Proposal Report

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1. INTRODUCTION

This group coursework of module “CS5054NI - Advanced Programming and Technologies” is about developing an e-commerce website that specializes in selling any of the electronics and gadgets. Here, for our project we had chosen the website to build for selling various unique smartwatches named as **“O’clock”.** Moreover, our website is focused to directly delivered the product to all the customers interested in smartwatches with offering various subscription plans including various warranties, premium features along with proper data plans accordingly customers preference. Likewise, it is assumed to partner with the various established electronics retailers, smartphones stores or various fitness centres for upgrowing the business network of the store.

In addition, It is planned to distribute its stocked smartwatches to all the audience of all age-group people who are Tech Enthusiasts(individual interested on the latest technology and features), Fitness Tracker(Individuals interested in monitoring health and wellness activity), Busy Professionals(Individual who have busy schedule), and so on. Likewise, smartwatches sell on this website are of different well-renowned brands along with the watches compromising of various innovative features like advanced health monitoring, provide the feature of extended battery life by minimizing charging interruptions frequently, seamless integration with specific apps or ecosystems and smartphones along with more user-friendly interface making easier for user to use. The price range of the products are also reasonable

focusing all the consumers accordingly their budgets. So that products can flourished in the market properly with fulfilling customers' requirements.

Moreover, The website followed the Model-View-Controller (MVC) Architecture pattern for efficient project development, management and maintenance along with outlining various functionalities in the system like encompassing user login with role-based access control, a comprehensive admin panel, spontaneous search features, with user-friendly shopping cart system for the customers with addressing various validation and error handling mechanism for developing the efficient website for all the users.

2. AIM AND OBJECTIVES

The aim and objectives of this coursework are as follows:

2.1 Aim

The main aim of this coursework is to develop user-friendly platform using MVC design pattern along with Java EE technologies for providing information about smartwatches along with providing proper reliable platform for users to shop them accordingly their preferences.

2.2 Objectives

The objectives for this coursework are as follows:

- To develop a proper user-friendly website by implementing the MVC (Model-View-Controller) design pattern.
- To enhance Java programming skills especially with servlets which are used for handling HTTP requests and responses.
- To gain practical experience on integrating database with Java EE with using MySQL.
- To understand and implement the session managements concepts along with cookies.
- To understand and implement user authentication and authorization functionalities into practice.
- To be able to utilize Java Server Pages (JSP) to develop dynamic webpages for displaying data accordingly to the users.
- To be able to implement proper CSS for user-pleasing user Interface.
- To acquire the knowledge in error handling with proper data validation to maintain data integrity and security.
- To learn more about web application deployment using Tomcat server and XAMPP software.
- To develop the problem-solving skills by tackling real-world scenarios.
- To enhance the teamwork and collaboration abilities for better project management techniques.

3. Tools Used

The following are the tools used on this coursework.

3.1. Eclipse IDE:

Eclipse is an open source Integrated Development Environment written in Java, and comes with plug-in construction toolkits and examples, including a fully operational Java application development tools package. It implements a mechanism for discovering, loading, and integrating plug-ins needed for manipulating and sharing project resources. (Eclipse Foundation, 2023) Eclipse IDE is chosen as a development platform for its extensibility which allows customization through plugins. Eclipse offers a rich set of features for coding, debugging, and project management while being cross-platform, ensuring flexibility, and integrating seamlessly with other tools, enhancing productivity and collaboration.

Figure 1: Eclipse IDE

3.2. Java Programming:

Java is one of the most popular and widely used programming languages. It was created in 1995 and is owned by Oracle. Java is an open-source and free language that is used for a variety of purposes such as creating mobile applications, desktop applications, web applications, web servers and game applications, games, database connection, etc. Java is supported by multiple platforms such as Windows, Linux, Mac, Raspberry Pi, etc. It is easy to learn and simple to use and has huge community support. Java is also an object-oriented programming language which means that the programs have a clear structure and the codes can be reused which helps to lower development cost. (Refsnes Data, 2024)

Figure 2: Java

3.3. Java EE:

Java Platform, Enterprise Edition (Java EE) is the standard in community-driven enterprise software. Java EE is developed using the Java Community Process, with contributions from industry experts, commercial and open source organizations, Java User Groups, and countless individuals. (Oracle, 2024) It offers a comprehensive set of APIs and runtime environments for building scalable, reliable, and secure distributed applications. Java EE includes various technologies like Servlets, JSP, EJB, JPA, and JMS, along with features for transaction management, security, and resource management. Applications developed using Java EE are portable across different application servers and suitable for enterprise-grade requirements.

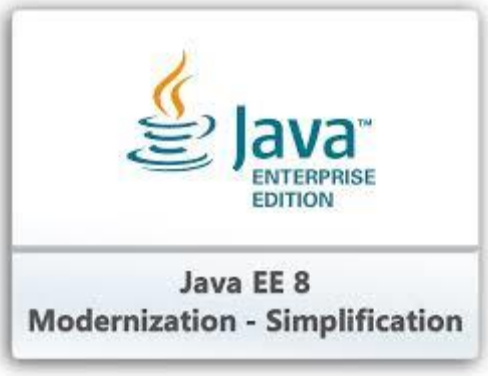

Figure 3: Java Enterprise Edition

3.4. XAMMP:

XAMPP is an abbreviation where X stands for Cross-Platform, A stands for Apache, M stands for MYSQL, and the Ps stand for PHP and Perl, respectively. It was developed by Apache Friends and is one of the most widely used cross-platform web servers. XAMMP is easy to use, contains many customization options, and has cross-platform compatibility, which makes it accessible to developers of varying skill levels across different operating systems. (www.javatpoint.com, 2024)

Figure 4: XAMMP

3.5. MySQL:

MySQL is an open-source relational database management system. It is the world's most popular open source database and ranks at number two behind Oracle Database. It powers many popular applications such as Uber, Twitter, Airbnb, etc. MySQL is fast, reliable and scalable. It is easy to use and is faster and less expensive than other database services. It also provides advanced security features and gives user maximum flexibility. (Oracle, 2024)

Figure 5: MySQL

3.6. Tomcat Server:

The Apache Tomcat software is an open source implementation of the Jakarta Servlet, Jakarta Server Pages, Jakarta Expression Language, Jakarta WebSocket, Jakarta Annotations and Jakarta Authentication specifications. These specifications are part of the Jakarta EE platform. (The Apache Software Foundation, 2024) Tomcat is lightweight, scalable, and compatible with Java EE technologies, making it suitable for various web development needs. It offers features for security, performance, and embedding into other applications.

Figure 6: Apache Tomcat