Decision Matrix

The decision matrix is based on AHP methodology and the team made the decision based on the total weight, and the top choice was picked. Analytical Hierarchy Process (AHP) method is used to come up with the best project. First, the criterion is compared with each other to get a fair ratio and weight. Then comparative analysis is performed between the projects to find the best results.

Numerical values used for comparative analysis between each criteria:

- 1 – equal
- 3 – "moderately" more important
- 5 – "strongly" more important
- 7 –" very strongly" more important
- 9 – "extremely" more important

	Requirement	Ability	Cost	Safety	Inventory	Originality	Challenging	Time	Mean	Weight
Requirement	1	1	1	3	3	3	3	3	1.98	0.22
Ability	1	1	3	3	3	3	1	1	1.73	0.19
Cost	1	1/3	1	1/3	1	1/5	1/3	1/3	0.45	0.05
Safety	1/3	1/3	3	1	3	3	3	3	1.51	0.16
Inventory	1/3	1/3	1	1/3	1	1/3	1/3	1/5	0.41	0.04
Originality	1/3	1/3	5	1/3	3	1	1/3	1/5	0.66	0.07
Challenging	1/3	1	3	1/3	3	3	1	1/3	1	0.11
Time	1/3	1	3	1/3	5	5	3	1	1.49	0.16
									9.23	1

Table 1: Analytical Hierarchy Process (AHP) to find the weights for each criterion

Project:		Brightness Changing Lantern	Equalizer Mixer Board	Portable Heating Element	Smart Cane
Criteria	Weight				
Meets the requirement	9	5	5	8	9
Technical Ability to Develop	7	7	6	6	7
Estimated Cost (1 - Most, 2 - Least)	2	2	1	1	2
Safety	6	6	6	3	6
Parts in Inventory (least to most available)	2	2	2	1	2
Originality	4	2	2	4	4
Challenging	4	2	4	4	4
Time to production (1 most, 6 least)	6	6	3	4	4
Total	40	32	29	31	38

Table 2: Showing the weighted results for different project under AHP methodology