<u>Criterion A - Planning</u>

<u>Problem Statement</u>

My Robotic teacher has trouble managing the limited materials in the Robotic club and he is also facing the challenge of maximizing the use of a limited budget.

<u>Description of Scenario</u>

My Robotic teacher Mr. Ortwein just took the responsibility of managing the Robotic Club last year. Robotic Club is growing faster and faster. As Mr. Ortwein mentioned in interview #1, "this year we have 5 teams while last year we only have 3 teams"[1]. Materials are the most important resources in Robotic, more teams mean that Robotic Club will potentially run out of materials if those materials aren't used well. As a relatively new teacher in Robotic Club, it is really challenging and time-consuming for him to efficiently manage the materials. "I always rely on my memory to manage the materials and purchase new ones."[2] Since it is already challenging for the Robotic Club to sustain the daily consumption of 5 teams, the robotic teacher needs a way to efficiently manage the materials to maximize the use of materials.

<u>The rationale for the Proposed Product</u>

I believe that an effective Java program will help me to solve Mr. Ortwin's problems. By implementing Java's abstract data types(ADT), the information of the materials can be stored in the ADT in the form of objects. The GUI functions will demonstrate this information in the display table which enables both students and teachers to easily manage the materials in the club.

Besides that, the information of the used materials is also included in the ADTs. This can provide students with detailed information about the used materials which make students possible to recycle them. This can largely reduce the club's wasted money which can reduce its pressure on the budget.

To solve the client's trouble in purchasing materials, two different accounts are created which are student account and teacher account. In the teacher account, teachers are able to make a purchase decision based on the current material information stored in the ADTs.

<u>Reasons for using Java</u>.

- I am most familiar with it
- It works on many platforms
- It allows me to take an object-oriented approach
- I can use Java libraries, which gives[3] me access to several useful functionalities
- The robotic teacher is also familiar with Java

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[1] Jacob Ortwein, interviewed by the author, Bangkok, November 6, 2019, audio recording 2:13, Appendix 1

[2] Jacob Ortwein, interviewed by the author, Bangkok, November 6, 2019, audio recording 4:06, Appendix 1

[3] Jacob Ortwein, interviewed by the author, Bangkok, November 6, 2019, audio recording 4:26, Appendix 1

- Java makes me easy to construct a database.

Success Criteria

- "Programs need to keep track of how many materials left"[4]
- Can search for certain materials based on the name of the materials.
- Allow users to manually edit the information of certain material.
- Can store the information for the materials to the local files.
- Can give a recommendation list for purchase based on the priority of the materials and the number of materials left.
- Teams and teachers are allowed to log in with different accounts.
- User-friendliness is appropriate for the degree of specialization.
- Based on the speicality of current situation, teacher is allowed to adjust the algorithems to generate more accurate recommended list of purchase.
- Input needed for each field are clearly communicated.

Word Count: 281

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[4] Jacob Ortwein, interviewed by the author, Bangkok, November 6, 2019, audio recording 5:29, Appendix 1