SPM

Assignment 01

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1. Project Lifecycle Phases

a) Initiation Phase

- Define the project scope.
- Identify stakeholders (retail managers, marketing teams, IT staff, end customers).
- Develop the **business case**: how the tool increases ROI by automating and personalizing loyalty strategies.
- Charter approval to formally start the project.

b) Planning Phase

- Define detailed **requirements**: predictive analytics, customer segmentation, personalized reward allocation, integration with POS systems.
- Create **work breakdown structure (WBS)** and schedule.
- Identify risks: data privacy, integration challenges, scalability issues.
- Allocate budget, resources.
- Develop a **communication plan.**

c) Execution Phase

- Develop the agent using AI/ML algorithms.
- Integrate with business loyalty databases and POS systems.
- Design dashboards for real-time tracking.
- Continuous stakeholder engagement (marketing team feedback).

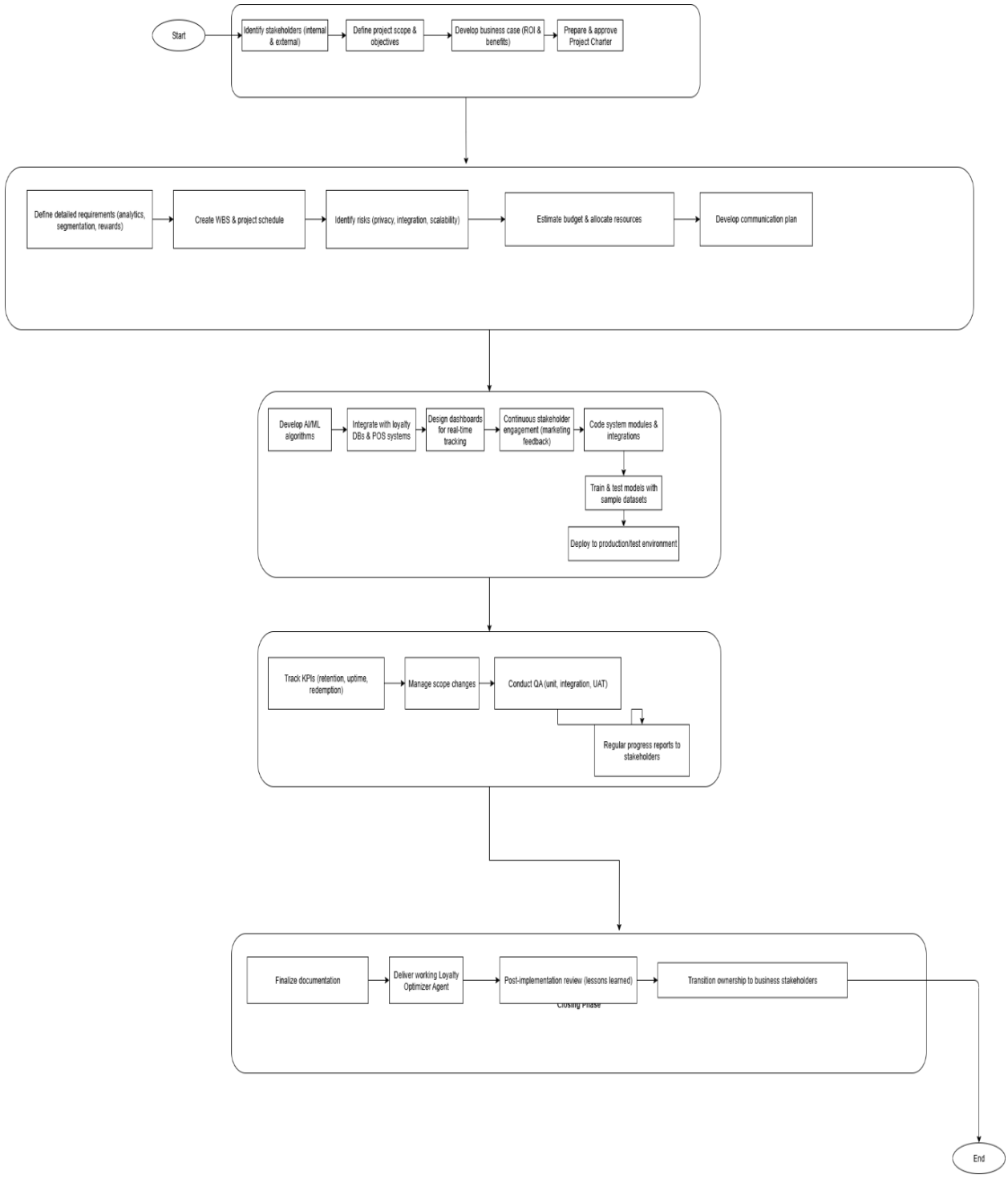
d) Monitoring & Controlling Phase

- Track KPIs such as customer retention rates, system uptime, reward redemption rates.
- Manage scope creep by monitoring requirement changes.
- Perform quality assurance through testing (unit, integration, and UAT).
- Regular progress reports to stakeholders.

e) Closing Phase

- Finalize documentation.
- Deliver the fully functional Loyalty Program Optimizer Agent.
- Conduct **post-implementation review** (lessons learned).
- Transition system ownership to business stakeholders.

Phase	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Phase 1: Initiation/Concept	Develop project charter, identify stakeholders	High-level scope, feasibility study for Loyalty Program Optimizer Agent	null	Track initial risks and assumptions	null
Phase 2: Planning/Design	null	Detailed requirements gathering, design AI architecture & workflow	Assign design tasks to team members	Review design progress via team meetings	Approve design deliverables
Phase 3: Development/Execution	Kick off development sprint, confirm resources	Break work into modules (e.g., backend, ML model, dashboard)	Code development, integrate APIs & ML model	Daily stand-ups, unit testing, quality checks	Complete code reviews & merge
Phase 4: Testing & Integration	null	Create test plans (unit, integration, UAT)	Execute tests, fix defects, validate performance	Track defect rates, monitor test results	Sign-off on integration and test completion
Phase 5: Deployment & Monitoring	Deployment approval & stakeholder readiness check	Rollout strategy (phased or pilot)	Launch agent, train staff, onboard pilot users	Post-launch metrics (uptime, customer engagement, ROI tracking)	null
Phase 6: Closure & Maintenance	null	Conduct lessons learned workshop	Finalize documentation & knowledge transfer	Final audits, verify system stability	Project sign-off, archive documents, transition to maintenance


Start
Identify stakeholders (internal & external)
Define project scope & objectives
Develop business case (ROI & benefits)
Prepare & approve Project Charter
Define detailed requirements (analytics, segmentation, rewards)
Create WBS & project schedule
Identify risks (privacy, integration, scalability)
Estimate budget & allocate resources
Develop communication plan
Develop AI/ML algorithms
Integrate with loyalty DBs & POS systems
Design dashboards for real-time tracking
Continuous stakeholder engagement (marketing feedback)
Code system modules & integrations
Train & test models with sample datasets
Deploy to production/test environment
Track KPIs (retention, uptime, redemption)
Manage scope changes
Conduct QA (unit, integration, UAT)
Regular progress reports to stakeholders
Finalize documentation
Deliver working Loyalty Optimizer Agent
Post-implementation review (lessons learned)
Transition ownership to business stakeholders
Closing Phase
End

SWOT Analysis

Strenght:	Weaknesses :
Team members with diverse technical backgrounds (ML, backend, frontend). Good coordination and willingness to collaborate. Prior exposure to similar academic projects. Motivation to deliver on time.	Limited real-world project management experience. Inconsistent familiarity with MS Project/Visio. Some members have limited time due to other courses. Dependence on synthetic datasets, not real business data.
Opportunities :	**Threats :**
Course project offers hands-on PM practice. Project aligns with trending industry needs (customer retention, AI agents). Good potential for portfolio/demo beyond the course. Guidance from instructor and real case studies in textbook.	Tight deadlines with multiple deliverables. Risk of scope creep (adding unnecessary features). Possible coordination issues if tasks are not clearly divided. Dependence on other sections/groups for integration.

Strengths:

- Team members with diverse technical backgrounds (ML, backend, frontend).
- Good coordination and willingness to collaborate (Grades as reward).
- Prior exposure to similar academic projects.
- Motivation to deliver on time.

Weaknesses:

- Limited real-world project management experience.
- Inconsistent familiarity with MS Project/Visio.
- Some members have limited time due to other courses.

- Dependence on synthetic datasets, not real business data.
- Many exams are between this project lifecycle.

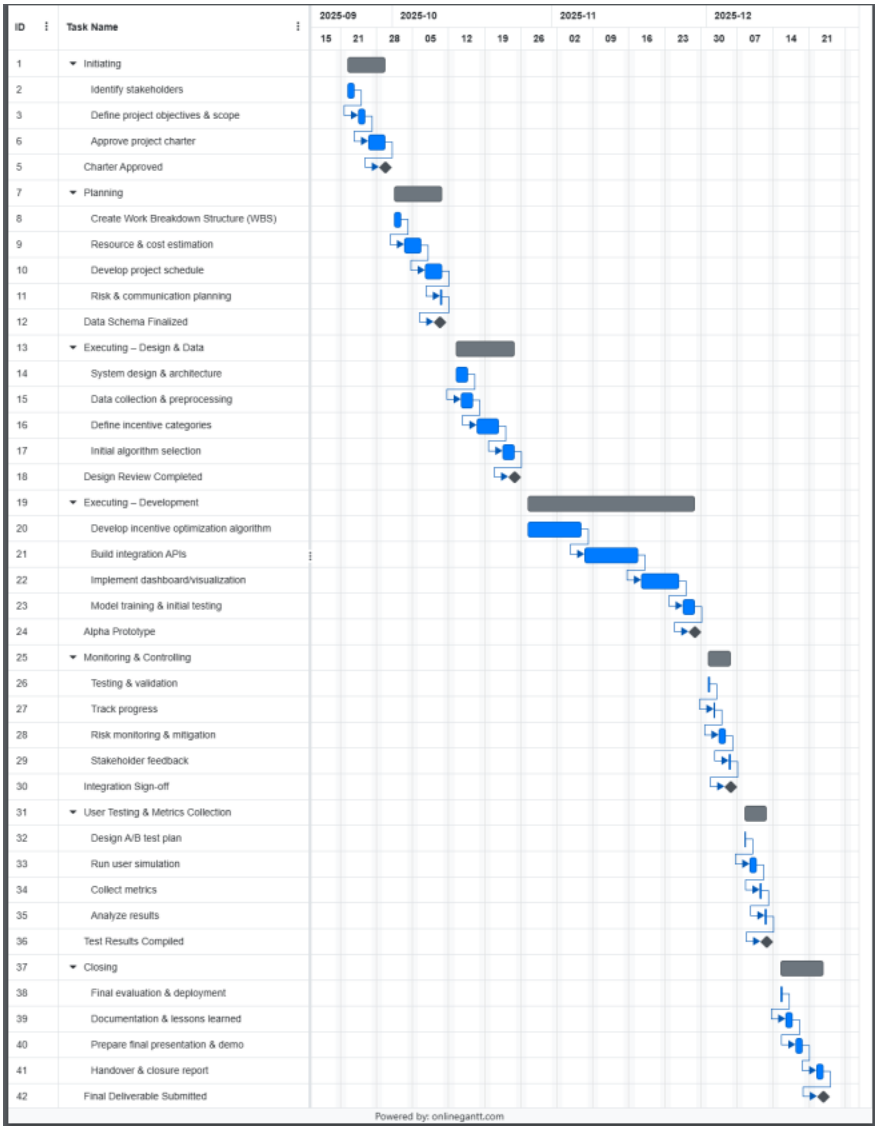
Opportunities:

- Course project offers hands-on PM practice.
- Project aligns with trending industry needs (customer retention, AI agents).
- Good potential for portfolio.
- Guidance from instructor and real case studies in textbook.

Threats:

- Tight deadlines with multiple deliverables.
- Risk of scope creep (adding unnecessary features).
- Possible coordination issues if tasks are not clearly divided.
- Dependence on other groups for integration.

Gantt chart:


ID
Task Name
2025-09
2025-10
2025-11
2025-12
15 21 28 05 12 19 26 02 09 16 23 30 07 14 21
1 Initiating
2 Identify stakeholders
3 Define project objectives & scope
6 Approve project charter
5 Charter Approved
7 Planning
8 Create Work Breakdown Structure (WBS)
9 Resource & cost estimation
10 Develop project schedule
11 Risk & communication planning
12 Data Schema Finalized
13 Executing – Design & Data
14 System design & architecture
15 Data collection & preprocessing
16 Define incentive categories
17 Initial algorithm selection
18 Design Review Completed
19 Executing – Development
20 Develop incentive optimization algorithm
21 Build integration APIs
22 Implement dashboard/visualization
23 Model training & initial testing
24 Alpha Prototype
25 Monitoring & Controlling
26 Testing & validation
27 Track progress
28 Risk monitoring & mitigation
29 Stakeholder feedback
30 Integration Sign-off
31 User Testing & Metrics Collection
32 Design A/B test plan
33 Run user simulation
34 Collect metrics
35 Analyze results
36 Test Results Compiled
37 Closing
38 Final evaluation & deployment
39 Documentation & lessons learned
40 Prepare final presentation & demo
41 Handover & closure report
42 Final Deliverable Submitted
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Project Charter

5.1 Project Title

Loyalty Program Optimizer Agent Development Project

5.2 Date of Authorization

September 22, 2025

5.3 Project Start and Finish Dates

- Start: September 22, 2025
- Finish: December 21, 2025

5.4 Key Schedule Milestones

- **Charter Approved**: September 22, 2025
- **Requirements & Data Schema Finalized**: October 12, 2025
- **Design Review Completed**: October 26, 2025
- **Alpha Prototype Ready (MVP)**: November 30, 2025
- **Integration Sign-off**: December 14, 2025
- **Test Results Compiled**: December 21, 2025
- **Final Deliverable Submitted (Closure)**: January 4, 2026

5.5 Budget Information

This project is academic in nature and does not involve a financial budget. Effort and resources are measured in terms of time, assigned roles, and deliverables.

5.6 Project Manager

- **Name:** Soban Ahmed Malik
- **Email:** i222460@nu.edu.pk
- **Phone:** 0312-8866620

5.7 Project Objectives

- Develop an AI-driven Loyalty Program Optimizer Agent to improve customer retention and engagement.
- Implement predictive analytics to forecast customer behavior and optimize rewards distribution.
- Integrate the agent with sample Point-of-Sale (POS) and loyalty databases for demonstration.

- Provide a simple, interactive dashboard for stakeholders to view retention metrics and program effectiveness.
- Demonstrate how businesses can leverage AI tools for customer loyalty management in academic and professional contexts.

5.8 Main Project Success Criteria

- Project delivered within planned schedule (by December 21, 2025).
- Fully functional prototype showcasing loyalty optimization with sample datasets.
- Stakeholder (academic evaluators) satisfaction ≥ 90%.
- System demonstrates ≥ 95% uptime during testing phase.
- Model achieves at least 80% accuracy in predicting customer retention patterns on test data.

5.9 Approach

The project will follow an **Agile methodology**, with 2-week sprints focused on incremental deliverables:

- Sprint 1: Requirements gathering & architecture design.
- Sprint 2: Core AI model development.
- Sprint 3: Database integration & dashboard.
- Sprint 4: Testing, bug fixing, and stakeholder feedback.
- Sprint 5: Final deployment, documentation, and closure.

5.10 Roles and Responsibilities (with Sign-offs)

Role	Responsibilities	Assigned To	Sign-off
Project Manager	Overall coordination, sprint planning, reporting	**Soban Ahmed Malik**	_____
Developer	AI/ML model coding, integration, dashboard	**Soban, Uzair, Moiz**	_____
Tester(s)	Conduct unit, integration, and UAT testing	**Uzair & Moiz**	_____
Stakeholder/Sponsor	Approve milestones, review deliverables, feedback	**Instructor / Academic Supervisor**	_____

5.11 Comments / Assumptions

- Timely access to required academic resources (sample customer data, development tools, test environment).
- The project scope will remain within academic constraints and not require commercial deployment.
- Any scope changes will be addressed in subsequent sprint cycles through Agile backlog updates.
- Privacy and ethical use of data will be ensured (no real customer data used).