

Criterion A: Planning

Defining the problem

My client, Mrs. Goh Lea Lin, is the owner of a small packaging firm. The firm supplies unique, custom paper box packaging to well-known cake and cookie brands in Malaysia. She is always occupied, being involved in every stage of the firm's operations, from the design stage to the point of delivery. As she is very busy during the day, her time at home is often spent on paperwork (e.g. making quotations for her clients).

Currently, my client manually calculates her costs, prices and stores her order data on Microsoft Excel. She then creates her documentation manually on Microsoft Word. She has two main Excel workbooks; one where she has separate spreadsheets for calculating the price and costs of each new order, and another where she again has separate spreadsheets for listing the summary details of all her orders, which she uses to evaluate the performance of her business.

Although her Excel workbooks are somewhat organised, it can be a hassle to scroll through the many spreadsheets in her workbook in search of the relevant cost information, and it can also be time-consuming to have to manually format a table, type up the relevant figures, calculate the total cost on a calculator and manually format and produce a quotation for the customer on Microsoft Word. Rushing to inform her customers of her pricing, the lack of data validation also makes this system more vulnerable to data entry errors.

I have volunteered to create a more efficient system which uses a database and a web-based program (linked to the database). With both of these, she will be able to calculate her costs with a few inputs and clicks, view complete auto-generated documentation, and filter data records to easily assess the firm's performance from a particular perspective (e.g. in terms of orders from a specific customer). My colleague, Mr. Daniel Nomoto McMahon, has agreed to be my advisor for this project.

Rationale

I've chosen to design the solution on a database, because the main issue we're dealing with here is an inefficient store of information - and databases specialise in effectively storing information in a manner that the data can be easily manipulated and navigated through. Additionally, I've chosen to design this database on MySQL Workbench because I will be able to personalise the functions of the database easier when programming with MySQL - as opposed to for example just simply using the set tools on Microsoft Access. I am also considerably familiar and comfortable with the SQL programming language.

I will also be using HTML, CSS and PHP to create the web-based application that my client can use to view and filter records of the tables in the database, and automatically generate her required documentation. I am using PHP so I can connect the web-based application to my database, to then extract the required information to transfer onto the required PDF documentation and tables on the

webpage. I am also more familiar with building a web-based, interactive and responsive UI than a complete program on Java. Webpages are also often easier to navigate through than a completely new program for a less technologically advanced user such as my client. The learning process will be much shorter and easier, so that my client can begin to implement the solution as soon as possible.

Criteria for Success

- To have all the required tables set up beforehand.
- To have a form for each table for the user to easily input the desired records into the database.
- To have preset views that merge together the desired tables that are needed to assemble the required fields and records together for the PDF document generation.
- To be able to filter records from tables by inputting the value to be searched for in the table.
- To be able to automatically generate the selected documentation by inputting the appropriate document ID.
- To have a responsive website UI that scales with the window size.
- To make sure the records and data in the generated PDF fit within the margins and borders (especially with longer record values), and do not overlap with any of the other elements of the PDF.
- Constraints to be set on database fields to minimise data entry errors and prevent database errors from occurring.
- Data validation for *both* the forms on the web-based application and forms in the MySQL database.