CS 411 Project: PC Builder

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1 Project Description and Summary

Sometimes we note that shopping for a desktop directly from a computer manufacturing company costs more than buying accessories and assembling them. However, assembling a computer is not an easy task. One has to determine the compatibility between different parts of a desktop. Customers sometimes buy components that are not compatible with each other, unless they search Google before shopping. Apparently, that takes a lot of time, since there is no website that provides compatibility testing among different computer accessories.

Meanwhile, one has to consider the budget and performance of the desktop. People who choose to DIY desktops definitely want to maximize the performance of their computers on a limited budget. After realizing the demand for such a PC Builder platform, we plan to design a website to help clients select computer accessories. The two most important problems we want to solve are to give performance calculations and to provide reliable compatibility checks.

2 Usefulness

Based on our searches, we did find a similar website PCBuilder. However this website does not provide performance measurement and compatibility check features. We intend to include these features and design a function to measure the performance of the desktop.

Another difference between our website and the existing one is that users can only find and select parts which are included on the existing website. We realize it is impossible to always keep the website up-to-date. In this case, if a user wants to choose a newly released product, nothing will be returned. To address this issue, we decide to provide an interface to ensure that users of our platform can add accessories that are not included in our database, and we will automatically generate performance scores of the new instances based on the parameters entered by the users. We believe it is user's responsibility to guarantee the authenticity and the accuracy of the added data.

3 Realness

Our system will store CPU, motherboard, graphics card, memory, etc, as well as their parameters. For example, we will store the brand name, release date, and architecture of a CPU. Apart from the parameter values, we will also store the product launch price and a score returned by our performance calculating function based on parameter values.

We plan to include necessary information to determine the compatibility between different types of accessories in our database. For example, we will store "LGA" and "PGA" as architectures into CPU and motherboard tables. To check the compatibility, we are not going to scan the tables that contain all the parameter values of products. We are planning to create another table for each type of accessory; the table is believed to contain only two to three features, the brand name and the common attributes needed to be compared. The SQL queries and the platform will return nothing if the client wants to choose an Intel CPU with an AMD motherboard. We can definitely include all the information in several big tables. However, that will increase the search time dramatically.

The data will be from the computer manufacturer's website, which is open-source and is guaranteed to be real. We plan to manually enter data into the database if the size of data is not

large, otherwise, we will build a legal crawler to download the open-source information.

We will store the users' information as well. Whenever a new user creates an account, we will add the user's information to our database.

4 Functionality

We will create a user login platform, users will not be able to use the client's interface to build their computers unless they log in to our website. We will match user's account name and password to accept or reject a login in attempt.

On our website, clients can search for the accessories they want. For example, if someone wants a 12^{th}-gen Intel chip, he can enter the name of the product, and the platform will run a keyword search and return the information of the chips. After determining one part, the platform will only return accessories that are compatible with the selected one if the client wants to move on to the next part. In the end, the platform will display a price summing up the price of all the accessories. Meanwhile, clients can click on the button "Calculate Performance" which will return the performance score of the customized computer.

We understand that it's impossible to include all of the accessories users' want. Therefore, we will provide an interface for users to create instances of the accessories that are not in our database. Data entered by users will be stored in different tables, which are completed separate from the tables monitored by our administrators. The users can only alter and delete the records they entered, and they are not allowed to change or remove data entered by our administrators.

We plan to design a separate interface for administrators to delete, add, and change data. For example, if some CPUs are out-of-date, or no longer supported by majorities of computers, they will be removed from the database. Administrators can simply search for the name or the brand of that accessory and make changes to database. The concept is similar for both clients and administrators, and the only difference is that they are making changes on different tables.

5 Task Distribution

Zijian Pei: Write the project proposal, draw the ER diagram and UML diagram, and develop the web interface

Zhanyu Feng: Find the source of data, load and clean data.

Zhexuan Yin: Backend Development.

Jixuan Lu: Draw demos of website, ER diagram and UML diagram, and develop the web interface.

The project involves a lot of conceptual designs, which are hard to be assigned. All of our team members will be involved in the design part of the relational model. Meanwhile, if one or more team members find it difficult to finish his/their parts by himself/themselves, the task distribution is subject to change.

6 User Interface

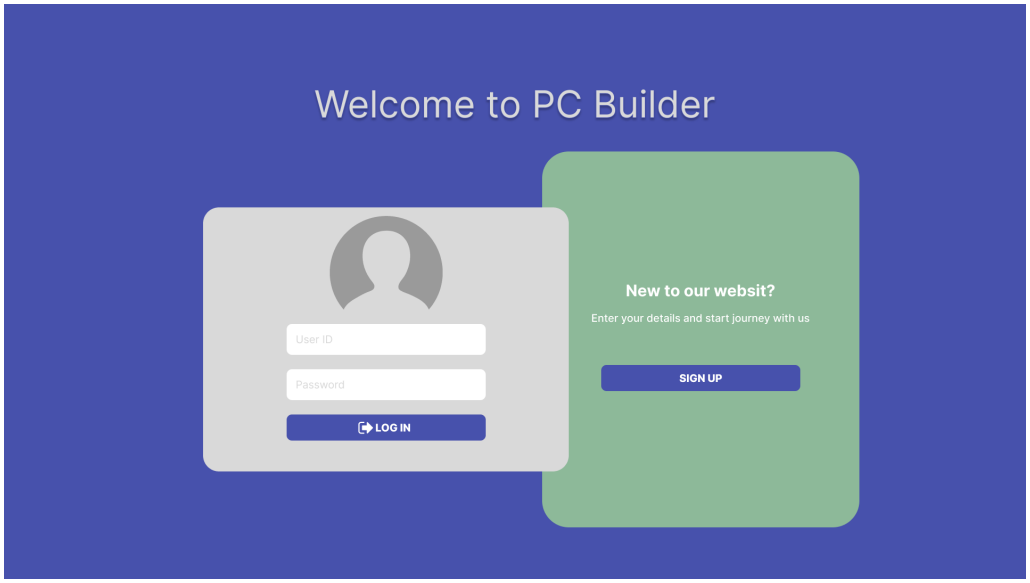

Fig. 1. User Login in Interface

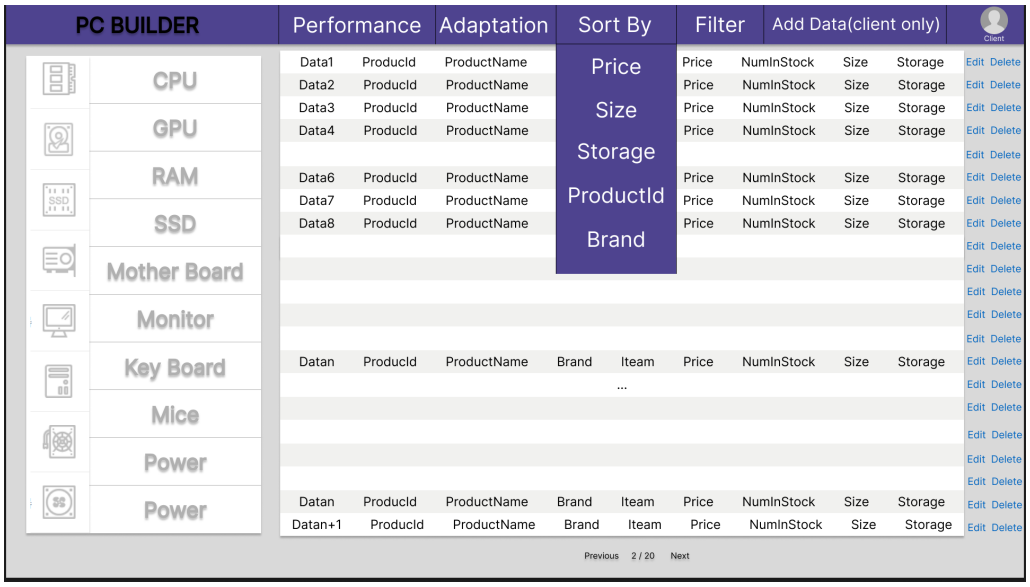

Fig. 2. User Interface of the PC Builder Platform