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Subject Name : Software Design Lab
Experiment No. : 9
Experiment Name : Prepare project plan, predict resources and time scheduling.
Roll No. : 17IT1064
Class/Div/Batch : TE/A/A4
Date of performance :
Date of submission :
Grade :
Sign :

Aim: To study and prepare project Plan, predict resources and timeline(scheduling).
Hardware & Software Required: PC Desktop, Any project scheduling tool like MS-Project
Theory:
Project managers have a variety of tools to develop a project schedule – from the relatively simple process of **action planning** for **small projects**, to use of **Gantt Charts** and Network Analysis for **large projects.** Here, we outline the key tools you will need for schedule development.
Schedule Inputs
You need several types of inputs to create a project schedule:

- **Personal and project calendars** – Understanding working days, shifts, and resource availability is critical to completing a project schedule.
- **Description of project scope** – From this, you can determine key start and end dates, major assumptions behind the plan, and key constraints and restrictions. You can also include stakeholder expectations, which will often determine project milestones.
- **Project risks** – You need to understand these to make sure there's enough extra time to deal with identified risks – and with unidentified risks (risks are identified with thorough Risk Analysis).
- **Lists of activities and resource requirements** – Again, it's important to determine if there are other constraints to consider when developing the schedule. Understanding the resource capabilities and experience you have available – as well as company holidays and staff vacations – will affect the schedule.

A project manager should be aware of deadlines and resource availability issues that may make the schedule less flexible.
Scheduling Tools
Here are some tools and techniques for combining these inputs to develop the schedule:

- **Schedule Network Analysis** – This is a graphic representation of the project's activities, the time it takes to complete them, and the sequence in which they must be done. Project management software is typically used to create these analyses – **Gantt charts** and **PERT Charts** are common formats.

- **Critical Path Analysis** – This is the process of looking at all of the activities that must be completed, and calculating the 'best line' – or critical path – to take so that you'll complete the project in the minimum amount of time. The method calculates the earliest and latest possible start and finish times for project activities, and it estimates the dependencies among them to create a schedule of critical activities and dates. Learn more about **Critical Path Analysis** .

- **Schedule Compression** – This tool helps shorten the total duration of a project by decreasing the time allotted for certain activities. It's done so that you can meet time constraints, and still keep the original scope of the project. You can use two methods here:

- **Crashing** – This is where you assign more resources to an activity, thus decreasing the time it takes to complete it. This is based on the assumption that the time you save will offset the added resource costs.

- **Fast-Tracking** – This involves rearranging activities to allow more parallel work. This means that things you would normally do one after another are now done at the same time. However, do bear in mind that this approach increases the risk that you'll miss things, or fail to address changes.

Use of Project Stages:

One of the biggest reasons that projects over-run is that the 'final' polishing and error-correction takes very much longer than anticipated. In this way, projects can seem to be '80% complete' for 80% of the time! What's worse, these projects can seem to be on schedule until, all of a sudden, they over-run radically.

Project Review

Once you have outlined the basic schedule, you need to review it to make sure that the timing for each activity is aligned with the necessary resources. Here are tools commonly used to do this:

- **'What if' scenario analysis** – This method compares and measures the effects of different scenarios on a project. You use simulations to determine the effects of various adverse, or harmful, assumptions – such as resources not being available on time, or delays in other areas of the project. You can then measure and plan for the risks posed in these scenarios.

- **Resource leveling** – Here, you rearrange the sequence of activities to address the possibility of unavailable resources, and to make sure that excessive demand is not put on resources at any point in time. If resources are available only in limited quantities, then you change the timing of activities so that the most critical activities have enough resources.

- **Critical chain method** – This also addresses resource availability. You plan activities using their latest possible start and finish dates. This adds extra time between activities, which you can then use to manage work disruptions.

- **Risk multipliers** – Risk is inevitable, so you need to prepare for its impact. Adding extra time to high-risk activities is one strategy. Another is to add a time multiplier to certain tasks or certain resources to offset overly optimistic time estimation.
- After the initial schedule has been reviewed, and adjustments made, it's a good idea to have other members of the team review it as well. Include people who will be doing the work – their insights and assumptions are likely to be particularly accurate and relevant.

Key Points

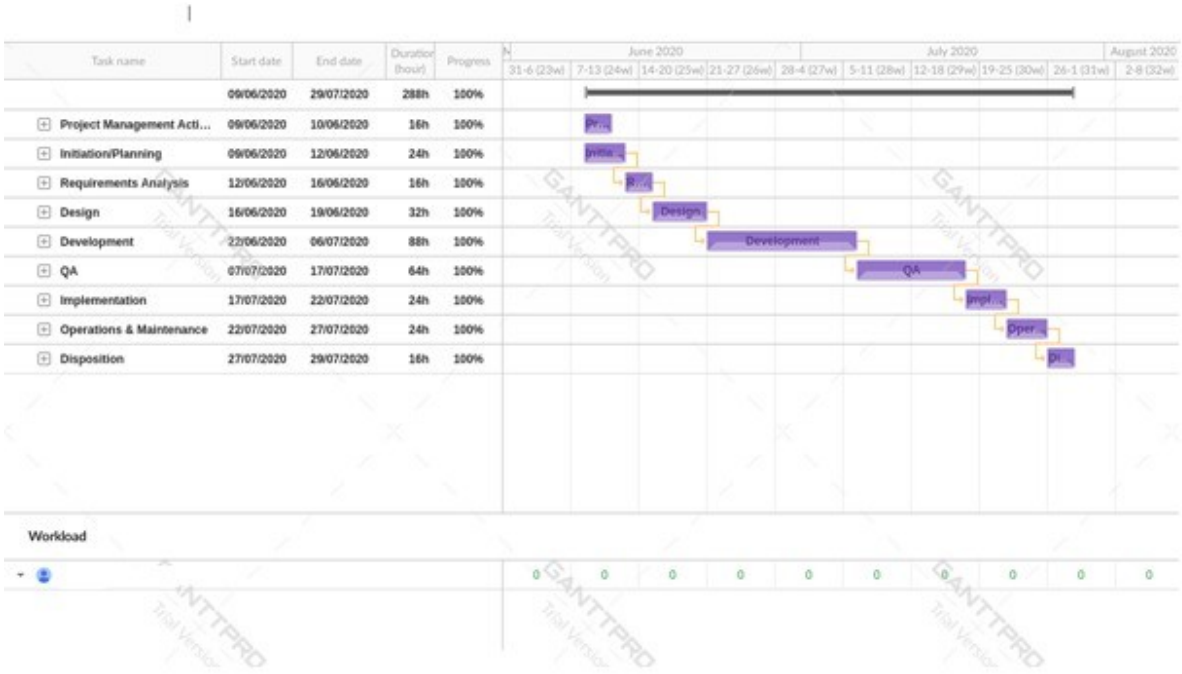
You need to estimate time accurately if you're going to deliver your project on time and on budget. Without this skill, you won't know how long your project will take, and you won't be able to get commitment from the people required to help you achieve your objective. More than this, you risk agreeing to impossibly short deadlines, with all of the stress, pain, and loss of credibility associated with this. To estimate time effectively, follow this four-step process:

1. Understand what's required.
2. Prioritize activities and tasks.

3. Decide who you need to involve.
4. Do your estimates.

Use a variety of estimating methods to get the most accurate time estimates

Results:



Risk	Probability	Effects	Risk planning strategy
One of team members leaves the project before it is finished, or falls ill	low	serious	Reassign the tasks to the other members, depending on availability and previous knowledge of what the currently unavailable member was working on.
Inappropriate version of Packages and Development tools	high	serious	Carefully select the specific versions of tools and components to use and ensure that every member will adhere to the choice throughout the entire project.
Failure to meet deadlines for deliverable.	high	serious	Setup milestones ahead of the final due date for each deliverable
Requirements sudden change	high	serious	Liaise with the sponsor to avoid unnecessary changes. If necessary, adjust the schedule of the project to accommodate the change.
If a suitable place for meeting the team cannot be found	moderate	tolerable	Use E-mail as the backup communication channel to avoid this risk.
Frequent power cuts	high	serious	There is a spare generator to avoid this risk.
Loss of valuable information by accident	high	catastrophic	An off-site backup should be kept up to date to minimize the chances of information loss

Conclusion and Discussion:

Thus preparation of project Plan, predicting resources and timeline(scheduling) has been successfully studied.