Criterion B: Analysis

Proposed solution:

Alex and I considered the following options:
- Create an improved spreadsheet that would be on a cloud
- Keep track of expenses on a shared notetaking app on his phone
- Creating an app that turns the spreadsheet into a user interface, this app would be allowed to add records to a database.

After further brainstorming, we decided upon creating a website with a user interface and a database to store this data.

Requirement specification

IT system requirements

Hardware:
- Apple Device running IOS 12 onwards:
    - Internet Connection: Through Cellular or Wi-Fi
    - Web Browser: Safari etc.

- (Alternative) Android Device running Oreo onwards:
    - Internet Connection: Through Cellular or Wi-Fi
    - Web Browser: Chrome etc.

- Mac or Windows PC
    - Internet Connection: Through Cellular or Wi-Fi
    - Web Browser: Chrome, Safari etc.

Software (needed to make product):
- Python
- Visual Studio Code
- Web Browser Chrome etc.

System interaction
- The database must be created in a cloud provider that accepts HTTP or HTTPS requests and posts utilizing SQL Statements:
- The proposed website would need to be on a server that can be accessed from any part of the world
- Ensure that website functions correctly in a range of browsers and devices.

Input/output requirements
- **Input during set-up (entered by me during debug testing phases):**
- Transaction details: Title, Price, Date
- For this I will also be including and testing data validation setup to ensure that wrong data is not inputted. This will ensure that before the user submits a form in a correct format, so the database doesn't experience issues.
- **User Inputs (entered by Alex during usage):**
- Alex will be utilizing a form within the app in order to input the records. There will be a text field for the Text, for the Price, and for the date there

will be a widget that will pop up on the screen in order for her to choose the correct date.

-
- **Output requirements:**
- 1 - A new asset is added to the list of transactions on the database, this information is gathered from the form that was filled in.
- 2 - The website fetches the new record input from the database and displays it on the screen as a widget. This includes 'title', 'price', 'date/time'. There will also be a delete button in order to delete an entity
- 4 - Output total amount of money spent within that week.

Processing

- A graphical interface that allows to see database records that were inserted using the form
- A graphical interface for a form that allows the user to input data required for example 'title' and 'price'
- Information entered will be displayed within two tables, "New Transactions" and "Weekly Spending"

Security

- There will be credentials that will be required in order to access the website. Only one login per user, this being Alex and his mother.
- All sensitive information, such as database URL and credentials will be stored within the server.
- Database will have an alphanumeric password to ensure no one can access it even if they manage to get the link.
- SQL injection won't be possible because of data validation.

Specific performance criteria

To test if the app meets Alex requirements:

- a) Test the website with a Wi-Fi and cellular connection to ensure that records can be added to the website using both connections and multiple devices.
- b) Both tables will update automatically when a new entity is added.
- c) Data inputted should be validated for its type and length to ensure it is correctly sent to the database.
- d) Transactions can be deleted if a mistake is made.
- e) The website should show a list of the records as a graphical interface in order of date added.
- f) Data inputted into the form should be sent to the database.
- g) My mother should be able to access the database through a web-browser using her credentials.

Justification of chosen solution

I believe that the best solution to Alex's problem is to utilize a website. A website will provide unlimited customization to allow to make the website as simple as the client would want. A website would fix the main issue that he is having with jis current solution, he would be able to add a record as soon as he purchases something with the freedom of utilizing any device he would want. This would mean that he doesn't have to carry around his notebook anymore

Updating her excel spreadsheet would not fix the all inconveniences he was experiencing, simply making it easier to input records. He would still have to find an easier method to share the information with his mother. A database would fix this as it would allow both individuals to check the records inserted. But the issue with this is that it would lack the simple user interface Alex is looking for.

A website with a connection to a database is therefore the preferred solution, as it addresses all the problems mentioned by Alex. As well as it with would be free to create and distribute to him.

What I have decided is that I will utilize an HTML and Python, Python will be to control the websites backend and all the connections to the database. The HTML will be to make the webpage functional and display the information from the SQL database. Furthermore, Cascading Style Sheets will also be used to ensure that the website is attractive and meets the requirements of a good GUI. A website is compatible with all devices, which means that for the future Alex would not be limited to one operating system or device. Python allows to utilize libraries to add features to the program and simplifying code. This will be useful during programming

I have chosen to utilize an online server called Heroku which provides a POSTGRESQL database bundled with the website. This service is also free and provides me with a domain that can be accessed by any device. Heroku also has feature that I can add information in the server so no one can access it. Finally, Heroku also provides features for troubleshooting such as Logs for when the app crashes.

Adobe Photoshop was chosen as an editor for creating assets such as the logo but also to design the initial diagrams of the app in order to get approval from Alex.

Word Count: 404