

Project Plan

RespiraSense

Member Name	Roll Number
Sania Nisar	21L-6065
Ayesha Haroon	21L-6116
Aman Zeeshan	21L-5785
Sheraz Kaleem	21L-5782

Statement Of Work

1. Scope of Work:

This project includes:

- Designing three major application features.
- Developing the frontend chatbot and integrating APIs for communication.
- Creating a risk management plan and a work breakdown structure.
- Using the COCOMO model to estimate project costs and effort.
- Implementing the admin-side dashboard.
- Implementing user authentication.
- Performing integration and testing for seamless functionality.

2. Deliverables:

- Software Project Contract
- Detailed Figma designs.
- Fully developed and tested chatbot with integrated APIs.
- Admin-side dashboard.
- Secure user authentication.
- Finalized, fully integrated, and tested application.

3. Work Products

S#	Work Product	Human Resource Responsible
1	GANTT Chart	Aman Zeeshan
2	Risk Plan	Ayesha Haroon
3	Work Breakdown Structure	Aman Zeeshan
4	COCOMO Model-Based Cost and Effort Estimation	Ayesha Haroon
5	Resource List	Ayesha Haroon
6	Test Cases	Sania Nisar, Ayesha Haroon, Aman Zeeshan, Sheraz Kaleem
7	User Manual	Sania Nisar, Ayesha Haroon, Aman Zeeshan, Sheraz Kaleem

8	Database Storage	Sania Nisar
9	Figma Design	Sania Nisar
10	Frontend Development	Sania Nisar, Ayesha Haroon, Aman Zeeshan, Sheraz Kaleem
11	Backend Development	Sania Nisar, Ayesha Haroon, Aman Zeeshan, Sheraz Kaleem
12	User Authentication and Management	Sania Nisar, Ayesha Haroon

Resource List

1. Team Members:

- I. Sania Nisar
- II. Ayesha Haroon
- III. Aman Zeeshan
- IV. Sheraz Kaleem

2. Tools and Technologies:

- **Frontend:** React.js
- **Backend:** Node.js, Express.js
- **Database:** MongoDB
- **Design:** Figma
- **Version Control:** GitHub
- **Testing Tools:** Selenium

3. List

S#	Resource Name	Type	Initials	Max Utilization	Standard Rate (PKR)
1	Sania Nisar	Work	SN	100%	1500/hour
2	Ayesha Haroon	Work	AH	100%	1500/hour
3	Aman Zeeshan	Work	AZ	100%	1500/hour
4	Sheraz Kaleem	Work	SK	100%	1500/hour
5	Coding Environment	Material	DS	N/A	N/A
6	Web Hosting Service	Material	CH	N/A	N/A

7	Testing Tools	Material	TT	N/A	N/A
8	Design Tools	Material	DT	N/A	N/A
9	Database Storage	Material	DB	N/A	N/A

WORK BREAKDOWN STRUCTURE (Of complete Project)

1. Patient-Side Features

- 1.1. User Registration and Secure Login
 - 1.1.1. Email Verification
 - 1.1.2. Phone Verification
- 1.2. Personal Health Dashboard
 - 1.2.1. History of Lung Conditions
 - 1.2.2. Past Scans and AI Predictions
- 1.3. Real-Time Notifications
 - 1.3.1. Doctor Feedback
 - 1.3.2. Follow-up Reminders

2. Doctor-Side Features

- 2.1. Doctor Registration and Verification
 - 2.1.1. Credential Upload
 - 2.1.2. Admin Approval Process
- 2.2. Doctor Dashboard
 - 2.2.1. Assigned Patient Management
 - 2.2.2. View Patient Reports and Predictions

3. AI Diagnostic Model Integration

- 3.1. Development of AI Model
 - 3.1.1. Dataset Collection and Preprocessing
 - 3.1.2. Model Training and Testing
- 3.2. Integration with Backend
 - 3.2.1. Model Deployment on Cloud
 - 3.2.2. Flask

4. User Management

- 4.1. Update Personal Details
- 4.2. Maintain Medical History
- 4.3. Track Past Conditions and Scans

5. Secure Data Management

- 5.1. Data Encryption and Security Measures
- 5.2. MongoDB Database Setup
 - 5.2.1. Schema Design for User and Doctor Data
 - 5.2.2. Scans and Reports Storage

6. Notifications and Alerts

- 6.1. Email Alerts
 - 6.1.1. Critical Health Updates
 - 6.1.2. Appointment Reminders
 - 6.1.3 Doctor Feedback Notification

7. Frontend Development

- 7.1. React.js-Based Interface
 - 7.1.1. Patient Interface
 - 7.1.2. Doctor Interface
- 7.2. Mobile Responsiveness
- 7.3. Chatbot UI Interface

8. Backend Development

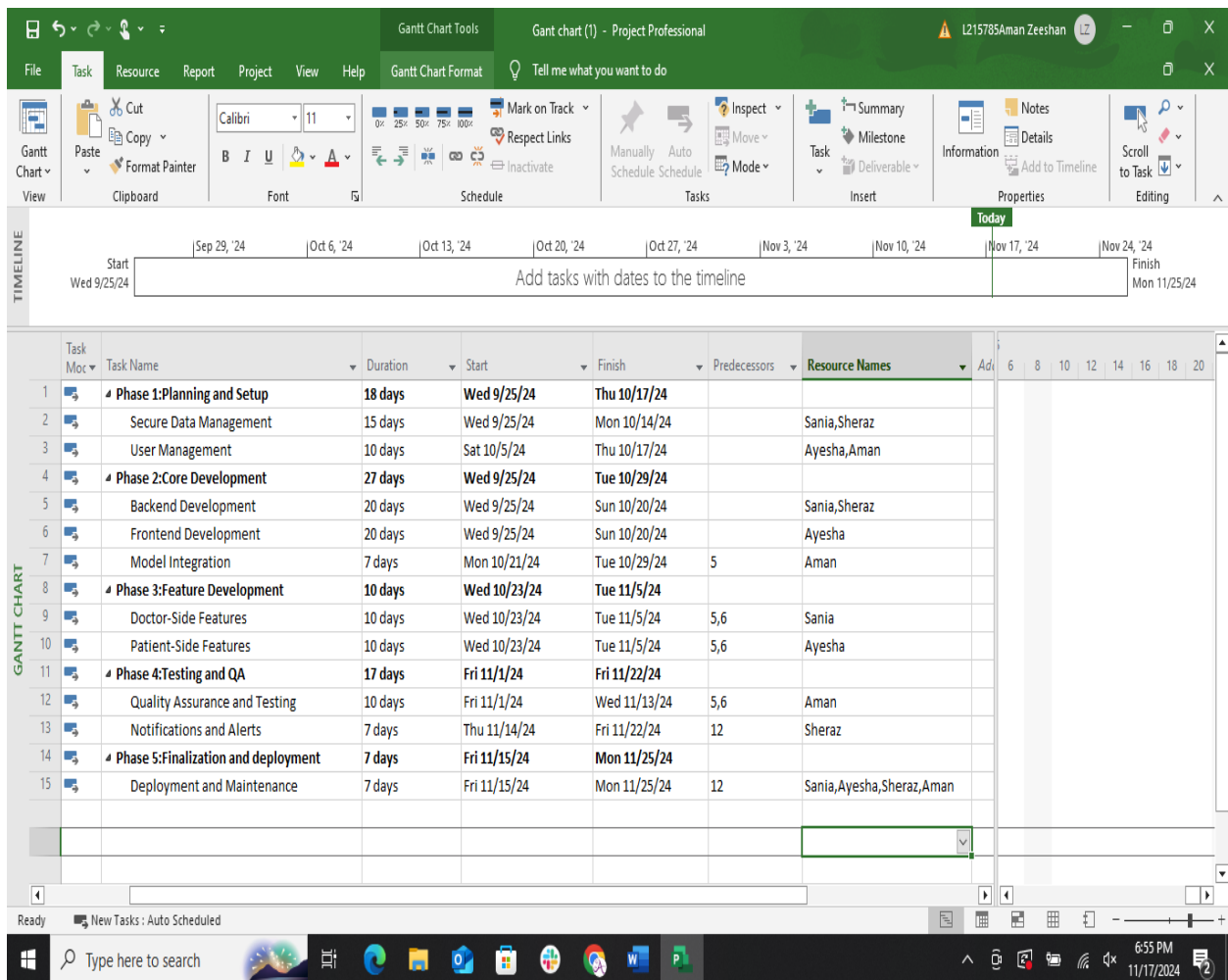
- 8.1. Session and Token Management
- 8.2. Middleware for Data Validation

9. Quality Assurance and Testing

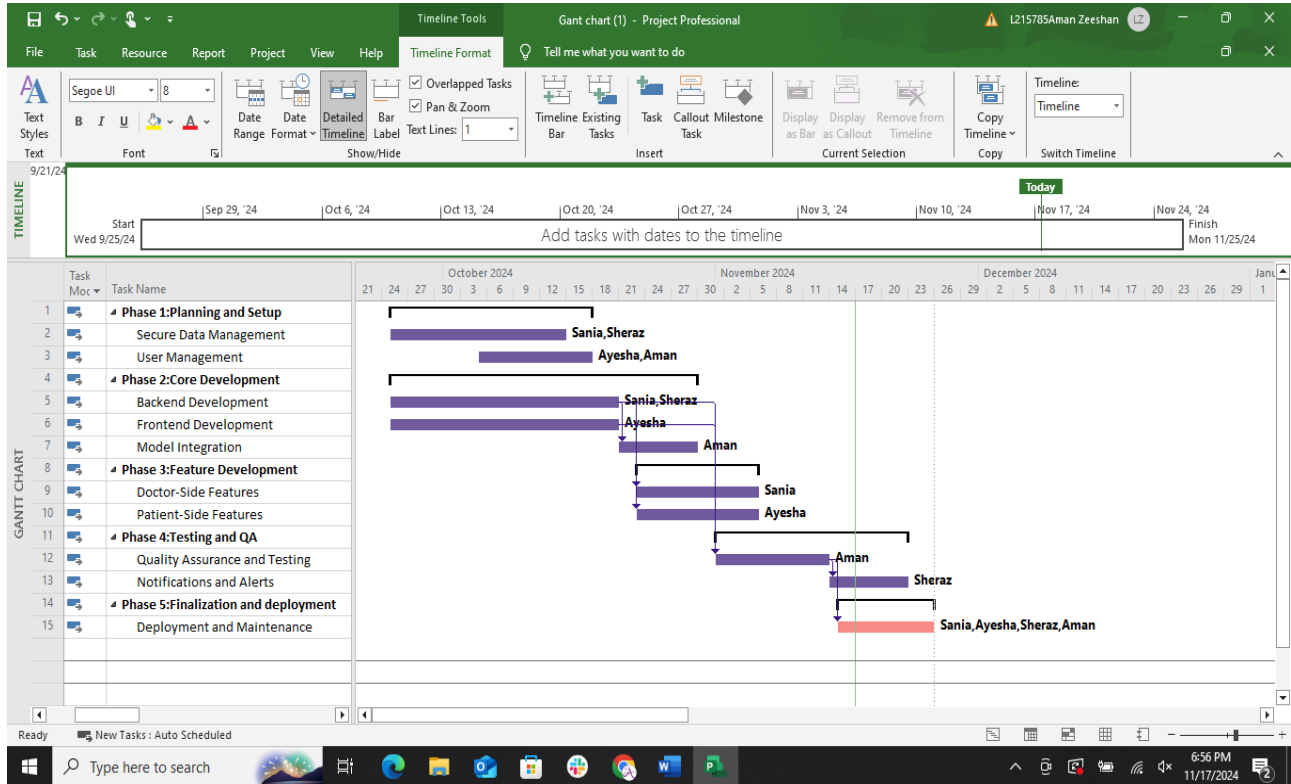
- 9.1. Manual Testing
 - 9.1.1. Frontend Testing
 - 9.1.2. Backend Testing
- 9.2. Automated Testing
 - 9.2.1. Selenium for Frontend
 - 9.2.2. Postman for API Testing

10. Deployment and Maintenance

- 10.1. Cloud Deployment
 - 10.1.1. Backend Hosting
 - 10.1.2 Website Hosting
- 10.2. Maintenance and Updates
 - 10.2.1. Bug Fixes
 - 10.2.2. Feature Enhancements



GANTT Chart



Risk Plan

1. Risk Analysis

Risk Exposure = Risk Impact * Risk Probability

Risk Description	Risk Mitigation	Impact (1-10)	Probability (0-1)	Risk Exposure	Priority
Security: User authentication breaches	Implement robust encryption; perform penetration testing; use multi-factor authentication.	9	0.8	7.2	High
Quality: Insufficient testing	Allocate dedicated time for testing; use automated testing tools for efficiency.	9	0.7	6.3	High
Technical: API integration issues	Conduct regular integration tests; use mock APIs during development to ensure smooth integration later.	8	0.7	5.6	High
Project: Timeline overruns	Use agile methodology to monitor progress in sprints; identify	8	0.7	5.6	High

	and resolve blockers early.				
Team: Resource unavailability	Cross-train team members for critical roles; maintain a buffer for resource allocation.	5	0.7	3.5	Medium
Software: Unexpected tool failures	Use well-documented, reliable tools; maintain frequent backups of code and data.	6	0.5	3	Medium
Scope: Feature creep	Define a clear scope and feature list; get approval for any additional features before development.	5	0.6	3	Medium
Team: Communication breakdown	Schedule regular team meetings; use collaboration tools like Jira or Trello for tracking progress.	5	0.4	2	Medium

External: Minor browser compatibility issues	Test the application on multiple browsers during development and optimize for modern versions.	4	0.3	1.2	Low
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2. Monitoring Plan

Weekly progress reviews to ensure all tasks are on schedule. Risk reassessments during each sprint.

COCOMO Model Based Estimates

Cost per person month (dollars) = >

PKR 1500 per hour

Per day = $1500 \times 4 = 6,000$

Per Week = $12,000 \times 5 = 30,000$

Per month = $60,000 \times 4.33 = 129,900$

129,900 PKR = 467 USD

COCOMO II - Constructive Cost Model

Software Size Sizing Method: Source Lines of Code

[SLOC](#)

	% Design Modified	% Code Modified	% Integration Required	Assessment and Assimilation (0% - 8%)	Software Understanding (0% - 50%)	Unfamiliarity (0-1)
New	1000					
Reused	0	0				
Modified						

Software Scale Drivers

Precedentedness	Low	Architecture / Risk Resolution	Nominal	Process Maturity	Low
Development Flexibility	High	Team Cohesion	High		

Software Cost Drivers

Product	Personnel	Platform	Project		
Required Software Reliability	Nominal	Analyst Capability	High	Time Constraint	High
Data Base Size	Low	Programmer Capability	High	Storage Constraint	Nominal
Product Complexity	High	Personnel Continuity	Nominal	Platform Volatility	Low
Developed for Reusability	Nominal	Application Experience	Nominal		
Documentation Match to Lifecycle Needs	Nominal	Platform Experience	High	Use of Software Tools	Low
		Language and Toolset Experience	High	Multisite Development	Very Low
				Required Development Schedule	High

Maintenance Off

Software Labor Rates

Cost per Person-Month (Dollars) 467

Calculate

Results

Software Development (Elaboration and Construction)

Effort = 2.5 Person-months

Schedule = 6.4 Months

Cost = \$1150

Total Equivalent Size = 1000 SLOC

Effort Adjustment Factor (EAF) = 0.84

Acquisition Phase Distribution

Phase	Effort (Person-months)	Schedule (Months)	Average Staff	Cost (Dollars)
Inception	0.1	0.8	0.2	\$69
Elaboration	0.6	2.4	0.2	\$276
Construction	1.9	4.0	0.5	\$874
Transition	0.3	0.8	0.4	\$138

Team Allocation:

1 Person day = 4 hours

1 Person month = 30 days = $30 * 4 = 120$ person-hours

Therefore 2.5 person months = $2.5 * 120 = 300$ person-hours

Total Effort = 300 person-hours.

Functional Points:

Metric	Count	Reasoning
Number of User Inputs	11	- Admin Dashboard Inputs (5): Admin login and sign up credentials - Chatbot User Inputs (6): User's login and sign up credentials, queries in the chatbot
Number of User Outputs	4	- Admin Dashboard Outputs (2): Dashboard summary, error/success messages. - Chatbot Outputs (2): Responses to queries, error/success messages
Number of User Inquiries	3	- Admin Inquiries (2): Uploading and retrieving specific files, editing profile - Chatbot Inquiries (1)
Number of Files	1	- Database Files (1)
Number of External Interfaces	2	- MongoDB (1): For user login and admin access. - Chatbot Backend API (1): For processing user queries and returning responses.

MEASUREMENT PARAMETER	COUNT (value >= 0)	WEIGHTING FACTOR		
		Simple	Average	Complex
Number of User Input	<input type="text" value="11"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of User Outputs	<input type="text" value="4"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of User Inquiries	<input type="text" value="3"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of Files	<input type="text" value="1"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of External Interfaces	<input type="text" value="2"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Complexity Adjustment Table](#) | [FP Calculation](#)

RESULT	
PROJECT FUNCTION POINTS	<input type="text" value="48.75"/>

[Top of Page](#) | [Domain Characteristic Table](#) | [Complexity Adjustment Table](#)