DESIGN AND DEVELOPMENT OF A FULL-STACK E-COMMERCE AND PRODUCT RENTAL MANAGEMENT SYSTEM : AWAM GOODS

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APPROVAL

The project titled "**Design And Development Of A Full-Stack E-Commerce And Product Rental Management System**" submitted by Md. Mahmudul Hasan Bhuiyan (CSE2203027015), Fatema – Tuz - Zohora Mishi (CSE2203027039), Farzana Akter (CSE2201025155), Naimur Rahman Ripon (CSE2203027035) to the Department of Computer Science and Engineering, Sonargaon University (SU), has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering and approved as to its style and contents.

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DECLARATION

We, hereby, declare that the work presented in this report is the outcome of the investigation performed by us under the supervision of **Mohammad Naderuzzaman, Associate Professor,** Department of Computer Science and Engineering, Sonargaon University, Dhaka, Bangladesh. We reaffirm that no part of this project has been or is being submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

The project, "**Awam Goods**" is a web-based full-stack e-commerce and product rental system. It is designed and developed to provide the customers a single platform where they can browse products, purchase and rent available items for a specific period of time, manage their member account, check their orders and rental records, and complete the payments online. The system also has an admin panel where admins can manage products, categories, subcategories, brands, orders, rentals, and some basic information.

The frontend "**Awam Goods**" is developed with React and TypeScript, while Node.js and Express.js were used for backend. As for the main database MongoDB is used and Mongoose for the database operations. Here JWT is used for authentication and bcrypt for password hashing. Authenticated sessions are maintained using the HTTP-only cookies. Cloudinary is used to store product images, and SSLCommerz is integrated for online payments. Vite is used for the frontend development environment, and Tailwind CSS is used to design the user interface and make it responsive.

Awam Goods is on a different level from regular e-commerce stores available now a days as it supports buying as wll as renting products which is a prime feature for this project. For purchased products, the system needs to keep track of stock, quantities, orders, and payments. The rental period, rental cost, security deposit and rental record of the customers can be stored within the database to recollect the rented products. To develop these features, we had to work with several thing like database design, API development, authentication, payment processing, frontend development and testing.

This report describes the development of Awam Goods, including the project background, motivation, existing system comparison, requirements, system architecture, development process, analysis, testing, and user interface. It also discusses the current limitations of the system and possible improvements that can be made in the future. The project was developed as an academic full-stack application and can be further improved with additional features and deployment work.

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LIST OF ABBREVIATION

API	Application Programming Interface
CRUD	Create, Read, Update, Delete
CSE	Computer Science and Engineering
CSS	Cascading Style Sheets
DB	Database
HTTP	Hypertext Transfer Protocol
JWT	JSON Web Token
MERN	MongoDB, Express.js, React, Node.js
REST	Representational State Transfer
SSL	Secure Sockets Layer
UI	User Interface
URL	Uniform Resource Locator
UX	User Experience

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