Criterion A
Computer science- Internal assessment

Defining the problem:

My client, Mr. Utkarsh, has recently started his own firm. The business model is to buy back used batteries, recycling the materials from these batteries, develop new batteries using the recycled materials and finally distribute them into the market through the distributor channels, who would further sell the product to market retailers. The waste materials which are extracted during the process are sold off to make additional profits.

Presently, the business manually notes down all the raw materials used to make their products. This is a very time consuming process which affects the overall efficiency of the firm. Not only this, but the firm experienced irregularities in maintaining the stock record for all the raw materials as there was data loss due to mishandling of records by the employees. This led to the production of batteries with the wrong raw materials used, causing consumer dissatisfaction and product expectations not being met.
The recent growth of the business and its sales has led to record keeping being even more problematic for my client.

I proposed a solution to this problem by offering the firm with a software which would replace the traditional methods of record keeping by hand. The software would determine the type and quantity of materials needed for the production of their product as well as display, modify, delete and add data.

Rationale for the proposed system:

After much consideration, I chose to make a software (object-oriented programming), in conjunction of a database, rather than only having a database to perform the task. This is because the project would require complex logic and a graphical user interface. This kind of interface would make it faster and more interactive for my client to solve his problem. Having to edit data in a database wouldn't be efficient, as the solution should automatically perform tasks of adding, deleting and modifying information on raw materials.

I chose to use Java as my programming language because:
- the language will allow me to develop a GUI with buttons and icons (high interactivity).
- it is free to use and no licensing is required.
- the language is platform independent, which means that Java code runs on any machine that doesn't need any special software to be installed

I chose to use MS Access for database manipulation because:
- it is quick and easy to create database systems
- this software is well-known and supported by majority of applications.
- data structures can be formed and normalisation can be done through multiple tables.

Success Criteria:

- The primary function of the software of maintaining a stock-management system should be successfully implemented.
- A software that would allow the client to search different records- the quantity of raw materials will constantly change depending upon the amount of output the firm produces; these records will help the firm to determine whether they have a surplus or a deficit of resources.

- Each of the databases will contain primary keys to act as a unique identifier.
  - Product_ID will be the primary key for both databases since this field will be unique for each product and will help in efficient recognition of data which the user inputs.

- The software should help Mr. Utkarsh to add information on raw materials- it might be possible that the firm is required to changes in the way they produce the batteries.
- Similarly, there may also be a need for deleting information from databases.
- The interface of the software should be user-friendly for increased productivity.
- A monthly report should be produced at the end of each month- these reports will help the firm to track the growth in output/ production.