Name:
Automatic PC builder and upgrader

Explanation:

- This feature will ask the user to select if they are building a computer or simply upgrading.
- **Building**:
    - The user will be asked to select between basic, gaming, or graphic intensive. This criteria will determine which components to prioritize.
    - From a list, the user will also select, if any, peripherals they want included in their search.
    - The user will select which type of PSU they want whether it be non, fully, or semi modular. (Modularity refers to how many wires can be removed or are built into the PSU box. Fully modular means each wire has to be individually plugged into the PSU and non modular means the wires are built into the PSU and cannot be unplugged.)
    - From a list the user will select which hard drive type(s) to include in their search and how many they want.
    - The user will input their desired maximum price.
    - Click the build button to see results.
- **Upgrading**:
    - If the user is registered and logged in, they will be given the option to choose and import a previously saved build from their garage. They can also choose to manually enter the components of their build.
    - If it is an unregistered user they will have to manually enter each component of the build.
    - The user will select which component(s) they want to upgrade.
        - If the PSU or hard drive is selected they will have to select which type of PSU and or hard drive they are looking for.
    - The user will input their desired maximum price.
    - Click the upgrade button.
- In either case if there are no results that meet the criteria for the price the user will be asked if they want to put in a new price or start over.

Scope:
The builder and upgrader will compare certain technical aspects of each component (listed in project proposal). We will be gathering data from B&H, Walmart, BestBuy, NewEgg and Amazon. The primary benchmarks we will be using to compare the products offered are as follows:

- CPU - We will be comparing the number of cores, Instruction set (complex reduction set: heavy duty number crunching. reduced instruction set: low heat and low power devices) and CPUs base clock speed and its boosted, or overclocked clock speed.
- CPU cooler - The CPU cooler is probably the least important to have as an actual benchmark, since most of the decision is based off of aesthetic and how loud the fan is. The user will have the choice of selecting an air cooler with a heat sink or a liquid cooler for their build. Though for the purposes of our application, for air coolers, we will be comparing the fans' size, RPMs, the size of the heatsink, and its dBA output. For liquid coolers we will be comparing the fans' size, RPM, and its dBA.
- RAM - We will be comparing the RAM's type (DDR2,DDR3, etc.), bandwidth, transfer speed, latency, timings, and capacity.
- GPU - Similarly to the CPU, we will be comparing the GPU's base and boosted clock speeds. The GPU's clock speed will be the primary comparison but we will also be incorporating the GPU's memory and memory bandwidth. It will also compare the resolution and framerate that it can support.
- Motherboard selection will be based on compatibility(RAM type,CPU support, PCI ports) , chipset, maximum RAM support, and ethernet throughput. We will also be comparing the number of PCIe slots, GPU slots, and SATA SSD slots availible.
- PSU - The user will have the choice of selecting either a fully modular, semi modular or non modular PSU and will match the PSU to the recommended wattage for the end system build.
- Hard Drive - The user will be able to choose between a hard disk drive (HDD), solid state drive (SSD), or other SSD type. Then we will compare the hard drive's storage capacity, read/write speeds, longevity(how many reads/writes it is expected to handle in its lifetime), and, if necessary, the disk spin speed (which will affect access speeds as well as noise).
- Case - The user will be given the choice of whether they want the case to be organized by the inner-workings (ie: number of hard drive slots and motherboard type) or by the physical dimensions of the case.

Functional Requirements:

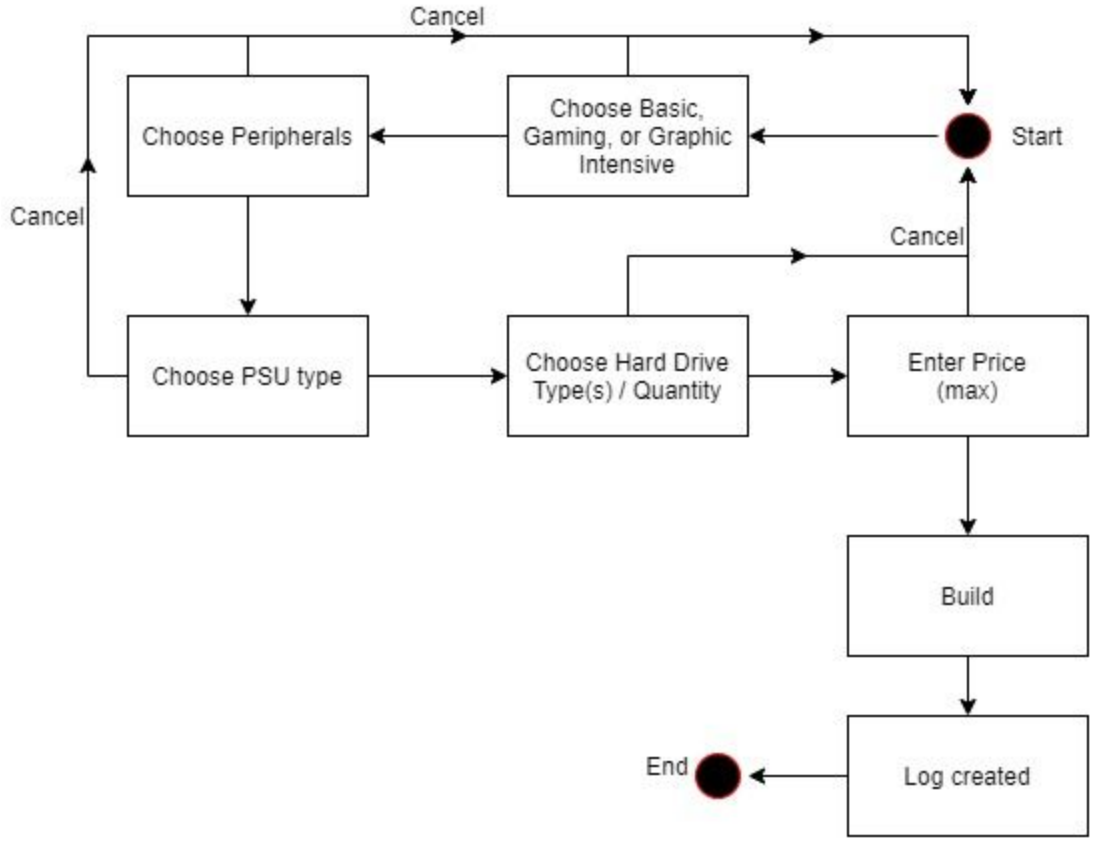
- Select the components for a full computer build with any additional peripherals.
- Input the maximum price you want to pay for your build or upgrade.

- Choose basic, gaming, or graphic intensive to set the priority for your build.
- Select the modularity of your PSU.
- Select which hard drive type(s) you want and their quantity (minimum of one).
- Upgrade one or more components of a pre-existing build.

Non Functional Requirements:

- A log will be made when a registered user either builds or upgrades a computer.

PC Builder Diagram



PC Upgrader Diagram