PC Builder Web Application

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***Abstract* —With the rapid development of technology, computers have already become an essential part of our life, especially for students as well as people who are engaged in the information technology field. Since nowadays people rely much on the computers. a suitable computer can significantly improve the efficiency of our daily jobs. Although it’s easy for us to purchase any computers or parts online, choosing a hardware configuration of a computer still can make us very indecisive. A computer without an appropriate configuration will potentially cost more to upgrade later. Therefore, the purpose of our project is to help people purchase the hardware of a computer which can highly meet their needs. Also, our application will sync our users with the most recent technology not only because of the dynamic change of user needs but also the rapid iteration of technology.**

***Keywords***—**PC hardware**, **web application, PC builder**

1. Introduction

This web application provides specialized hardware guidance for different groups of customers such as students, engineers and so on. Today people benefit from the web services a lot with its advantage on reducing cost and saving time. We are going to apply the Responsive Web design to make the user feel comfortable with the browsing experience when they visit our website.

In our application, we will use the react google firebase as a database to support the frontend application. Here are some basic processes for the new user when they visit our website at first time. First of all, when they visit our website, they will be directed to the main page with login/register window. Then they can have a quick registration. Our website will ask users to enter their name and email address. As long as they finish this simple registration. The website will automatically send a link to the email to verify the account. Once the link been clicked, it means that the account has been successfully registered. The users can login onto their account by their email address and password next time.

Moreover, after the user login onto their account, they can get some hardware products when they enter some keywords in the search bar. Before they use the search bar, we have the “Questions and Answer” part by which we will ask users to provide information like age, job title and requirements for the computer which can leave out and avoid the unwanted products in advance. For example, if the user is a student who is major of computer science, we will provide them a hardware which is good for the database programming, game designing and many other things about the computer science.

Last but not least, we have the forum for users to share their experience of purchasing the hardware and their specific specs to fulfill their requirements. They can comment on others’ purchase plan as well. Our website will also have a section to share technical articles and to educate users on more knowledge of the PC hardware.

1. Literature Survey

As we all know, there are plenty of manufactures providing customized hardware products to meet the needs of the customers. However even with so many modernized online shopping platforms, it’s still not straightforward for users to find a hardware product with satisfaction.

Based on our survey, there are some common pain points people may have for their computers. Some people complained the issue that the computer is not responsive once they use it to watch the TV series. Other people are grooming about the hardware overheat and are has concern for satefy. And another quite common problem people have is the tradeoff between limited budget and performance.

When we do the customer research, we have met with two users who can represent a significant number of users. Nancy, a Computer Science student, found that there are so many laptop’s brands with similar hardware. As of a result, she had a hard time to make a purchase decision.

Han, an Engineer who is an experienced IT professional, still struggles to find right PC hardware which can match his field of work.

With our survey and research, we can see that to find the right hardware config with limited budget is a general challenge faced with everyone. This is also our solution’s market fit. Our solution tries to provide a one-stop experience to facilitate and guide customers to find hardware to meet their technical and financial requirement in a timely fashion.

1. Project Requirements

Software Requirements:-​

The version above Mozilla Firefox 4.0, Microsoft Edge, Google Chrome are necessary.

Hardware Requirements:-

● We need the version of the processor after Intel Core 2 Duo.

● The operating System should be capable of running the browsers.

Functional Requirements:-

● We should enable users to login and register easily.

● We should set the system for the user to access the email, then they also need to set the password for the application as well.

● We should redirect logged-in users to the homepage.

● We should keep the users logged until users logout manually.

● Users should be able to update their personal information after login.

● Users can view and search products by keyword.

● Users can upload, edit and delete pictures and comments.

● Users can search related articles and and leave comments.

● The administrators can manage user information. They can help users to manage their accounts better.

Technical Requirements:

* This is a web application which should support users browse from PC end and mobile end.
* This web and mobile application are going to use React.
* Other technologies used would be HTML, Google Firebase, and CSS.

Usability Requirements:

● The web application will be functional in all the major web browsers.

● The web application will have a simple user interface

1. System Diagrams

Use-Case Diagram:-

ADMIN-



USER-



1. Database Schema

Table Name: **User**

Description: To store the details of user and admin

Schema:

|  |  |  |
| --- | --- | --- |
| **Fields** | **Data Types** | **Constraints** |
| id | INT | Primary Key |
| user\_name | STR |  |
| password | STR |  |
| first\_name | STR |  |
| last\_name | STR |  |
| email | STR |  |
| Is\_active | BOOL |  |
| created\_at | DATETIME |  |
| updated\_at | DATETIME |  |
| update\_user | INT |  |
| role | INT |  |

Table Name: **Product**

Description: To store the details of user and admin

Schema:

|  |  |  |
| --- | --- | --- |
| **Fields** | **Data Types** | **Constraints** |
| id | INT | Primary Key |
| code | STR |  |
| name | STR |  |
| brand | STR |  |
| created\_at | DATETIME |  |
| edited\_at | DATETIME |  |

Table Name: **Product\_Config**

Description: To store the details of user and admin

Schema:

|  |  |  |
| --- | --- | --- |
| **Fields** | **Data Types** | **Constraints** |
| product\_id | INT | Foreign Key |
| cpu | STR |  |
| memory | STR |  |
| motherboard | STR |  |
| harddisk | STR |  |

Table Name: **Occupation**

Description: To store the details of user and admin

Schema:

|  |  |  |
| --- | --- | --- |
| **Fields** | **Data Types** | **Constraints** |
| id | INT | Primary Key |
| name | STR |  |

Table Name: **Useage**

Description: To store the details of user and admin

Schema:

|  |  |  |
| --- | --- | --- |
| **Fields** | **Data Types** | **Constraints** |
| id | INT | Primary Key |
| name | STR |  |

Table Name: **Product\_****Occupation**

Description: To store the details of user and admin

Schema:

|  |  |  |
| --- | --- | --- |
| **Fields** | **Data Types** | **Constraints** |
| product\_id | INT | Foreign Key |
| occupation\_id | INT | Foreign Key |

Table Name: **Product\_Use**

Description: To store the details of user and admin

Schema:

|  |  |  |
| --- | --- | --- |
| **Fields** | **Data Types** | **Constraints** |
| product\_id | INT | Foreign Key |
| use\_id | INT | Foreign Key |

1. Data Modeling









1. Future Scope

For next stage, we have plan for several new features and functions.

* Merge login and register forms;
* Create dimension tables for users’ professional information and major usage of the computer;
* Link users’ pick with above tables to provide recommendation to users with similar needs;
* Create tables to support user forum including information like thread headline, content, author, creation time and edit time;
* Create user form to post thread onto the forum;
* Create pages for threads and create functions for users to leave comments;

We will hold virtual scrum meetings to scrum back

1. Product results

Here are the screenshots of the website implemented so far.

Graphical user interface, application

Description automatically generated

Figure 1. Login page

Graphical user interface

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Figure 2. Admin page

1. Conclusions

References

Figure . Login page with unformatted email