Project system analysis.

System request:
(supermarket)

Prepared by:

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system request (supermarket).

1.Project sponsor: for this supermarket project, the main sponsor is(x y z) investment .they`re a company that wants to branch out into retail .

They`re providing the funding and support we need to kick things off, which is really important for getting started.

2.Business Need: in our community, there`s definitely a need for a supermarket that offers a good variety of everyday items.

people want a place where they can get their groceries without having to travel too far. This supermarket will not only make shopping more convenient but also help local residents access what they need easily . Additionally,the project aims to meet customer needs by introducing online shopping ,making it easier for customers to purchase groceries and daily essentials .

3.Business Requirements: get this supermarket going ,I think we need to focus on a few key things:

Location :we should find a spot that`s easy to reach for most people ,maybe near public transport.

Space : it`s crucial to have enough room to display products and make it comfortable for customers to move around.

Invenory : we`ll need to stock a mix of food items, household products, and some seasonal items too.

Technology : implementing a solid online shopping platform
that includes .Browsing available product catalog Adding products to a shopping cart. Processing online payment transactions. Tracking orders and scheduling delivery times. Providing home delivery options or in-store pickup.

Staffing : Hiring friendly ,well-trained staff is essential for providing great customer service.

Marketing :A good marketing plan will be necessary to attract customers and establish our brand in the community .

4.Business value: I really believe this supermarket can bring a lot of benefits, such as: increasing sales by drawing in a lot of customers from the area. Improving customer satisfaction through quality service and pleasant shopping experience.

Creating job apportunities for locals, which is always a plus .

Setting the stage for future growth , like opening more branches if this one dose well.

Expected revenue estimates include:

500.000 in online sales in the first year .$

$700.000 in online sales in the second year.

An additional $300.000 in sales from product promotions through the online platform

5.Special issue or constraints :

There are a few challenge we should keep in mind :

Competition :there are already a couple of supermarkets nearby ,so we need to think about how to stand out .

Costs :we have to be careful with our operating costs to ensure we don`t run into financial issues.

Compliance: we need to follow local laws and health regulations to avoid any problems .

Seasonality: some products might have fluctuating demand based on the season ,so we`ll need to manage our inventory accordingly.

Feasibility Analysis Assessment factors.

.Technical feasibility:

1. Site Analysis: Assess location for accessibility and zoning compliance.
2. Design and Layout: Plan efficient store layout and integrate technology.
3. Infrastructure: Ensure access to utilities and transportation.
4. Supply Chain: Establish supplier relationships and inventory management.
5. Regulatory Compliance: Follow health, safety, and building regulations.
6. Financials: Develop a budget and explore funding options.
7. Risk Assessment: Conduct market research and create contingency plans.

Economic Feasibility:

1.Cost Analysis: Estimate initial and ongoing costs, including construction, equipment, and operating expenses.

2. Revenue Projections: Forecast sales based on market demand and develop a pricing strategy.

3. Break-Even Analysis: Calculate the revenue needed to cover costs and the time to profitability.

4. Market Analysis: Assess competitors and identify the target customer base.

5. Return on Investment (ROI): Evaluate expected profits relative to the initial investment.

6. Sensitivity Analysis: Examine how changes in key variables affect profitability.

7.Funding Options: Explore financing methods and their impact on costs.

Organizational Feasibility:

- Management Structure: Define roles and assess management expertise.
- Human Resources: Determine staffing needs and recruitment strategies.
- Operational Processes: Develop standard operating procedures and key performance indicators.
- Supply Chain Management: Evaluate sourcing and supplier relationships.
- Technology: Assess needs for POS and inventory management systems.
- Legal Compliance: Ensure adherence to relevant laws and obtain necessary licenses.
- Financial Management: Establish budgeting and financial oversight processes.
- Risk Management: Identify potential risks and create contingency plans.

Simple cash flow projection.

Net cash flow	costs	revenue	Year
300.000	200.000	500.000	Year 1
450.000	250.000	700.000	Year 2
600.000	300.000	900.000	Year 3

Methodology..

Rapid Application Development (RAD) using the Rapid Application Development (RAD) approach. This methodology emphasizes speed, user feedback, and iterative development to deliver a functional and efficient system.

Phase 1: Requirements Planning

Objective:

Define the core requirements and scope of the system by collaborating with stakeholders.

Steps:

1.Brainstorming Sessions with Stakeholders:

Identify the key problems faced by the supermarket (e.g., inventory management, sales tracking, or generating reports).
Discuss desired features such as:
Inventory management (add/remove products, track quantities).
Sales management (generate invoices, record daily transactions).
Reports (weekly/monthly sales, most-sold products).
Customer management (discounts, loyalty points).

2.Define the Project Scope:

Prioritize essential features for the initial version.
Set clear boundaries to avoid unnecessary complexity.

3.Set Constraints:

Time: Ensure the project is completed within a specific timeframe.
Resources: Define the team size and available tools.

4.Deliverables:

A concise document outlining core requirements.
A prioritized list of essential functionalities.

Phase 2: User Design (Prototyping)

Objective:

Create and refine interactive prototypes to ensure the system aligns with user expectations.

Steps:

1.Create User Interface (UI) Mockups:

Design mockups for the main screens, such as:
Login screen.
Product management screen.
Invoice generation screen.
Reports overview screen.

2.Develop Interactive Prototypes:

Use tools like Figma, Adobe XD, or basic web-based prototypes.
Present the prototypes to stakeholders for feedback.

3.Refine the Design:

Iterate on the prototypes based on user feedback to ensure the design meets their needs.

4.Deliverables:

A functional prototype showcasing the system's core features.
A refined list of user feedback for the next phase.

Phase 3: Rapid Construction

Objective:

Develop the system with a focus on delivering the core functionalities in a short timeframe.

Steps:

1.Develop the Core System:

Set up the database:
Tables for products, sales, customers, and reports.
Write the application code using a suitable framework (e.g., **Python** with Flask/Django or **Java** with Spring).

2.Parallel Development:

Divide tasks among the team:
One member focuses on UI development.
Another member handles database implementation.
A third member integrates the backend with the UI.

3.Internal Testing:

Test core features like:
Adding and removing products.
Generating invoices.
Viewing sales reports.

4.Present the Initial Version:

Share a working version with stakeholders for feedback.
Record any issues or suggestions for improvement.

5.Deliverables:

A functional, testable version of the system.
A list of enhancements based on user feedback.

Phase 4: Cutover (Implementation and Testing)

Objective:

Deploy the final system in the supermarket and ensure it performs effectively.

Steps:

1.Comprehensive Testing:

Test the system in the real-world environment:
Verify the accuracy of invoices.
Ensure inventory updates automatically.
Check the reliability of sales reports.

2.User Training:

Train supermarket staff to use the system effectively.
Provide a user manual for reference.

3.System Deployment:

Launch the final version of the system in the supermarket.

4.Ongoing Support:

Provide technical support for resolving any post-deployment issues.

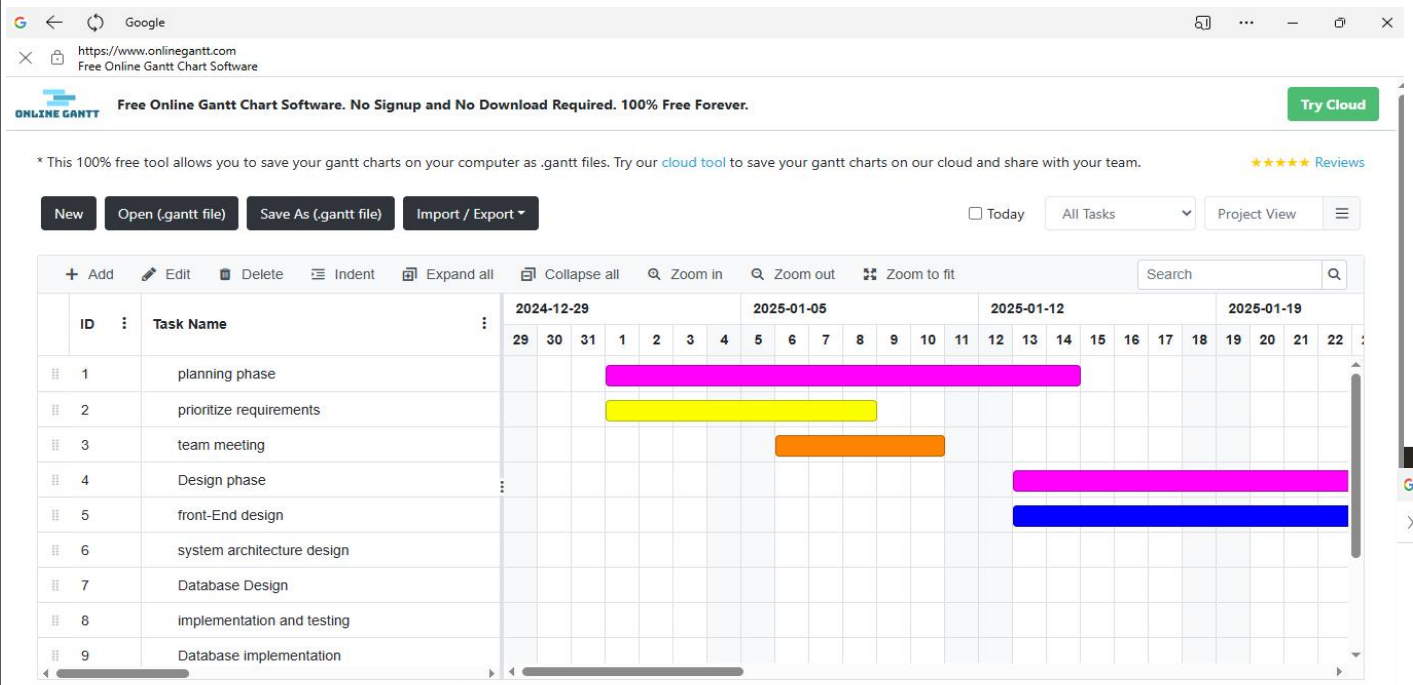
5.Deliverables:

A fully operational system deployed in the supermarket.
Trained staff ready to use the system.

Work plan.

Assigned to	Duration	finish Data	Start Data	Task Name	Task ID
All team	10	10/1/2025	1/1/2025	**Planning phase**	**1.**
All team	6	6/1/2025	1/1/2025	Prioritize requirements	**2.**
All team	4	10/1/2025	6/1/2025	Team meeting	**3.**
All team	31	11/2/2025	11/1/2025	**Design phase**	**4.**
Shams	14	25/1/2025	11/1/2025	Front-End design	**5.**
Habiba .Abrar	9	3/2/2025	25/1/2025	System architecture Design.	**6.**
Sondos	8	11/2/2025	3/2/2025	Database Design.	**7.**
All team	17	1/3/2025	12/2/2025	**Implementation and testing.**	**8.**
Abrar .Sondos	6	17/2/2025	12/2/2025	Database implementation.	**9.**
Shams . Habiba	13	1/3/2025	17/2/2025	Code integration and testing.	**10.**
All team	9	10/3/2025	2/3/2025	**Updates.**	**11.**
Shams .Abrar	4	5/3/2025	2/3/2025	Version 2 Development	**12.**
Habiba .Sondos	5	10/3/2025	5/3/2025	Version 3 Development	**13.**

Gannt Chart.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1 planning phase
2 prioritize requirements
3 team meeting
4 Design phase
5 front-End design
6 system architecture design
7 Database Design
8 implementation and testing
9 Database implementation
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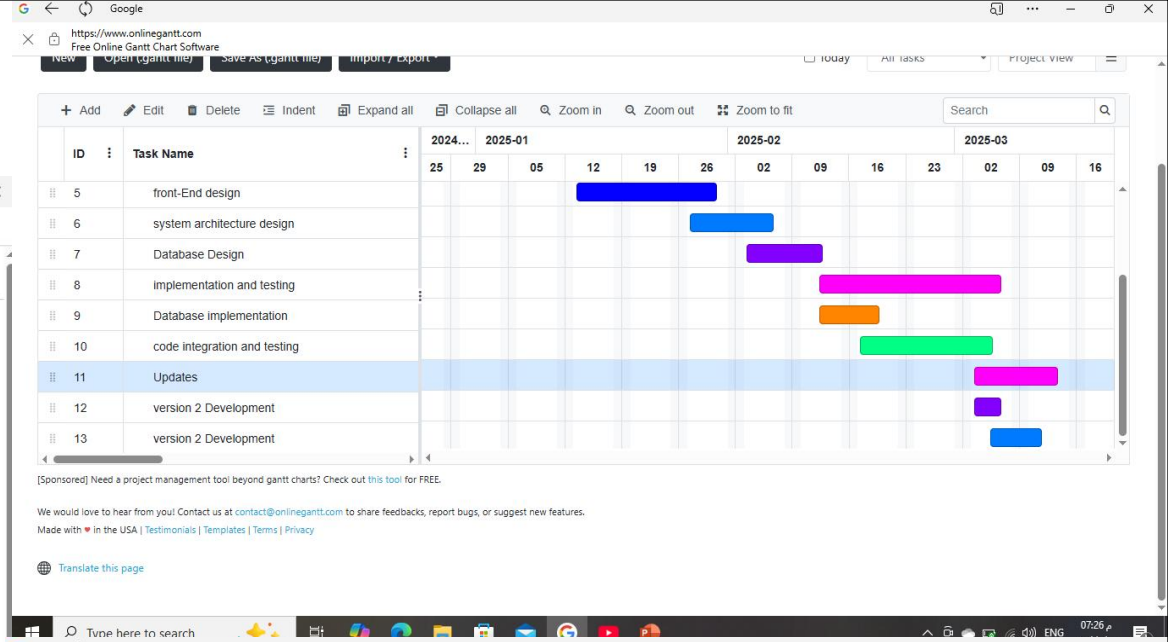
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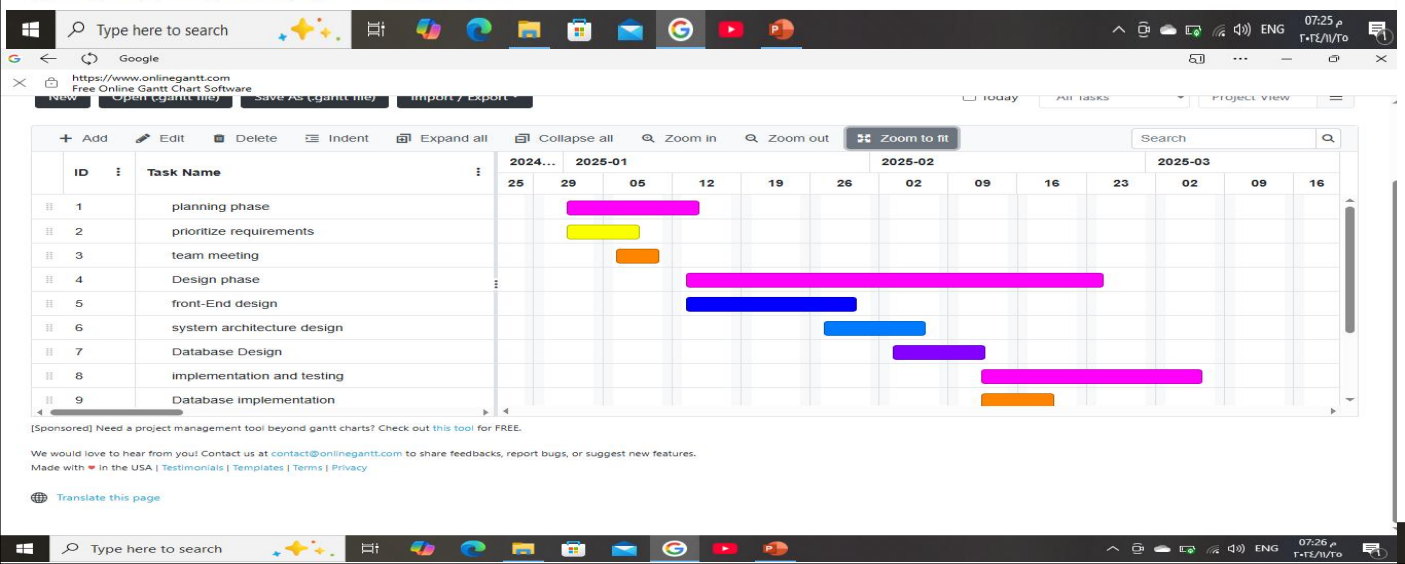
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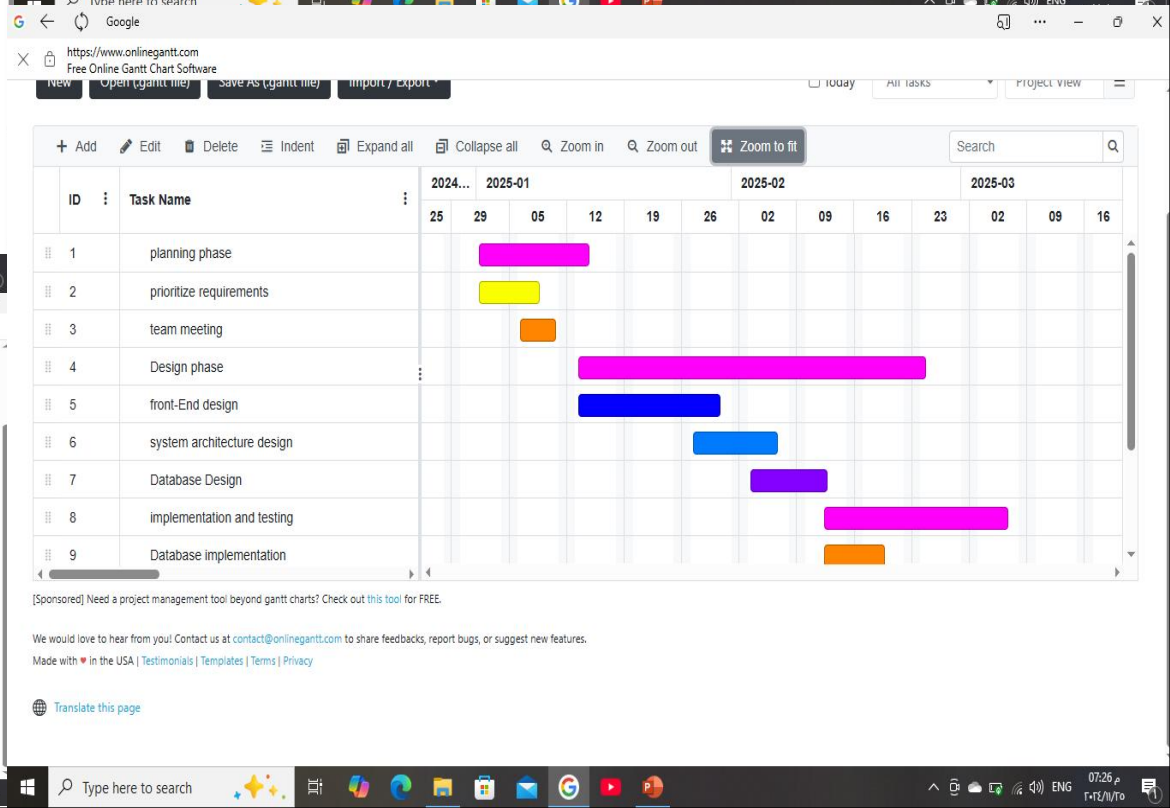
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Functional Requirements:

These define what the system should do and include specific features and functionalities.

1. Inventory Management:

The system must allow staff to add, update, and delete inventory items.
The system should track stock levels and notify the manager when stock is low.

2. Point of Sale (POS):

The system must allow cashiers to scan products, calculate totals, and process payments.
The system should support multiple payment methods (cash, card, mobile payments).
Generate receipts for each transaction.

3. Customer Management:

The system should manage customer profiles for loyalty programs.
Track customer purchase history and generate personalized discounts.

4. Supplier Management:

The system must allow adding, updating, and deleting supplier details.

Enable ordering products directly from suppliers and track deliveries.

5. Reporting:

The system must generate sales reports, inventory reports, and staff performance reports.

Allow exporting reports in various formats (PDF, Excel).

6. User Roles and Authentication:

The system must support different user roles (admin, cashier, manager) with role-based access control.

Ensure secure login and password management for users.

7. Product Search:

The system should allow users to search for products by name, category, or barcode.

8. Discount and Promotion Management:

Enable setting up discounts, promotions, and special offers for specific products or categories.

9. Billing and Invoicing:

Provide functionality to generate and store invoices for purchases and supplier payments.

Non-Functional Requirements:

These define the quality attributes and constraints of the system.

1. Performance:

The system should respond to user actions within 2 seconds.
It must handle at least 100 concurrent users without performance degradation.

2. Scalability:

The system should be scalable to support future expansions, such as adding new branches or handling increased inventory.

3. Reliability:

The system should have 99.9% uptime to ensure business continuity.
Automatic backups must be performed daily to prevent data loss.

4. Security:

Sensitive data, such as customer information and payment details, must be encrypted.
The system must comply with data protection regulations (e.g., GDPR, PCI DSS).

5. Usability:

The system must have a user-friendly interface that requires minimal training for staff.
Provide a help section or user guide within the system.

6. Maintainability:

The system codebase should be modular and easy to update or debug.
Logs should be maintained for system errors and usage to help with troubleshooting.

7. Availability:

The system must be available 24/7, with minimal downtime during updates or maintenance.

8. Compatibility:

The system must work on multiple devices (desktops, tablets, mobile devices).
It should be compatible with barcode scanners, receipt printers, and payment terminals.

9. Data Storage:

The system must support a large database for storing inventory, transactions, and customer data.
Ensure the database can grow as the business expands.

10. Accessibility:

The system should support accessibility features, such as screen readers and adjustable font sizes.

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