

Hackathon Project Phases Template

Project Title:

AI personalized Email Generator

Team Name:

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Team Members:

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Phase-1: Brainstorming & Ideation

Objective:

- to **develop an AI-powered tool** that helps users **quickly generate and send well-structured emails** in different tones (Formal, Casual, Appreciation, Complaint, etc.). This tool aims to **save time, improve communication, and enhance productivity** by automating email writing with AI.

Key Points:

1. **Problem Statement:** Writing clear and professional emails is often time-consuming and challenging, especially when adjusting tone and wording for different situations. This project automates email writing using AI, making the process faster, easier, and more effective.
2. **Proposed Solution:** The project provides an **AI-powered email generator** that helps users quickly create well-structured emails in different tones (Formal, Casual, Appreciation, Complaint, etc.). It automates email writing and sending, ensuring **efficiency, professionalism, and ease of use** while saving time.
3. **Target Users:**
 - ☐ **Working professionals** – Quickly draft emails for office communication.

- ☐ **Businesses & customer support** – Automate responses and improve efficiency.
- ☐ **Students & job seekers** – Create professional emails for applications and networking.
- ☐ **Individuals** – Easily write emails without worrying about wording or tone.
- ☐ **Anyone who sends emails** – Save time and enhance communication.

4. **Expected Outcome:**

- ☐ A **user-friendly AI tool** that generates well-structured emails instantly.
 - ☐ Emails with **proper tone and format** based on user input.
 - ☐ **Time-saving automation** for personal and professional communication.
 - ☐ Secure **email sending feature** using SMTP integration.
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Phase-2: Requirement Analysis

Objective:

Define technical and functional requirements for the AI personalized Email Generator

Key Points:

1. Technical Requirements:

- ☐ **Programming Language:** Python
- ☐ **Frameworks & Libraries:** Streamlit (for UI), Requests (for API calls), Authlib (for authentication)
- ☐ **AI Model:** Hugging Face Falcon-7B
- ☐ **Email Sending:** SMTP (Simple Mail Transfer Protocol)
- ☐ **Authentication:** Google OAuth2

2. Functional Requirements:

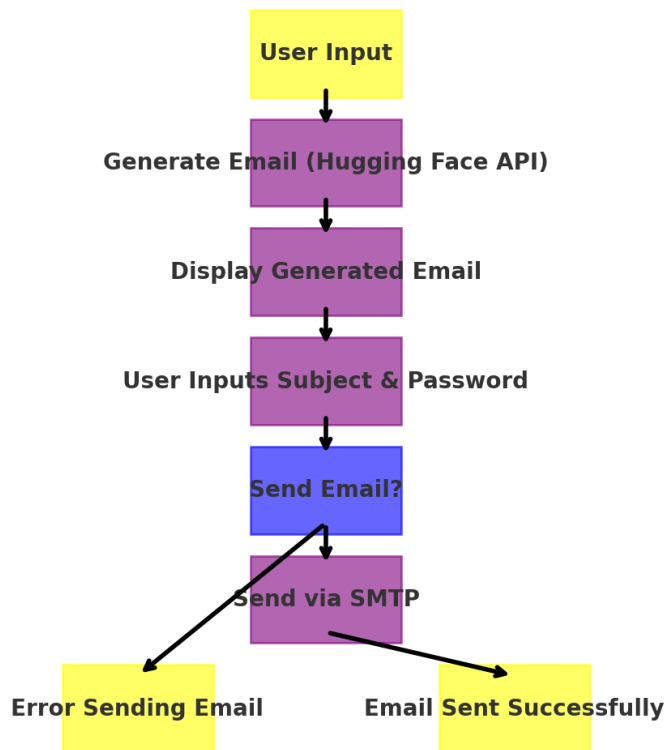
- ☐ **AI-generated email content** based on user input (topic, tone, etc.).
- ☐ **User authentication** with Google OAuth for security.
- ☐ **Email customization options** (sender, recipient, subject, and message tone).
- ☐ **SMTP integration** to send emails directly from the application.
- ☐ **Search history feature** to track previous email topics.

3. Constraints & Challenges:

- ☐ **API Limitations:** Hugging Face API may have rate limits or response delays.
 - ☐ **Email Security Risks:** Proper encryption and authentication are needed for safe email sending.
 - ☐ **User Experience:** Ensuring easy navigation and seamless AI-generated results.
 - ☐ **Deployment Issues:** Hosting considerations for handling multiple users efficiently.
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Phase-3: Project Design

Block Diagram: AI Email Generator & Sender



Objective:

- Define the **architecture** and **user flow** of the project to ensure smooth functionality and usability.

Key Points:

1. System Architecture:

- User inputs details → AI generates email → User reviews → Email is sent via SMTP.
- Google OAuth for secure login.
- Optional: Database for saving email history.

2. User Flow:

- User logs in via Google.
- Enters email details (topic, recipient, tone, etc.).
- AI generates the email.
- User reviews & edits (if needed).

- User sends the email.
- Email is saved in history for future reference.

3. UI/UX Considerations:

- Simple & clean UI using Streamlit.
- Easy input fields for email customization.
- Predefined tone options for quick selection.
- Real-time feedback on email generation & sending.

Phase-4: Project Planning (Agile Methodologies)

Objective:

- Break down the tasks using Agile methodologies.

Phase-4: Project Planning (Agile Methodologies)

Objective:

- Break down development tasks for efficient completion.

Sprint	Task	Priority	Duration	Deadline	Assigned To	Dependencies	Expected Outcome
Sprint 1	Environment Setup & API Integration	<div></div> High	6 hours (Day 1)	End of Day 1	Member 1	Google API Key, Python, Streamlit setup	API connection established & working
Sprint 1	Frontend UI Development	<div></div> Medium	2 hours (Day 1)	End of Day 1	Member 2	API response format finalized	Basic UI with input fields
Sprint 2	AI Email Generation Model Integration	<div></div> High	3 hours (Day 2)	Mid-Day 2	Member 1 & 2	API response, UI elements ready	AI-generated email functionality working
Sprint 2	Error Handling & Debugging	<div></div> High	1.5 hours (Day 2)	Mid-Day 2	Member 1 & 4	API logs, UI inputs	Improved system stability
Sprint 3	Testing & UI Enhancements	<div></div> Medium	1.5 hours (Day 2)	Mid-Day 2	Member 2 & 3	API response, UI layout completed	Responsive UI, better user experience
Sprint 3	Final Presentation & Deployment	<div></div> Low	1 hour (Day 2)	End of Day 2	Entire Team	Working prototype	Demo-ready project

Key Points:

Sprint Planning with Priorities

Phase-5: Project Development

Objective:

Objective:

Implement core features of the AI Personalized Email Generator.

Key Points:

1. Technology Stack Used:

- **Frontend:** Streamlit
- **Backend:** Hugging Face Falcon-7B API
- **Programming Language:** Python

2. Development Process:

- Implement **API key authentication** and integrate Hugging Face Falcon-7B API.
- Develop **AI-powered email generation** based on user input.
- Optimize **SMTP integration** for secure email sending.

3. Challenges & Fixes:

- **Challenge:** Delayed API response times. **Fix:** Implement caching to store frequently generated emails.
 - **Challenge:** Limited API calls per minute. **Fix:** Optimize API requests to fetch only necessary data.
 - **Challenge:** Email security concerns. **Fix:** Use **OAuth-based authentication** and encryption for SMTP integration.
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Phase-6: Functional & Performance Testing



Objective:

Functional & Performance Testing

Objective:

Ensure that the AI Personalized Email Generator works as expected.

Test Case ID	Category	Test Scenario	Expected Outcome	Status	Tester
TC-001	Functional Testing	Enter a topic and select "Formal" tone	AI should generate a well-structured formal email	 Passed	Tester 1
TC-002	Functional Testing	Enter a topic and select "Casual" tone	AI should generate a relaxed, conversational email	 Passed	Tester 2
TC-003	Performance	Generate multiple emails	Emails should be generated		Tester

Test Case ID	Category	Test Scenario	Expected Outcome	Status	Tester
TC-004	Testing	within a minute	without significant delay	Passed	3
	Security	Attempt to send an email without authentication	System should prevent sending without login	 Passed	Tester 4
	Testing			Passed	4
TC-005	Error Handling	Provide an invalid email address for sending	System should display an error message	 Passed	Tester 5

Final Submission

1. **Project Report Based on the templates**
 2. **Demo Video (3-5 Minutes)**
 3. **GitHub/Code Repository Link**
 4. **Presentation**
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