

Project Proposal: TechXpress E-commerce Platform

1. Introduction

1.1 Project Overview

TechXpress is a scalable and maintainable e-commerce platform designed to facilitate the online sale of electronic products. The system will enable customers to browse, search, and purchase products while allowing administrators to manage inventory, orders, and user roles efficiently.

1.2 Objectives

- Develop a feature-rich e-commerce website using **ASP.NET Core MVC**.
- Implement **NTier Architecture, Repository Pattern, and Unit of Work** to ensure separation of concerns and maintainability.
- Integrate **Stripe** for secure online payments.
- Deploy the application on **Microsoft Azure** for scalability and reliability.

2. Scope

2.1 Functional Scope

The system will provide the following core functionalities:

For Customers:

- Browse products by category and apply filters.
- Add products to the shopping cart and modify quantities.
- Securely complete purchases using Stripe.
- View order history and track order status.
- Manage user profiles and account details.

For Administrators:

- Manage products, categories, and inventory.
- Oversee and update order statuses.
- Access sales reports and analytics.
- Control user roles and permissions.

2.2 Non-Functional Scope

- **Performance:** Ensure search results load within **2 seconds** under normal load conditions.

- **Security:** Implement **AES-256 encryption**, HTTPS, and prevent SQL injection & XSS attacks.
- **Scalability:** The system should support future growth with horizontal scaling.
- **Usability:** A responsive and user-friendly interface designed with Bootstrap and JQuery.

3. Technologies and Tools

- **Backend:** ASP.NET Core MVC, Entity Framework Core.
- **Frontend:** HTML, CSS, JavaScript, JQuery, Bootstrap.
- **Database:** Microsoft SQL Server (hosted on Azure SQL Database).
- **Authentication:** ASP.NET Identity with role-based access control (RBAC).
- **Payment Gateway:** Stripe API.
- **Hosting:** Microsoft Azure / Hostinger.

4. Project Plan

The project will follow an **Agile development** approach with weekly sprints. Regular progress reviews will ensure timely delivery of features.

Week	Tasks
Week 1	Project setup, database design, authentication system
Week 2	Shopping cart, role-based access control, admin panel
Week 3	Order processing, Stripe integration, user profile management
Week 4	UI enhancements, testing, and deployment

5. Task Assignment & Roles

- **Project Manager:** Oversees project timeline, task assignments, and risk mitigation.
- **Frontend Developer:** Designs and implements the UI using Bootstrap and JQuery.
- **Backend Developer:** Develops business logic, database interactions, and APIs.
- **Database Administrator:** Manages database design and optimizations.
- **QA Engineer:** Conducts testing for security, performance, and usability.

6. Risk Assessment & Mitigation Plan

Risk	Impact	Mitigation Strategy
Payment Gateway Issues	High	Implement fallback payment options and thorough testing
Security Vulnerabilities	High	Conduct regular security audits and apply best security practices
Performance Bottlenecks	Medium	Optimize database queries and implement caching strategies

Risk	Impact	Mitigation Strategy
Scope Creep	Medium	Strict requirement management and stakeholder alignment
Deployment Failures	Low	Maintain detailed deployment documentation and CI/CD pipelines

7. KPIs (Key Performance Indicators)

- **System Performance:** Response time for product searches under **2 seconds**.
- **Transaction Success Rate:** Minimum **98%** successful transactions via Stripe.
- **User Engagement:** Increase in returning users by **30%** within 6 months.
- **Error Rate:** Less than **1%** critical system failures post-deployment.
- **Scalability:** System should handle at least **100 concurrent users** without degradation.

8. Assumptions and Constraints

- The project will be completed within **4 weeks**.
- The system will be hosted on **Microsoft Azure**.
- Integration with external email services (e.g., SendGrid) is **not required** at this stage.
- The Stripe payment gateway is assumed to be functional within the development environment.

9. Deliverables

- **Fully functional e-commerce platform** with authentication and role-based access.
- **Admin dashboard** for product and order management.
- **Secure payment processing** via Stripe.
- **Deployment on Microsoft Azure** with complete documentation.

10. Conclusion

The **TechXpress E-commerce Platform** aims to provide a robust, secure, and user-friendly experience for online electronics shopping. With a structured development plan, adherence to design patterns, and deployment on a cloud platform, this project will ensure maintainability and scalability for future enhancements.
