Project Proposal

Overview:
This project aims to develop a smart home IoT dashboard using ASP.NET Core MVC with WebSockets for real-time communication. The dashboard will provide users with an intuitive interface to monitor and control IoT-enabled smart home devices such as lights, fans, and door locks.

Objectives:

1. Implement a user-friendly dashboard with real-time updates.
2. Enable seamless communication between IoT devices and the system using WebSockets.
3. Ensure scalability and security using an MVC architecture.
4. Provide role-based authentication and authorization.

Scope:

- Real-time device status monitoring.
- Interactive device control (on/off, toggle, scheduling).
- WebSockets for instant updates.
- User authentication and access control.

Project Plan, Timeline (Gantt Chart):

Task	Start Date	End Date	Duration
Requirement Analysis & System Design	Week 1	Week 1	1 week
Backend Development	Week 2	Week 3	2 weeks
Frontend Development	Week 2	Week 4	3 weeks
WebSockets Implementation	Week 3	Week 4	2 weeks
Testing & Debugging	Week 5	Week 5	1 week
Deployment & Documentation	Week 6	Week 6	1 week

Milestones & Deliverables:

- Week 1: Requirements and design completed.
- Week 3: Backend & WebSockets implemented.
- Week 4: Frontend completed.
- Week 5: System tested and debugged.
- Week 6: Final deployment and documentation.

Task Assignment & Roles

Team Member	Role	Responsibilities
Developer 1	Backend Developer	Implement MVC structure
Developer 2	Backend Developer	Implement WebSockets.
Developer 3	Frontend Developer	Develop UI and integrate WebSockets.
Developer 4	Database Engineer	Design and implement database.

Risk Assessment & Mitigation Plan

Risk	Impact	Mitigation Strategy
WebSockets performance issues	High	Optimize data transmission and connection handling.
Security vulnerabilities	High	Implement role-based authentication and encryption.
Device connectivity issues	Medium	Implement retry mechanisms and logs for debugging.
Project timeline delays	Medium	Use Agile methodology for iterative development.

KPIs (Key Performance Indicators)

1. **Response Time:** Device state updates should reflect within 200ms.
2. **System Uptime:** Maintain 99.5% system uptime.
3. **User Adoption Rate:** Achieve at least 80% engagement from initial testers.
4. **Security Compliance:** No critical vulnerabilities in penetration tests.
5. **Scalability Performance:** Support at least 100 concurrent users without performance degradation.