Faculty of Engineering and Applied Science

SOFE 3490U - Software Project Management

Lab 4

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Risk Mitigation

With every software project, there are risks that will present themselves at every stage of the project. For example, during the development stage while refining the requirements, there is a risk for unrealistic time and cost estimates. To provide a more accurate estimate to the project cost, multiple estimation techniques such as bottom-up, top-down and expert judgment will be used. Furthermore, past projects can be analyzed to give valuable insights to the current project's cost. Even during the project's implementation, software tools can be used to adjust estimates as progress is tracked.

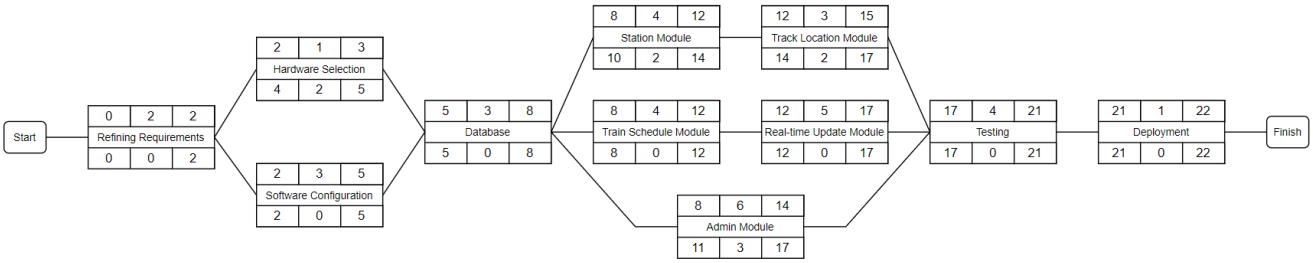
The first step towards risk mitigation is taken during the Hardware Selection/Software Configuration phases which decide how the rest of the project will be built. By carefully selecting the right tools and settings, the team can avoid having issues later on in the project which will be much more expensive to deal with. The earlier a risk is dealt with, the less it will affect the total cost of the project.

During the testing phase of the project, the team is trying to mitigate the risk of having software bugs before deployment so that the users are not the ones to discover these bugs. Having bugged software out on the market is very expensive to manage as the product would have to be recalled or shut down temporarily, which will cause the user inconvenience as well as revenue.

TASKS

The project was divided into activities during the previous lab. Each activity was assigned a duration. These durations were assigned according to a similar Railway Management System application that was implemented previously by the team. This duration falls under the lab guidelines for the 1-3 month project duration.

Here is the activity diagram that was implemented in the previous lab:



Activities Explained:

Refining Requirements: The team would get together with the stakeholders/customers and eliminate redundant requirements and refine the criteria for the project. The stakeholders will be consulted in every part of this step to make sure that the project is still on track and none of the details have been lost during the refinement phase.

Hardware Selection: The team will choose the most suitable hardware for this project as well as consider the cost of implementing it for this project. When selecting the hardware, a cost analysis will be done to compare between different available options and to ensure the maintenance will be within the budget of the customers.

Software Configuration: The team will decide which software to use to develop the project and make sure that it is compatible with the hardware selected. The software chosen will be configured to include all security and reliability features and will be developed further in later stages.

Database: The database required for the storage of train schedules, station information, platform information will be set up and tested during this stage. A cost analysis will also be done to compare between different database options, and to check if the database will be cost effective in terms of long term maintenance.

Station Module: The stations will be initialized in this module. All the information about the different stations will be stored. This will allow users to view the different lines and where stations are located, and the parking capacity of each station.

Train Schedule Module: Here all the information about the train schedules will be set. This will allow users to find the train times, what track the train will be on and where the train will be heading. This module will also contain information about the trains carrying capacity as well as estimated capacity.

Admin Module: This module will be created to allow the station master to manage train schedules, and platform status for the different platforms. The module will also manage the daily station information such as any maintenance, unavailability of platform etc. This module will only be accessible to a select few with a special login system, and there will be one module per station.

Track Location Module: In this activity, the team will implement a feature that will allow users to know exactly where the track is. This module will provide users with directions, descriptions and images of the different tracks at each station. This will allow users to find their track without much hassle.

Real-time Update Module: In this module, the real time updates of train's locations will be implemented. This will allow users to view exactly where the train is and how long it will take. This module will also allow users to see the potential delays.

Testing: The application must be tested for bugs and corrections. This will resolve errors before deploying the application.

Deployment: In this activity, the application will be deployed to the servers. This will allow users to access the website through the internet.

These activities were turned into tasks. The same duration was used. The start date was February 2019, as mentioned in the lab guidelines. There was a holiday for Good Friday on February 22nd. Particular tasks had multiple dependencies just as illustrated in the activity diagram. The summary task was Testing with Deployment as the subtask. The application must be tested right before deployment and changes must be continuously tested and then deployed. The risk mitigation tasks were Hardware Selection, Software Configuration and Testing as mentioned in the previous section. Resources and team members were assigned to their tasks based on their skills and expertise. All team members are very versatile and well rounded, they have not specialized in anything. All the resources to the different activities can be seen in the resource column of the task table.

Here is the task table that was implemented in Microsoft Project Professional:

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1		Refining Requirements	2 days	Fri 2/1/19	Mon 2/4/19		Abdul,Nathan, Nived
2		Hardware Selection	1 day	Tue 2/5/19	Tue 2/5/19	1	Abdul
3		Software Configuration	3 days	Tue 2/5/19	Thu 2/7/19	1	Nathan,Nived
4		Database	3 days	Fri 2/8/19	Tue 2/12/19	2,3	Nathan
5		Station Module	4 days	Wed 2/13/19	Mon 2/18/19	4	Abdul
6		Train Schedule Module	4 days	Wed 2/13/19	Mon 2/18/19	4	Nived
7		Admin Module	6 days	Wed 2/13/19	Wed 2/20/19	4	Abdul,Nived
8		Track Location Module	3 days	Tue 2/19/19	Thu 2/21/19	5	Abdul,Nathan
9		Real Time Update Module	5 days	Tue 2/19/19	Tue 2/26/19	6	Nived,Nathan
10		**Testing**	**4 days**	**Wed 2/27/19**	**Mon 3/4/19**	**7,8,9**	**Abdul,Nived**
11		Deployment	1 day	Tue 3/5/19	Tue 3/5/19		Nathan

Here is the Gantt chart that was created using the tasks. The data and duration for each task can be seen.