A WEB-BASED SYSTEM FOR PREDICTING PASTRY PRODUCTION USING INGREDIENT SUPPLY AND INVENTORY MANAGEMENT OF RHL BAKERY

Website Development Process

Gantt Chart

Time Line	September				October				November				December			
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16
Login & Sign-up	██	██	██													
Admin Dashboard (User Management)		██	██	██												
Admin Dashboard (System logs)			██	██	██											
Admin Dashboard (Weekly Inventory and Production Report)			██	██	██											
Inventory Management					██	██	██	██								
Expiration Alerts								██								
Exportable Inventory Reports								██								
Production Prediction										██	██	██				
System Testing															██	██
Final Deployment, Documentation & Maintenance															██	██

Sprint 1 - Login & Sign-up
Backend Development: User database, Authentication API
Frontend Development: Login & sign-up forms, input validation
Security Integration: Password hashing, session management
Testing: Unit testing, functional testing, regression testing.
Bug Fixing: Resolve issues from testing

Sprint 2 – Admin Dashboard (User Management)
Backend Development: User model (roles, status), User APIs (CRUD), role-based access control
Frontend Development: Admin dashboard UI, user list with search/filter, add/edit forms, role & status controls
Integration: Connect APIs, enforce admin-only access
Testing: Unit, integration, and security testing
Bug Fixing: Resolve issues from testing

Sprint 3 - Admin Dashboard (System logs)
Backend Development: System log model, API for log retrieval
Frontend Development: Dashboard logs page
Integration: Connect log APIs to UI, restrict access to admins
Testing: Unit, integration, and performance testing
Bug Fixing: Resolve issues from testing

Sprint 4 - Admin Dashboard (Weekly Report and Production Report)
Backend Development: Report generation APIs (weekly summary, production data), data aggregation logic
Frontend Development: Reports page UI, download options (CSV/PDF)
Integration: Connect report APIs to UI, ensure role-based access
Testing: Unit testing, functional testing, regression testing
Bug Fixing: Resolve issues from testing

Sprint 5 - Inventory Management
Backend Development: Ingredients database, full CRUD API for ingredients
Frontend Development: Data table UI, add/edit modal forms
Integration: Connect frontend to to inventory CRUD APIs
Testing: Unit test for all CRUD operations, functional testing of the entire inventory features, regression testing.
Bug Fixing: Resolve issues from testing

Sprint 6 - Expiration Alerts
Backend Development: Logic to scan database and flag items nearing expiration
Frontend Development: Dashboard UI for displaying alerts
Integration: Connect alert system to the main dashboard and inventory data
Testing: Unit testing, functional testing, regression testing.
Bug Fixing: Resolve issues from testing

Sprint 7 - Exportable Inventory Reports
Backend Development: Algorithm implementation (Linear Regression)
Frontend Development: Prediction dashboard UI
Integration: Connect prediction model to the dashboard and relevant data streams
Testing: Unit testing, functional testing, regression testing.
Bug Fixing: Resolve issues from testing

Sprint 8 - Production Prediction
Backend Development: Report generation API (CSV/PDF)
Frontend Development: UI for report configuration and download Integration. Connect report functionality to the existing inventory data.
Testing: Unit testing, functional testing, regression testing.
Bug Fixing: Resolve issues from testing

Sprint 9 - System Testing
Testing: Unit testing, functional testing, and regression testing of the whole system
Bug Fixing: Resolve issues from testing

Sprints 10: Final Deployment, Documentation & Maintenance
Deployment: Deployment on Vercel
Documentation: User manual and technical system documentation
Maintenance Plan: Bug fixing, reporting and support

SOFTWARE DEVELOPMENT LIFE CYCLE

We chose to implement Agile methodology as our SDLC model for developing the web-based system for predicting pastry production using ingredient supply and inventory management of RHL Bakery. This is primarily driven by Agile's approach that emphasizes flexibility, collaboration, and customer feedback. Since there may be changes during the development of the system from the client/customer, we believe this methodology is the most appropriate as it allows us to make necessary adjustments throughout the project lifecycle. Furthermore, Agile also allows breaking the project into smaller parts which would be helpful to us in testing and delivering features incrementally. Lastly, we will also implement Scrum as the framework for the methodology.