

PRACTICAL - 7

AIM: Consider a software development project with the following activities:

Activity A: Define Requirements (Duration: 5 days)

Activity B: Design Database (Duration: 8 days)

Activity C: Develop Frontend (Duration: 10 days)

Activity D: Implement Backend (Duration: 12 days)

Activity E: Perform Testing (Duration: 6 days)

Activity F: Deployment (Duration: 8 days)

1. Use the information to construct a Precedence Diagram.
2. Calculate Early Start (ES), Early Finish (EF), Late Start (LS), Late Finish (LF), and Total Float for each activity.
3. Determine the Critical Path.
4. Calculate the total project duration.

Solution:

Team Details:

Sr. No.	Name	Enrollment No.
Team Leader	Sarth Chaudhari	202303103510106
Team Member 1	Yash Patel	202203103510228
Team Member 2	Gati Shah	202203103510261
Team Member 3	Fenil Shilodre	202203103510041
Team Member 4	Angat Shah	202203103510097

Introduction

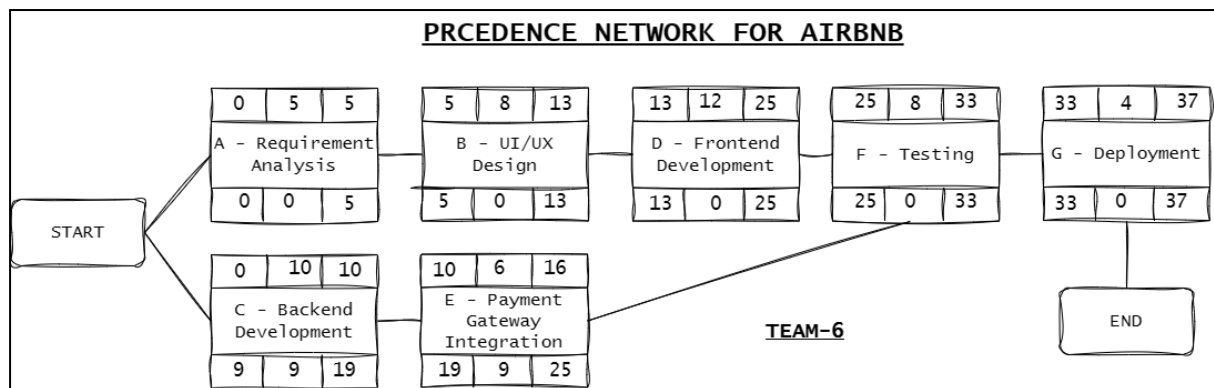
Project scheduling is a fundamental aspect of software project management, ensuring tasks are completed efficiently within defined timeframes.

The **Critical Path Method (CPM)** is used to estimate the total project duration and identify activities crucial to timely completion. This involves analyzing project activities, calculating scheduling parameters like **Early Start (ES)**, **Early Finish (EF)**, **Late Start (LS)**, **Late Finish (LF)** and **Total Float**. By determining these values, we can accurately schedule the tasks, identify the critical path and ensure the project is completed within the required timeframe.

Project Title : Airbnb System

Project Activities and Dependencies

Activity	Description	Duration (Weeks)	Predecessors
A	Requirement Analysis	5	-
B	UI/UX Design	8	A
C	Backend Development	10	-
D	Frontend Development	12	B
E	Payment Gateway Integration	6	C
F	Testing	8	D, E
G	Deployment	4	F



CPM Calculation :

Activity	ES	EF	LS	LF	Total Float
A	0	5	0	5	0
B	5	13	5	13	0
C	0	10	9	19	9
D	13	25	13	25	0
E	10	16	19	25	9

F	25	33	25	33	0
G	33	37	33	37	0

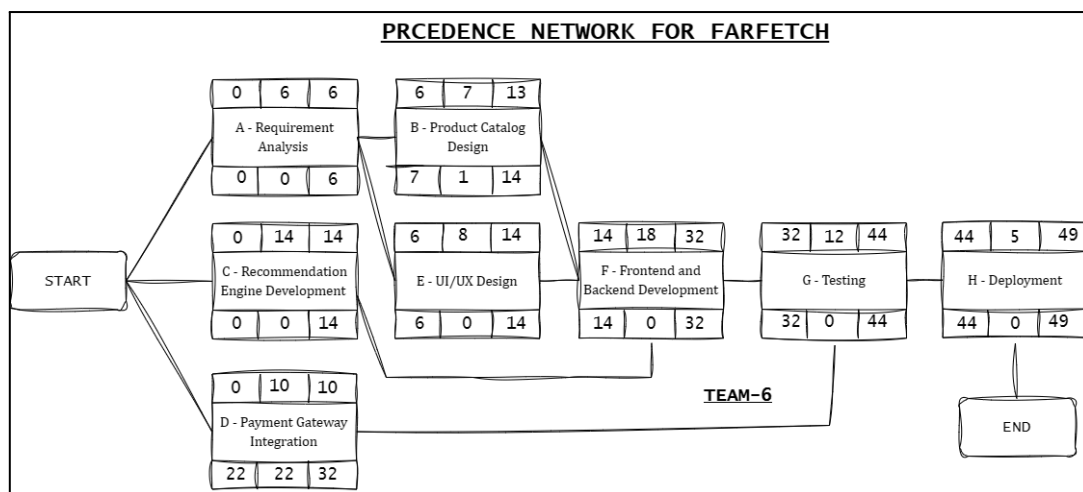
Critical Path & Project Duration :

- The Critical Path : **A → B → D → F → G**
 - The Total Project Duration : **37 Weeks**
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Project Title : Farfetch E-commerce System

Project Activities and Dependencies

Activity	Description	Duration (Weeks)	Predecessors
A	Requirement Analysis	6	-
B	Product Catalog Design	7	A
C	Recommendation Engine Development	14	-
D	Payment Gateway Integration	10	-
E	UI/UX Design	8	A
F	Frontend & Backend Development	18	B, C, E
G	Testing	12	D, F
H	Deployment	5	G



CPM Calculation :

Activity	ES	EF	LS	LF	Total Float
A	0	6	0	6	0

B	6	13	7	14	1
C	0	14	0	14	0
D	0	10	22	32	22
E	6	14	6	14	0
F	14	32	14	32	0
G	32	44	32	44	0
H	44	49	44	49	0

Critical Path & Project Duration :

- The Critical Path : **A → E → F → G → H**
- The Total Project Duration : **49 Weeks**

Conclusion

CPM effectively determines project scheduling and helps identify critical tasks that require close monitoring.

- **Farfetch requires a longer duration (49 weeks)** due to its complexity, multiple integrations and parallel dependencies, while **Airbnb's timeline is shorter (37 weeks)** with a more linear critical path.
 - Both projects benefit from the flexibility provided by float values in non-critical tasks, allowing schedule adjustments without affecting the critical path.
 - Backend development is a significant factor in both projects, and optimizing it could reduce delays.
 - Testing and deployment are crucial for both projects, emphasizing their importance in real-world software releases.
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