Software Requirements Specification

for

HUST-PC | Computers and IT Equipment

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

I. INTRODUCTION

1. Purpose

- Version: 1.0
- The purpose of this document is to define the software requirements for the project. This document describes the scope of products to which this SRS applies, especially if this SRS only describes part of the system or a subset of it.
- The HUST-PC project is a software system for the management and sales of computer stores. This system provides functions for product search, store information management, product management, employee management, order processing, invoicing, and other process-related functions. business in the computer store.
- This SRS focuses on the software requirements description for the HUST-PC project and includes important components such as user interface, integration with hardware, interfaces with other software, and communication requirements.

2. Document Conventions

Priority Level	Each request is assigned a priority to determine its importance. Priorities can be "High", "Medium" or "Low". Priority is used to prioritize between requirements and assign their importance.
Request Numbering	Each request is uniquely numbered for identification and tracking throughout the document. The claim number can be set in the format "X.Y", where X is the sequence number of the function or major factor, and Y is the sequence number of the specific requirement.
Text Format	We use a vertical text format (Arial font, size 11) for the main body of the document. Important points or special attention can be highlighted using bold or italic formatting.
Symbols and Acronyms	We use symbols and acronyms in the document to save space and reduce repetition. Before using symbols or acronyms, we make sure they are clearly explained and understood in context.

3. Intended Audience and Reading Suggestions

This document is intended for different audiences in the HUST-PC project, including developers, project managers, marketers, users, testers, and document writers. Below is a description of the audience and suggestions for how to read this document.

3.1. Developers: The first audience are software developers. They will be interested in detailed technical requirements and system interfaces. For these readers, it is suggested to read the document in the following order:

- First, read the Overview to understand the purpose and scope of the project.
- Next, read the functional requirements in the System Functions section to master the functions to be implemented.
- Then read the User Interface section to understand the user interface and user interaction requirements.
- Finally, read Communication and Protocols section to understand the requirements related to communication and protocols associated with other software components.

3.2. Project managers and marketing staff: The second audience includes project managers and marketing staff, who are interested in the project's goals and scope, as well as the features and competitive advantages of the project. product. Suggestions to read the documentation for this object are as follows:

- Read the Overview to understand the goal and scope of the HUST-PC project.
- Read the Objectives and Non-Functional Requirements section to master the non-functional requirements and limitations related to the project.
- If necessary, read other sections such as User Interface and Communication and protocols to better understand the product interface and requirements related to communication.

3.3. End users and testers: The third audience is end users and testers. They care about the functionality and features of the product to ensure that it meets the needs and achieves high quality. Suggestions to read the documentation for this object are as follows:

- Read the Overview to understand the purpose and scope of the project.
- Read the System Functions section to master the functions that need to be implemented in the product.
- If necessary, read other sections such as User Interface and Communication and protocols to better understand the product interface and requirements related to communication.

3.4. Document editor: The final object is the document editor. They are interested in how the document is organized and structured for future reference or manual writing. Suggestions to read the documentation for this object are as follows:

- Read the Overview to understand the purpose and scope of the HUST-PC project.
- Read the Description of Relevancy to understand the links and dependencies between requirements.
- Read the Document Structure section to understand how the document is organized and structured.

4. Product Scope

The software identified in this document is a website dedicated to the sale of assembled computers and information technology equipment, named HUST-PC. The main purpose of the software is to provide an online sales platform so that customers can customize their computer configuration and purchase information technology products according to their needs.

HUST-PC Software is geared towards the following benefits, objectives, and purposes:

- Benefit to Customers:
    - Custom configuration: Customers have the ability to customize the computer configuration according to personal requirements and preferences.
    - Diversified choice: The software provides a wide range of computer products and information technology equipment for customers to have a diverse choice.
    - Details: Customers can view detailed information about each product, including specifications, photos, and customer reviews.
- Benefit to Business:
    - Increase sales: HUST-PC software allows customers to easily buy goods online, creating favorable conditions to increase sales.
    - Branding: By providing quality service and a good shopping experience, HUST-PC aims to build a prestigious brand in the field of fast-assembled computers and information technology equipment.
    - Expand market: Software helps businesses expand their market to reach customers online, not limited by geography.

HUST-PC software is closely linked to the company's strategic goal, to build a leading brand in the field of selling quick-assemble computers and information technology equipment. It

assists in increasing sales, expanding markets, and enhancing customer satisfaction by providing quality service and the best shopping experience.

5. References

IEEE Guide for Developing System Requirements Specifications

https://ieeexplore.ieee.org/document/502838

FPT UNIVERSITY. Capstone Project

https://docplayer.net/15728449-Fpt-university-capstone-project.html

II. OVERALL DESCRIPTION

1. Product Perspective

The HUST-PC software identified in this SRS document is a standalone new product. This is a website specializing in trading in assembled computers and information technology equipment of the HUST-PC brand. The software was developed to provide customers with an online platform to customize computer configurations and purchase information technology products.

HUST-PC software is not the next member of a product family or a replacement for an existing system. It is a self-contained product that is functional enough to provide customers with a personalized shopping experience and product customization.

However, HUST-PC software can be a component of a larger system, such as an order management system or an inventory management system. In this case, the larger system requirements will concern the functionality of the HUST-PC software and define the interfaces between the two software.

2. Product Functions

Below is the list of the main functions the product must perform or allow the user to perform. The details will be provided in Part 3, so just create a premium summary here:

- Product search: Users can search and browse for computer products and information technology equipment by criteria such as name, brand, price, and features.
- Custom configuration: Users can customize the computer configuration by choosing flexible conditions and suitable features to answer individual questions.
- Ordering: Users can order products according to a custom configuration and choose a store to receive the goods.

- Checkout:
- Customer notification: The system will send a notification to the customer when the order has been processed and the product is ready.
- Product management: Store managers can add, modify or delete product information in the system.
- Order management: Store managers can view and manage orders, including order confirmations, status updates, and notifying customers of progress.
- Store management: Store managers can add or remove products from the store.
- Customer information management: Store managers can view and manage customer information, including order history and contact information.
- Statistics and reports: The system provides statistical functions and reports on revenue, number of orders, and other related data for store management.

3. User Classes and Characteristics

User Class	**Description**
Customer	A customer is the individual or organization who utilizes the website to purchase personal computers (PCs) and related products. Customers are the main target audience of the website and are crucial to its success. They engage with the website to explore, evaluate, and ultimately make a purchase of PCs or associated items.
Store Employee	A store employee is responsible for the smooth operation of the website and handling various tasks related to the online PC selling process
Store Manager	A store manager is the person who holds a managerial position within the HUSTPC's store. They have elevated privileges and responsibilities compared to regular staff members, focusing on overseeing and optimizing the operations of the store

4. Operating Environment

The ***HUST-PC | Computers and IT Equipment*** website will operate in the following environment:

- Hardware platform: Personal computer or mobile device with an internet connection.

- Operating System: Compatible with popular browsers such as Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari.

- Supported software: The website requires the installation and use of programming languages such as HTML, CSS, and JavaScript to provide interactive user interfaces and data processing.

5. Design and Implementation Constraints

The following constraints will influence the design and implementation decisions of the ***HUST-PC | Computers and IT Equipment*** project:

- Technology constraints: Websites must use modern web technologies to ensure compatibility and good performance across popular browsers.

- Security constraints: User data, including configuration information and payment information, must be securely protected.

- Interface constraints: User interfaces should be designed to be easy to use, user-friendly, and provide a good experience.

7. Assumptions and Dependencies

The following assumptions and dependencies affect the requirements of the HustPC project:

- Assumption: The user has a basic knowledge of computer components and the computer-building process.

- Dependencies: The project depends on the ability to provide detailed information about computer components from component suppliers.

III. EXTERNAL INTERFACE REQUIREMENTS

1. User Interfaces

The user interface of the HustPC project will have the following logical characteristics:

- The website will have an intuitive, easy-to-use, and friendly user interface.

- Screen interface templates will be provided so that users can easily select and customize computer components.

- The interface will follow HUSTPC's uniform interface design principles, including user interface standards and guidelines.

- Display standard buttons and functions such as help, search, and confirmation.

1.1. Login

- Login interface: Includes username and password input fields, Login button, and Forgot Password link.
- Successful login interface: Show success message and redirect to the home page.
- Login Failed Interface: Displays an error message and allows the user to retry or recover the password.

1.2. Search for products

- The user interface provides a search box and filter criteria for users to enter keywords, product categories, and pricing.
- A "Search" button is required to perform a search and display results.
- Search Failed Interface: Displays no item found

1.3. View product information

- Product information view: Displays detailed product information, including description, price, configuration, reviews, and images.
- Includes the “Add to Cart” button.

1.4. Cart

- The user interface displays a list of products in the cart along with information such as name, price, and quantity.
- Functions to edit the quantity, delete products and checkout are required.

1.5. Place Order

- The user interface requires the user to enter order information such as full name, address, and contact information and select a store to pick up.
- A "Confirm Order" button is required to complete the ordering process.

1.6. Successful Order Notification

- The interface notifies the customer that the order has been successfully placed, including information such as full name, address, contact information, and the store to pick up the goods.

- Detailed information about the order including product name, quantity, total price
- Includes a button to return to the home page, continue to purchase

1.7. Store Information Management

- The user interface provides fields for entering and editing store information such as address, contact information, and business hours.

1.8. Product Management

- The user interface allows store managers to add, edit, delete, and display product information such as name, description, price, and configuration.

1.9. Employee Management

- The user interface allows store managers to add, edit, delete, and display employee information such as name, title, and contact information.

1.10. Customer Management

- The user interface allows store managers to add, edit, delete, and display customer information such as name, address, and contact information.

1.11. Report

- Reporting interface: Provides options and parameters to generate reports on demand and display report results.

2. Hardware Interfaces

- Display Screen: The software system needs to interact with the display screen to display the user interface and product information. This interface can use a graphical interface such as HDMI, DisplayPort, or VGA.
- Keyboard and mouse: The user uses the keyboard and mouse to interact with the user interface. The software system needs to support communication with keyboards and mice through protocols such as USB or Bluetooth.
- Printer: For printing or receipt printing, the software system needs to interact with the printer. This interface can use common printing protocols such as USB, Ethernet or Wi-Fi.
- Network connection: The software system needs to support a network connection to transfer data, update product information, and communicate with offline services. This interface can use network protocols such as Ethernet, Wi-Fi, or 4G.

- Storage devices: For data storage, the software system needs to interact with storage devices such as hard drives, USB sticks, or memory cards. This interface can use a protocol such as USB or SATA.

- Other components: Depending on the specific requirements of the HUST-PC project, there may be other interfaces such as sensors, cameras, or remote control devices. These interfaces will be specifically defined and described within the project scope.

3. Software Interfaces

3.1. Database

- Database Management System: SQL Server Management Studio 2019 (SSMS 2019)

- Shared data: Products, Customers, Orders, and Store Information

- Purpose: Store and retrieve product, customer, order, and store information

3.2. Operating System

- Operating System: Windows 10, Windows 11

- Requirements for OS: Windows 10 version or higher, suitable hardware device controller

3.3. Tools and Libraries

- Framework Django 3.2: Used to build web applications and manage functions such as login, product search, store, and order information management.

- Requests Library: Used to send HTTP requests and interact with peripheral services.

3.4. Message Communication

- Send Email: Interface with email service to send order notifications, confirm orders and other information to customers.

- RESTful API: Communicate with external services through RESTful API to get product information and update orders.

3.5. Application Programming Interfaces (API)

- Login API: Provides an application programming interface for employee and store management and authentication and login.

- Product Management API: Allows you to manage product information, including adding, editing, and deleting products.

- Customer Management API: Provides an application programming interface to manage customer information, including adding, editing, and deleting customers.

3.6. Data Sharing

- Product Information: Shared between the user interface and the database, allowing product information to be displayed to the user.
- Order information: Shared between the user interface and the database, allowing storage and retrieval of order information.

4. Communications Interfaces

4.1. Email

- The email communication interface is used to send notifications, confirm orders and exchange information with customers.
- Security requirements: Send email via SSL/TLS protocol to ensure information security.

4.2. Web browser:

- The user interface of the HUST-PC system will be accessed through a popular web browser such as Google Chrome, Mozilla Firefox, or Microsoft Edge.
- Compatibility requirements: The system must ensure the correct display of data and user interface on these browsers.

4.3. HTTP/HTTPS protocol

- Communication interface via HTTP/HTTPS protocol to exchange data between the HUST-PC system and external services.
- Security requirements: Use HTTPS protocol to ensure data safety during transmission.

4.4. FTP/SFTP protocol

- Communication interface via FTP/SFTP protocol to exchange data with other systems or servers.
- Security requirements: Apply security measures such as data encryption to ensure safety during transmission.

4.5. Data transfer rate

- Requires a stable data transfer rate to ensure the performance of the HUST-PC system.

- Data transfer speed depends on the deployment environment and specific requirements of the project.

IV. SYSTEM FEATURES

1. Build your PC

1.1. Description and Priority

This feature allows customers to customize the specifications that meet their requirements. With this feature, The customers will be able to select and customize various hardware components and software options to build their desired PC Throughout the customization process, our website provides detailed information, compatibility checks, and recommendations to ensure customers make informed decisions. This feature is of high priority.

1.2. Stimulus/Response Sequences

1. *Stimulus*: Customer visits the PC selling website and navigates to the customization section.
   Response: The website displays a range of customizable options and components for the PC.

2. *Stimulus*: Customer selects the desired PC model or starts with a base configuration.
   Response: The website loads the selected PC model or the default base configuration.

3. *Stimulus*: Customer selects the CPU (Central Processing Unit) from available options.
   Response: The website updates the CPU selection and displays relevant specifications and prices.

4. *Stimulus*: Customer selects the amount of RAM (Random Access Memory) from available options.
   Response: The website updates the RAM selection and displays relevant specifications and prices.

5. *Stimulus*: Customer selects the storage type (e.g., HDD, SSD) and capacity.
   Response: The website updates the storage selection and displays relevant specifications and prices.

6. *Stimulus*: Customer selects the graphics card from available options.
   Response: The website updates the graphics card selection and displays relevant specifications and prices.

7. *Stimulus*: Customer selects additional components such as optical drives, sound cards, or network cards.
   Response: The website updates the selection and displays relevant specifications and prices for each component.

8. *Stimulus*: Customer adds any desired peripherals like monitors, keyboards, or mice.
   Response: The website updates the selection and displays relevant options, specifications, and prices.
   Stimulus: Customer reviews the selected components and makes final adjustments if necessary.
   Response: The website provides a summary of the chosen configuration and its total price.

9. *Stimulus*: Customer proceeds to add the customized PC to the cart and completes the purchase.
   Response: The website adds the customized PC to the customer's cart and directs them to the checkout process.

1.3. Functional Requirements:

1. The website should provide a user-friendly interface to guide customers through the customization process.
2. The website should offer a wide range of options for CPUs, RAM, storage, graphics cards, and other components.
3. The website should display detailed specifications and prices for each available option.
4. The website should update the configuration and price dynamically as the customer makes selections.
5. The website should allow customers to review their selections before finalizing the purchase.
6. The website should provide a seamless transition from customization to the checkout process.
7. The website should store the customer's selected configuration for future reference or reconfiguration.
8. The website should generate an order summary that includes the customized PC specifications and total price.

2. Product Browsing

2.1. Description and Priority

The "Product Browsing" feature of an online PC selling website allows users to explore and search for various computer products available for purchase. It provides an intuitive and user-friendly interface that enables users to browse through different categories, brands, and specifications to find the desired PC products. This is a critical feature with high priority

2.2. Stimulus/Response Sequences

1. *Stimulus:* Customer visits the website's homepage and clicks on the "PCs" or "Computers" category.
   Response: The website displays a list of PC products with thumbnail images, brief descriptions, and prices.

2. *Stimulus:* Customer can further refine the search by applying filters such as price range, brand, processor type, RAM capacity, etc.
   Response: The website updates the product list dynamically based on the applied filters.

3. *Stimulus:* Customer clicks on a product to view more details.
   Response: The website displays comprehensive information about the selected product, including specifications, customer reviews, ratings, and related accessories.

4. *Stimulus:* Customer can add the product to their cart or wish list directly from the product page by clicking on “Add to cart”.
   Response: The website display a notification that the product has been successfully added to the cart.

5. *Stimulus:* Customer can perform a keyword search using a search bar to find specific PC products.
   Response: The website displays search results based on the entered keywords and relevancy.

2.3. Functional Requirements

1. User-friendly and intuitive interface for easy navigation and browsing.

2. Categories and subcategories to organize PC products.

3. Filter options to narrow down the product selection based on various criteria.

4. Dynamic updating of the product list based on applied filters.

5. Detailed product pages with comprehensive information, including specifications, reviews, and ratings.

6. Add to cart and wishlist functionality for convenient saving and purchasing options.

7. Seamless integration with the website's search functionality for quick and accurate product retrieval.

8. Responsive design to ensure optimal browsing experience across different devices.

9. Integration with a secure payment gateway to facilitate smooth transactions when purchasing selected products.

10. Integration with related products and accessories to offer recommendations and cross-selling opportunities

3. Shopping Cart and Checkout

3.1. Description and Priority

This feature allows customers to add items or remove items from their virtual shopping cart. Customers can also review their selected items, and complete the purchase process by placing order and checking out, which will require customers to specify payment info . This is a high priority feature.

3.2. Stimulus/ Response Sequences

1. *Stimulus*: Customer selects a PC or PC-related product to purchase.
   Response: The website displays a "Add to Cart" button next to the product.

2. *Stimulus*: Customer clicks on the "Add to Cart" button.
   Response: The selected item is added to the user's shopping cart.

3. *Stimulus*: Customer wants to review the items in his/her shopping cart.
   Response: The website displays the shopping cart page, showing a list of all the items, their prices, quantities, and a subtotal.

4. *Stimulus*: Customer wants to modify the quantity or remove an item from the cart.
   Response: The website provides options to increase/decrease quantity or remove the item, updating the subtotal accordingly.

5. *Stimulus*: Customer decides to proceed to checkout.
   Response: The website presents a "Checkout" button or link.

6. Stimulus: Customer clicks on the "Checkout" button.
   Response: The website prompts the user to log in or create an account if they haven't already.

7. *Stimulus*: Customer logs in or creates a new account.
   Response: The website verifies the user's credentials and proceeds to the checkout process.

8. *Stimulus*: Customer provides billing and shipping information.
   Response: The website collects and validates the information, ensuring it meets the required format and criteria.

9. *Stimulus*: Customer selects a payment method (e.g., credit card, PayPal).
   Response: The website presents the necessary fields to enter payment details based on the chosen method.

10. *Stimulus*: Customer provides payment details.
    Response: The website securely processes the payment information and verifies its validity.

11. *Stimulus*: Payment is successful.
    Response: The website displays an order confirmation page with relevant details and provides a confirmation email to the user.

3.3. Functional Requirements

1. Add to Cart: The system should allow users to add products to their shopping cart.

2. View Cart: Users should be able to view the contents of their shopping cart, including item details, quantities, and prices.

3. Modify Cart: Users should have the option to modify the quantity or remove items from their shopping cart.

4. Checkout Process: The system should guide users through the checkout process, including steps like login/account creation, providing billing and shipping information, selecting a payment method, and submitting payment details.

5. Secure Payment Processing: The system should securely handle payment information and process payments through various payment gateways.

6. Order Confirmation: After a successful purchase, the system should display an order confirmation page and send a confirmation email to the user.

7. Error Handling: The system should handle errors gracefully, providing appropriate error messages and allowing users to rectify any issues encountered during the shopping cart and checkout process.

V. OTHER NONFUNCTIONAL REQUIREMENTS

1. Performance Requirements

- The system shall accommodate 400 users during the peak usage time window, with an estimated average session duration of 8 minutes.

- All Web pages generated by the system shall be fully downloadable in no more than 10 seconds over a 40 KBps modem connection.

- Response to queries shall take no longer than 7 seconds to load onto the screen after the user submits the query.

- The system shall display confirmation messages to users within 4 seconds after the user submits information to the system.

2. Safety Requirements

No safety requirements have been identified

3. Security Requirements

- All network transactions that involve financial information or personally identifiable information shall be encrypted per BR-33.
- The system shall permit only store managers who are on the list of authorized Administrators to create or edit the store's information and products.
- Staff members shall log in according to the restricted computer system access policy per BR-35

4. Software Quality Attributes

- Availability: The system shall be available to customers on the corporate Intranet and to dial-in customers 99.9% of the time between 5:00 A.M and 10.00 P.M local time.
- Robustness: If the connection between the user and the system is broken prior to an order being either confirmed or canceled, the system shall enable the customer to recover an incomplete order
- Usability: The website shall be user-friendly, with an intuitive interface and clear navigation, allowing users to easily find products, make purchases, and manage their accounts.

5. Business Rules

- Pricing and Discounts: The website should support business rules related to pricing, including displaying accurate prices, applying discounts, and handling promotional offers.
- Inventory Management: The website should enforce business rules for managing inventory, ensuring accurate stock levels and preventing overselling.
- Order Processing: The website should follow business rules for order fulfillment, including handling order cancellations, returns, and tracking shipments.

VI. OTHER REQUIREMENTS

There are no other requirements that need to be specified.

Appendix A: State-Transition Diagram

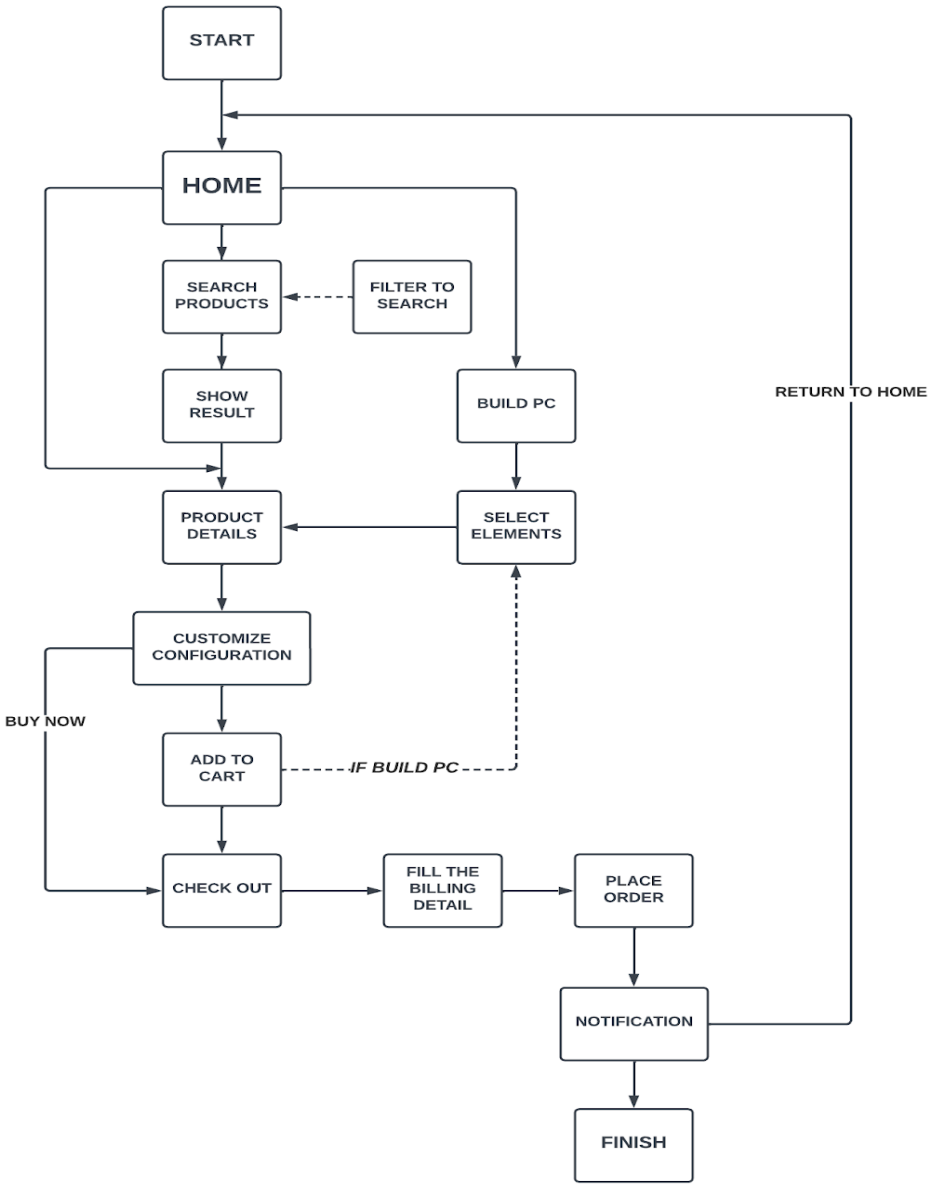

Figure D-1: *State-transition diagram that shows the possible order status and allowed changes in the status*