

### Practical No-03

**Aim:** Estimation of Project matrix and design Gnatt chart

**Problem Statement:** Library Management System

**A Project Estimation Matrix** is a structured format used to estimate **time, effort, resources, and cost** for each module/task of a project. It helps in planning and tracking.

Task ID	Task Name	Assigned To	Estimated Hours	Actual Hours	Start Date	End Date	Status
T1	Requirement Gathering	Analyst	10 hrs	12 hrs	01-Aug-25	03-Aug-25	Completed
T2	UI Design	Designer	15 hrs	14 hrs	04-Aug-25	07-Aug-25	In Progress
T3	Backend Development	Developer	25 hrs	-	08-Aug-25	15-Aug-25	Pending

#### Example of a Project Estimation Matrix

Component	Description	Estimation Technique	Estimation (Example)
Effort	Number of person-hours required	Function Point Analysis	1,000 person-hours
Time (Duration)	Calendar time for project completion	PERT/CPM	3 months
Cost	Estimated budget for project	Bottom-Up Estimation	\$50,000
Size	Size of the software	Function Points	300 function points
Resources	Number of developers, testers, etc. required	Expert Judgment	4 developers, 2 testers
Risk	Contingency for identified	Risk Analysis	10% buffer on

	risks	(Qualitative)	time/cost
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**Example: Library Management System (Mini Project)**

Task ID	Module	Est. Hours	Resources	Complexity	Remarks
1	Login/Authenticatio n	6 hrs	Developer A	Low	Simple form
2	Book Search	10 hrs	Developer B	Medium	Uses database
3	Book Issue/Return	15 hrs	Developer A, B	High	With logic
4	Admin Dashboard	8 hrs	Developer A	Medium	Stats, graphs

Task ID	Module	Est. Hours	Resources	Complexity	Hourly Rate (INR)	Estimated Cost (INR)
1	Login/Authenticatio n	6	Developer A	Low	600	3600
2	Book Search	10	Developer B	Medium	600	6000
3	Book Issue/Return	15	Developer A, B	High	600	9000
4	Admin Dashboard	8	Developer A	Medium	600	4800
				Total Cost		

## 2. Gantt Chart Design

### Steps to Design a Gantt Chart

A Gantt chart is a bar chart that visually represents the schedule of a project, showing tasks over time. Here's how to design one step-by-step:

#### Step-by-Step Process to Design a Gantt Chart

##### Step 1: Identify Project Tasks

List all the tasks or modules required to complete the project.

- Example:
  - Requirement Gathering
  - UI Design
  - Development
  - Testing
  - Deployment

##### Step 2: Determine Task Duration

Estimate how long each task will take (in days or hours).

- Example:
  - UI Design – 3 days
  - Development – 6 days

##### Step 3: Set Start and End Dates

Assign start and end dates for each task based on estimated duration and task dependencies.

##### Step 4: Identify Task Dependencies

Determine which tasks must be completed before others begin.

- Example:
  - Development starts after UI Design
  - Testing starts after Development

##### Step 5: Create a Table

Prepare a basic table structure like this:

Task Name	Start Date	Duration	End Date	Progress
UI Design	01-Aug-25	3 days	03-Aug-25	100%
Backend Development	04-Aug-25	6 days	09-Aug-25	60%

### Step 6: Plot on a Timeline (Bar Chart)

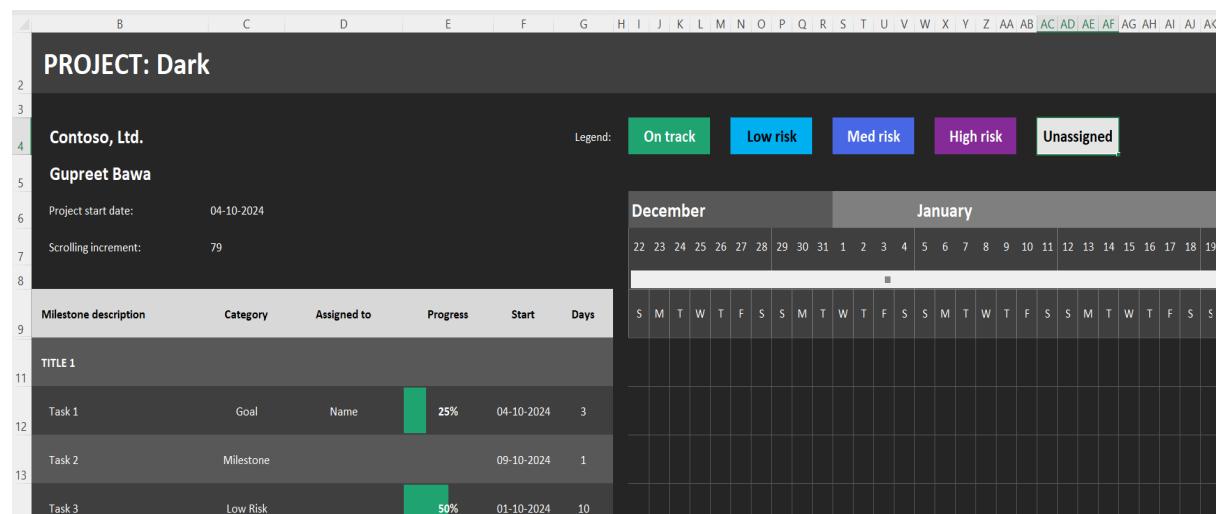
Use a horizontal bar chart to represent tasks:

- X-axis: Dates or time period
- Y-axis: Task names
- Draw bars from start to end date of each task

### Step 7: Add Details

- Color Code: Use different colors for “Completed”, “In Progress”, and “Planned”
- Milestones: Mark important checkpoints
- Progress Indicator: Show how much of each task is completed

### Gantt Chart (Library Management System Project)



### Conclusion:

This practical reinforces the significance of software engineering project management techniques. Understanding and applying cost estimation matrices and Gantt charts are

essential skills for ensuring that a project is delivered on time, within budget, and with optimal use of resources. These tools also enhance project visibility, risk management, and stakeholder communication.