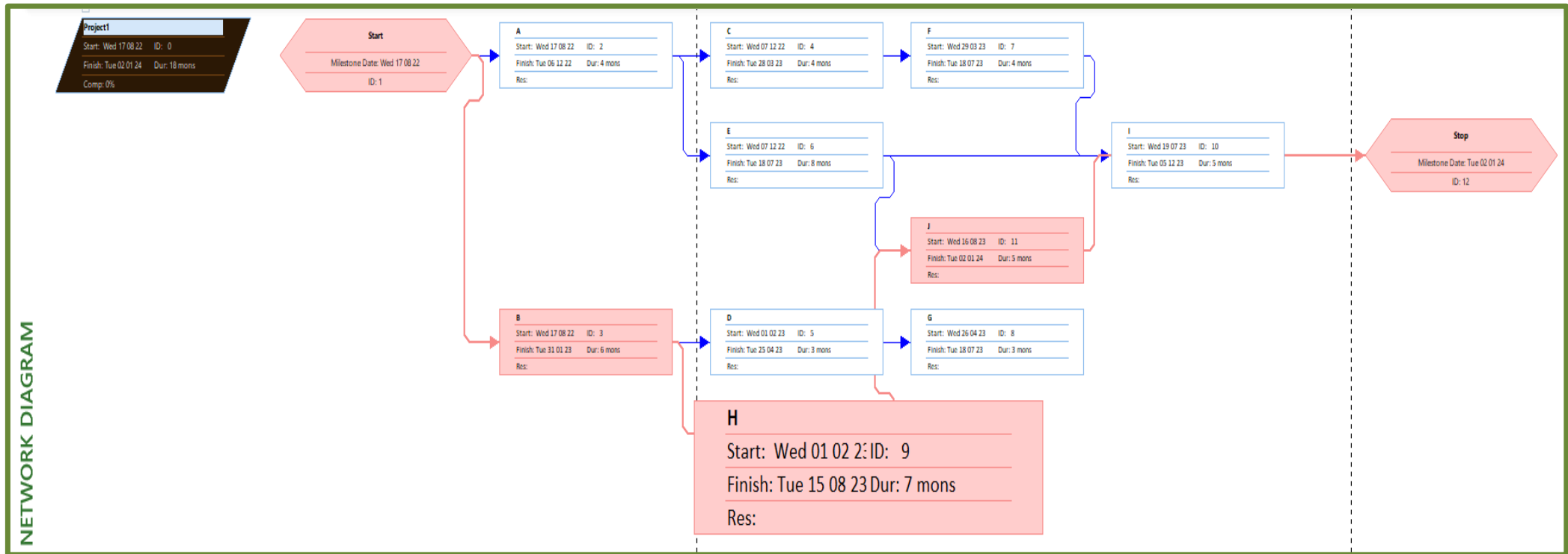
Start - B - H - J - Finish = 0 + 6 + 7 + 5 + 0 = 18

GANTT CHART IN MS-PROJECT SOFTWARE.



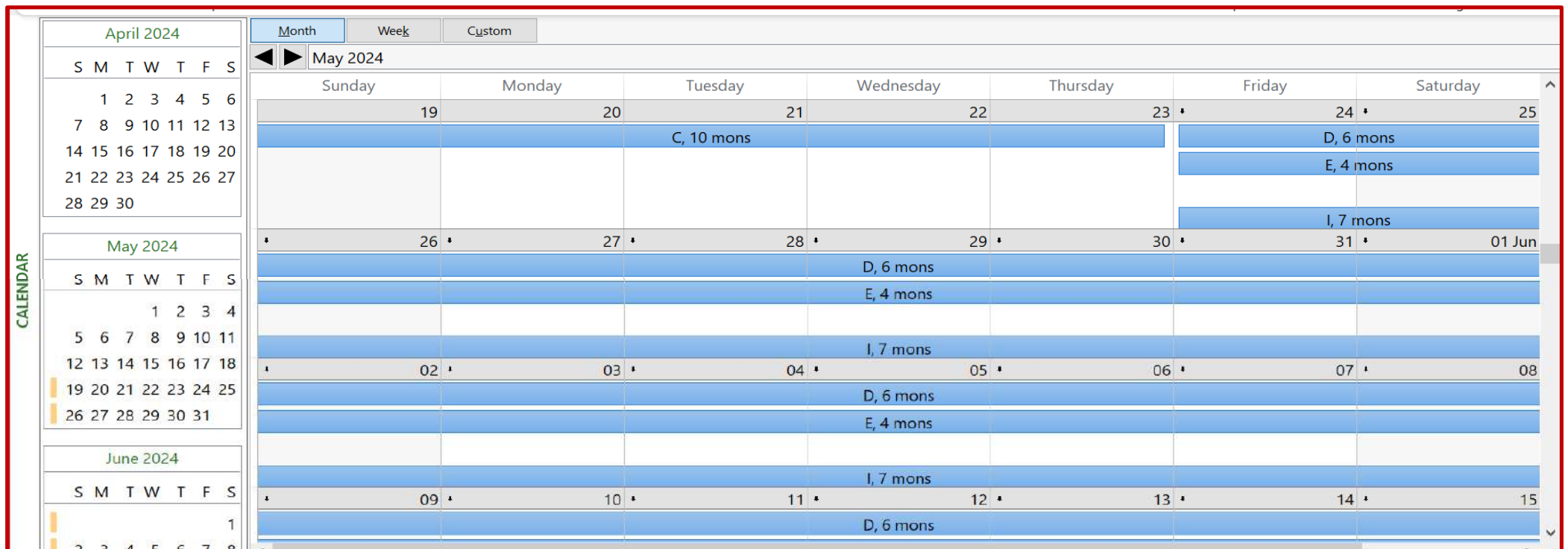
So the duration of the project = 18 Months

ACTIVITY NETWORK DIAGRAM IN MS-PROJECT SOFTWARE.



So the duration of the project = 18 Months

CALENDAR DIAGRAM IN MS-PROJECT SOFTWARE.



So the duration of the project = 18 Months

THANKS FOR LISTENING !

