GNG 1103 - Deliverable E: Project Schedule and Cost

Group F5

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Introduction

A project can be streamlined through the use of organizational tools such as tables, spreadsheets, and charts in order to set goals that help the group progress efficiently, as well as ensuring that the project yields optimal results. Through the formulation of a table, we create a cost analysis in the form of a BOM (Bill Of Materials) to create a budget that is both functioning, and under the $100 contingency. Finally, a spreadsheet of tasks and a Gantt chart are used to help the team organizationally by assigning dates and group members to specific tasks in order to ensure that deadlines are met.

Risks and Contingency

The risks taken during the development process is the speakers and sensors does not work as our design concept. This is the first time for this team to design a product. A major concern for this project is programming and wiring for the sensors and speakers. The team does not have the much experiences, skills and knowledge on programming and wiring. It has no surprise that the final project deliverable may not compete effectively if the team does not have any improvement on the engineering knowledge and skill.

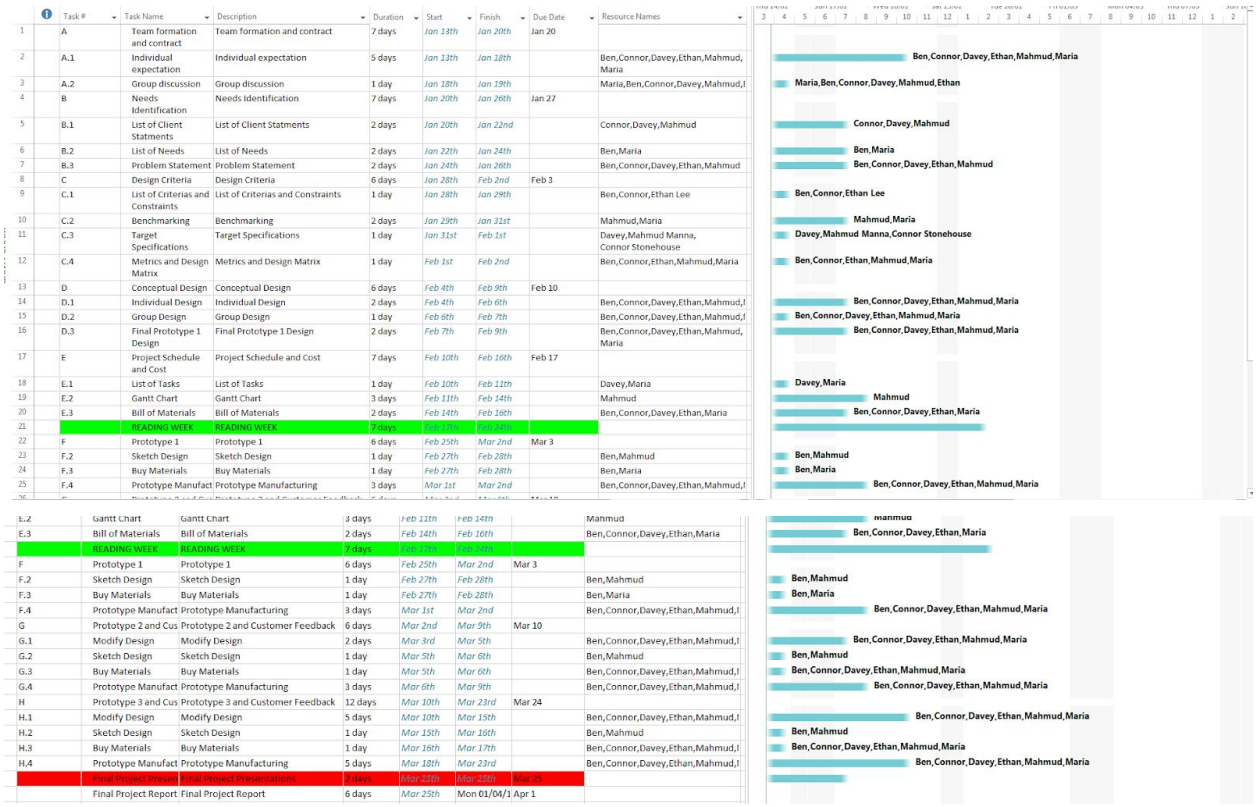
The following plan is discussed as a team to prevent or reduce the risks. The team will start on building the product/prototype earlier. Therefore, the team will have time to seek for help if the programming or wiring does not work. The team will start to learn and ask questions about programing and wiring from the TAs and fourth year engineering students.

Another potential risk when developing our prototype is the possibility of it getting damaged or destroyed. Accidents can occur at any time so to ensure we have a working prototype on design day a contingency plan needs to be put in place. Our prototype contains many parts, but the portion that is most likely to be damaged is the cardboard stairs. An effective contingency to have is a second model of just the stairs. If an incident were to occur and the main prototype was damaged, the smaller components like the speakers and the sensors could simply be placed onto the “backup” stair model, quickly resolving the issue and giving us a working prototype by design day. The cardboard and other materials required to build the stair portion of our prototype is essentially free, therefore building a second model will not drastically affect the cost.

Cost Analysis

The following table examines each component needed in the implementation of the proximity sensor design chosen in the last deliverable. The cost being considered includes shipping and taxes. Some items in the table such as the PVC pipe, pegboard and wire kit may not have to be purchased and could be obtained for free, lowering the total cost.

Part Number	Part Name	Description	Quantity	Cost/unit ($)	Total Cost($)
1	Arduino Nano	Main control unit of the prototype	1	30	30
2	Cardboard boxes	Main material for building the stairs	6	Free	Free
3	Peg Board	Attached to stair, holds railing and speakers	1	12	12
4	Peg Board Hooks	Hold railing on peg board	2	3	6
5	PVC Pipe	Forms the main railing	1	5	5
6	Hot Glue	To assemble the cardboard stairs	N/A	Free	Free
7	Range Detector	Senses people on the stairs	3	5	15
8	Wire kit	For wiring up all the components	1	12	12
9	Speakers	For outputting the sound	3	6	18
Total Cost			$98		



	Task #	Task Name	Description	Duration	Start	Finish	Due Date	Resource Names
1	A	Team formation and contract	Team formation and contract	7 days	Jan 13th	Jan 20th	Jan 20	
2	A.1	Individual expectation	Individual expectation	5 days	Jan 13th	Jan 18th		Ben,Connor,Davey,Ethan,Mahmud, Maria
3	A.2	Group discussion	Group discussion	1 day	Jan 18th	Jan 19th		Maria,Ben,Connor,Davey,Mahmud,E
4	B	Needs Identification	Needs Identification	7 days	Jan 20th	Jan 26th	Jan 27	
5	B.1	List of Client Statments	List of Client Statments	2 days	Jan 20th	Jan 22nd		Connor,Davey,Mahmud
6	B.2	List of Needs	List of Needs	2 days	Jan 22th	Jan 24th		Ben,Maria
7	B.3	Problem Statement	Problem Statement	2 days	Jan 24th	Jan 26th		Ben,Connor,Davey,Ethan,Mahmud
8	C	Design Criteria	Design Criteria	6 days	Jan 28th	Feb 2nd	Feb 3	
9	C.1	List of Criterias and Constraints	List of Criterias and Constraints	1 day	Jan 28th	Jan 29th		Ben,Connor,Ethan Lee
10	C.2	Benchmarking	Benchmarking	2 days	Jan 29th	Jan 31st		Mahmud,Maria
11	C.3	Target Specifications	Target Specifications	1 day	Jan 31st	Feb 1st		Davey,Mahmud Manna, Connor Stonehouse
12	C.4	Metrics and Design Matrix	Metrics and Design Matrix	1 day	Feb 1st	Feb 2nd		Ben,Connor,Ethan,Mahmud,Maria
13	D	Conceptual Design	Conceptual Design	6 days	Feb 4th	Feb 9th	Feb 10	
14	D.1	Individual Design	Individual Design	2 days	Feb 4th	Feb 6th		Ben,Connor,Davey,Ethan,Mahmud,I
15	D.2	Group Design	Group Design	1 day	Feb 6th	Feb 7th		Ben,Connor,Davey,Ethan,Mahmud,I
16	D.3	Final Prototype 1 Design	Final Prototype 1 Design	2 days	Feb 7th	Feb 9th		Ben,Connor,Davey,Ethan,Mahmud, Maria
17	E	Project Schedule and Cost	Project Schedule and Cost	7 days	Feb 10th	Feb 16th	Feb 17	
18	E.1	List of Tasks	List of Tasks	1 day	Feb 10th	Feb 11th		Davey,Maria
19	E.2	Gantt Chart	Gantt Chart	3 days	Feb 11th	Feb 14th		Mahmud
20	E.3	Bill of Materials	Bill of Materials	2 days	Feb 14th	Feb 16th		Ben,Connor,Davey,Ethan,Maria
21		READING WEEK	READING WEEK	7 days	Feb 17th	Feb 24th		
22	F	Prototype 1	Prototype 1	6 days	Feb 25th	Mar 2nd	Mar 3	
23	F.2	Sketch Design	Sketch Design	1 day	Feb 27th	Feb 28th		Ben,Mahmud
24	F.3	Buy Materials	Buy Materials	1 day	Feb 27th	Feb 28th		Ben,Maria
25	F.4	Prototype Manufact	Prototype Manufacturing	3 days	Mar 1st	Mar 2nd		Ben,Connor,Davey,Ethan,Mahmud,I

E.2	Gantt Chart	Gantt Chart	3 days	Feb 11th	Feb 14th		Mahmud
E.3	Bill of Materials	Bill of Materials	2 days	Feb 14th	Feb 16th		Ben,Connor,Davey,Ethan,Maria
	READING WEEK	READING WEEK	7 days	Feb 17th	Feb 24th		
F	Prototype 1	Prototype 1	6 days	Feb 25th	Mar 2nd	Mar 3	
F.2	Sketch Design	Sketch Design	1 day	Feb 27th	Feb 28th		Ben,Mahmud
F.3	Buy Materials	Buy Materials	1 day	Feb 27th	Feb 28th		Ben,Maria
F.4	Prototype Manufact	Prototype Manufacturing	3 days	Mar 1st	Mar 2nd		Ben,Connor,Davey,Ethan,Mahmud,I
G	Prototype 2 and Cus	Prototype 2 and Customer Feedback	6 days	Mar 2nd	Mar 9th	Mar 10	
G.1	Modify Design	Modify Design	2 days	Mar 3rd	Mar 5th		Ben,Connor,Davey,Ethan,Mahmud,I
G.2	Sketch Design	Sketch Design	1 day	Mar 5th	Mar 6th		Ben,Mahmud
G.3	Buy Materials	Buy Materials	1 day	Mar 5th	Mar 6th		Ben,Connor,Davey,Ethan,Mahmud,I
G.4	Prototype Manufact	Prototype Manufacturing	3 days	Mar 6th	Mar 9th		Ben,Connor,Davey,Ethan,Mahmud,I
H	Prototype 3 and Cus	Prototype 3 and Customer Feedback	12 days	Mar 10th	Mar 23rd	Mar 24	
H.1	Modify Design	Modify Design	5 days	Mar 10th	Mar 15th		Ben,Connor,Davey,Ethan,Mahmud,I
H.2	Sketch Design	Sketch Design	1 day	Mar 15th	Mar 16th		Ben,Mahmud
H.3	Buy Materials	Buy Materials	1 day	Mar 16th	Mar 17th		Ben,Connor,Davey,Ethan,Mahmud,I
H.4	Prototype Manufact	Prototype Manufacturing	5 days	Mar 18th	Mar 23rd		Ben,Connor,Davey,Ethan,Mahmud,I
	Final Project Presen	Final Project Presentations	2 days	Mar 24th	Mar 25th	Mar 25	
	Final Project Report	Final Project Report	6 days	Mar 25th	Mon 01/04/1	Apr 1	

The project generally followed the dates outlined in the Gantt chart. For a vast majority of the deliverables, the group met up early on the day before the deliverable was due to work, and completed the task. Since the deliverables were mostly due at 11:59 pm the next day, these due dates served as “buffer days” in case the group ran into issues that would require a second day for the task to be worked on. Notably, there were difficulties with staying on schedule was with the manufacturing of prototypes, such as issues with solder connections, or code, but despite this, the deliverables were steadily meeting deadlines and consistently on-time.

Conclusion

This document examines both the monetary, and time/human resources of the project in depth through a series of charts and other organizational methods in order to create a definite path for the project to follow.

Task list (attached)
Gantt chart (attached)