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Keith Holcomb

PC Building App

System Requirements:

Functional Requirements:

- PC Part selection.
  - Database of PC parts/components (CPU, GPU, RAM, Motherboard, etc.)
  - Filtering and sorting options (price, brand, compatibility, etc.)
  - Ability to compare multiple parts (parts are comparable if they are of the same type (CPUs, GPUs, etc).
- PC Build planning (via list)
  - List-like interface to add PC components.
  - Compatibility checks between parts added to the list.
  - Estimated build cost calculation (PC Build List/Guide total price).
- PC Build account/guides
  - Ability to create and login to an account
  - Ability to save and share custom PC Builds from user accounts.
  - Access to recommended PC Build guides (Budget, Gaming, etc.)

Nonfunctional Requirements:

- **Usability Requirements:**
  User Interface/Experience (JavaFX application)
  - Easy to navigate interface
  - Responsive design for various screen sizes (1080p, Ultrawide, windowed, fullscreen etc.)
  - Clear and helpful instructions/tooltips
- **Reliability Requirements:**
  Data accuracy/security
  - Accurate and up-to-date PC part information
  - Reliable compatibility checks
- **Performance Requirements:**
  Responsiveness and Resource Usage
  - Fast loading times and smooth navigation
  - Fast build price calculation updates
  - Low memory and power consumption
- **Security Requirements:**
  Security and protection
  - Secure user data storage and transmission
  - Encrypted user account information (password encryption)
  - Protection against unauthorized access of data (PostgreSQL built-in database security)

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- **Design Constraints:**
  PC parts list will be simplified:
  - PC parts list in the database will not be modifiable via the application.
  - PC parts list will not be updated in real-time (via methods like data skimming), but use an example list of parts, created by myself.
  - PC parts list will be a list of a handful of popular parts from different manufacturers and brands (Ex. Intel CPU and AMD CPU, NVIDIA GPU and AMD GPU, Corsair PSU and Thermalright PSU, etc).

  Account creation will be simplified:
  - Account creation will not use an email or any secondary authentication upfront.
  - Account creation will simply require a username, password and a password confirmation.
  - Account login will only require the username and password.

  PC Build Guides will be simplified:
  - Guide viewing will simply show that a guide exists, and some of its details.
  - Guides won't actually be able to have their parts viewed.
- **Implementation Requirements:**
  Programming languages
  - Latest version of Java with JavaFX to program the application and the interface.
  - IntelliJ will be used to compile the Java application.

  Development platform
  - The primary target platform is desktop.

  Database
  - Latest version of PostgreSQL will be used for the database.
  - Database will store user info, component list, as well as PC Build lists, all in separate tables.
- **Interface Requirements:**
  User interface (UI) Design
  - The visual UI should be simple and easy to navigate (Simple font, and contrasting colors (shades of blue and gold), etc.)
  - The layout of the UI should consist of

    Options in the top-left to create an account or login/log-out of an account.

    On the left side of the application there will be recommended Build lists and a 'Getting Started' section.

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In the center of the screen, there should be an option to browse the PC parts list/catalogue.

On the right side of the application there will be an option to create or load a PC Build list.

- Windows for the application will be locked to specific resolutions that fit within 720p definition. This ensures the viewing window can be seen on modern screen sizes, such as 720p, 1080p, etc.

User experience (UX) Design

- Simple user flow designs

  Ex. When entering account information, the user can enter their username and press the 'tab' key to go to the password box without having to click on it.

- **Physical Requirements:**
  The PC Building App is a software application and doesn't have any direct physical requirements.
- **Supportability Requirements:**
  Maintenance
  - PostgreSQL database will be able to backup the database.

  Documentation
  - Developer documentation in the form of code comments.
  - Simple user documentation will be within the application to help the user get started.