COLLEGE CODE : 9111

COLLEGE NAME: SRM MADURAI COLLEGE FOR ENGINEERING AND TECHNOLOGY

DEPARTMENT: B.E COMPUTER SCIENCE AND ENGINEERING

STUDENT NM-ID:

3DE3OEEADOADD16ABF843D795F7463AA
DE16A18153AEB4296F4DC6FC9A42259
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ROLLNO:911123104007
911123104027
911123104037
911123104038

DATE:

Completed the project named as Phase 5

TECHNOLOGYPROJECT NAME : Live Weather Dashboard

SUBMITTED BY,NAME:
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T.D.B.Kiruthikha
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LIVE WEATHER DASHBOARD – PHASE V

1. Additional Features

Adding new capabilities that extend the core functionality and improve user engagement.

Multi-locationWeatherTracking:
Allow users to add and monitor multiple cities or locations simultaneously on their dashboard.

WeatherAlertsandNotifications:
Implement real-time alerts for severe weather conditions (storms, heatwaves, rain, snow) via push notifications or emails.

HistoricalWeatherData&Trends:
Provide access to past weather data (e.g., last week/month) with graphical trend analysis.

CustomizableDashboard:
Users can customize the layout, themes (dark/light mode), and widgets they want to see (temperature, humidity, wind speed, UV index).

WeatherMapIntegration:
Embed interactive maps showing live weather patterns such as precipitation, temperature heatmaps, or storm tracking.

LocalizationandLanguageSupport:
Support multiple languages and regional weather formats (°C vs °F, metric vs imperial units).

OfflineMode:
Cache the last fetched weather data to provide basic info even when offline or network is unstable.

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2. UI/UX Improvements

Enhancing the interface anduser experience for better engagement and usability.

ResponsiveDesign:
Ensure the dashboard is fully responsive and optimized for all devices (desktop, tablets, smartphones).

SmoothAnimationsandTransitions:
Add subtle animations when updating weather info or switching between locations to create a more polished experience.

IntuitiveNavigation:
Simplify navigation with clear menus, search functionality for cities, and easy toggles for settings/customizations.

AccessibilityEnhancements:
Ensure compliance with WCAG guidelines — screen reader support, keyboard navigation, sufficient color contrast.

Loading Indicators and Error Messages:
Show clear feedbackduring data fetches,and user-friendly messages for errors or no data situations.

Personalized Greetings & Tips:
Display greetings based on time of day (e.g., “Good morning!”) and relevant weather tips (e.g., “Carry an umbrella today!”).

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3. API Enhancements

Improving backend communicationanddatahandling for reliability and extensibility.

Efficient Data Fetching:
Implementcachingstrategiestominimize API calls and improve load times; useconditional requestsorratelimiting.

Error Handling & Retry Logic:
Robusthandling of APIfailureswithretries, fallbacks, and graceful degradationwhen externaldataisunavailable.

Expand API Coverage:
Integrate additional APIsforenricheddata — pollen count, air quality index, UVindex, orradar imagery.

User API Keys (Optional):
Allowadvanceduserstoinputtheirown API keys if the dashboard relies on third-party weather APIswithratelimits.

WebSocket or Server-Sent Events:
Fornear real-time updates,explorepush-based mechanisms instead of periodic polling.

API Documentation:
Provide internal or external API documentation if the project exposes endpoints for third-party use.

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4. Performance and Security Checks

Ensuring the application runs efficiently and is secure against vulnerabilities.

Performance Optimization:
- o Minimize and bundle assets (JS/CSS).
- o Lazy load non-critical resources.
- o Optimize images and media.
- o Use CDN for faster asset delivery.

Load Testing:
Simulatehigh user loads to identify bottlenecks and optimize backend/database queries.

Security Audits:
- o Secure API keys and sensitive data.
- o Implement HTTPS everywhere.

- Validate and sanitize all user inputs to prevent injection attacks.
- Use secure authentication mechanisms if users log in.

DataPrivacyCompliance:
Ensure compliance with GDPR or other regional privacy laws, especially if collecting user data.

RegularDependencyUpdates:
Keep all libraries and frameworks up to date to patch known vulnerabilities.

Monitoring&Logging:
Set up monitoring for uptime, errors, and unusual activity; maintain logs for troubleshooting and audits.

Deployment

ChooseHostingPlatform:
Deploy on cloud platformslike AWS, Azure, Google Cloud, or services like Vercel, Netlify dependingon your stack.

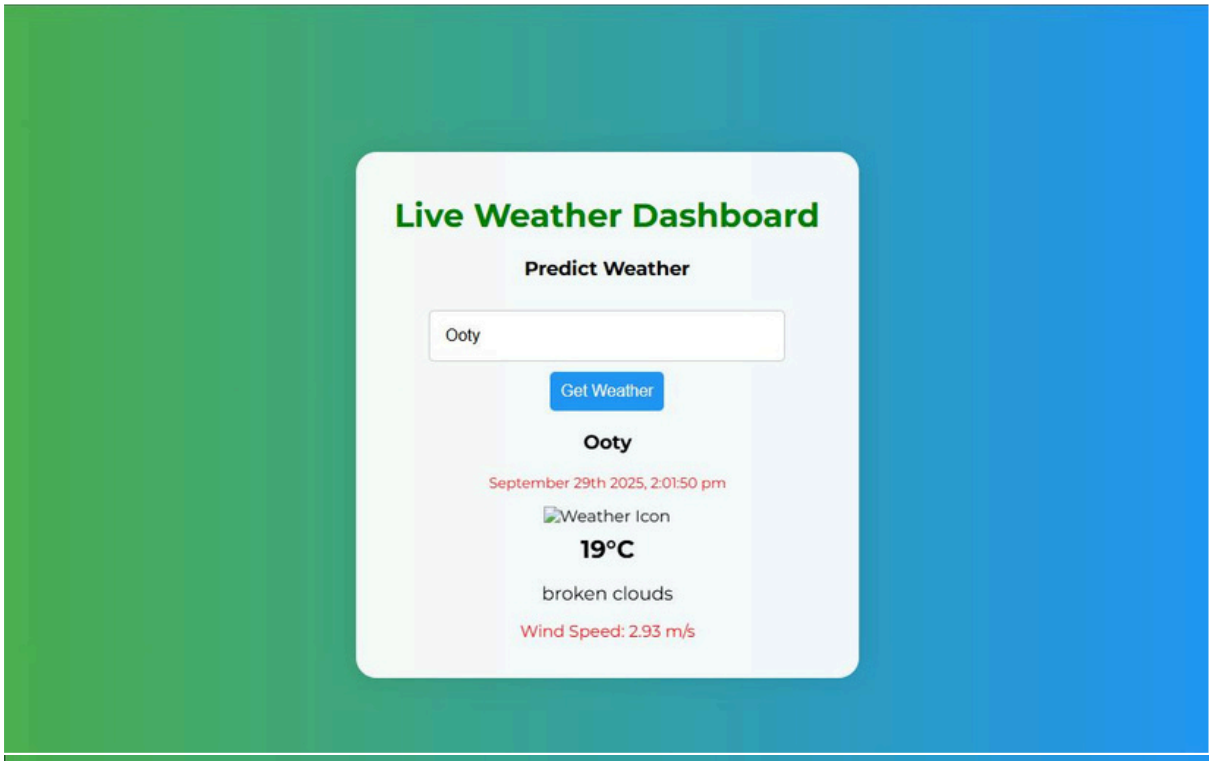
CI/CDPipeline:
Automate testing, building,and deployment workflows for faster and safer releases.

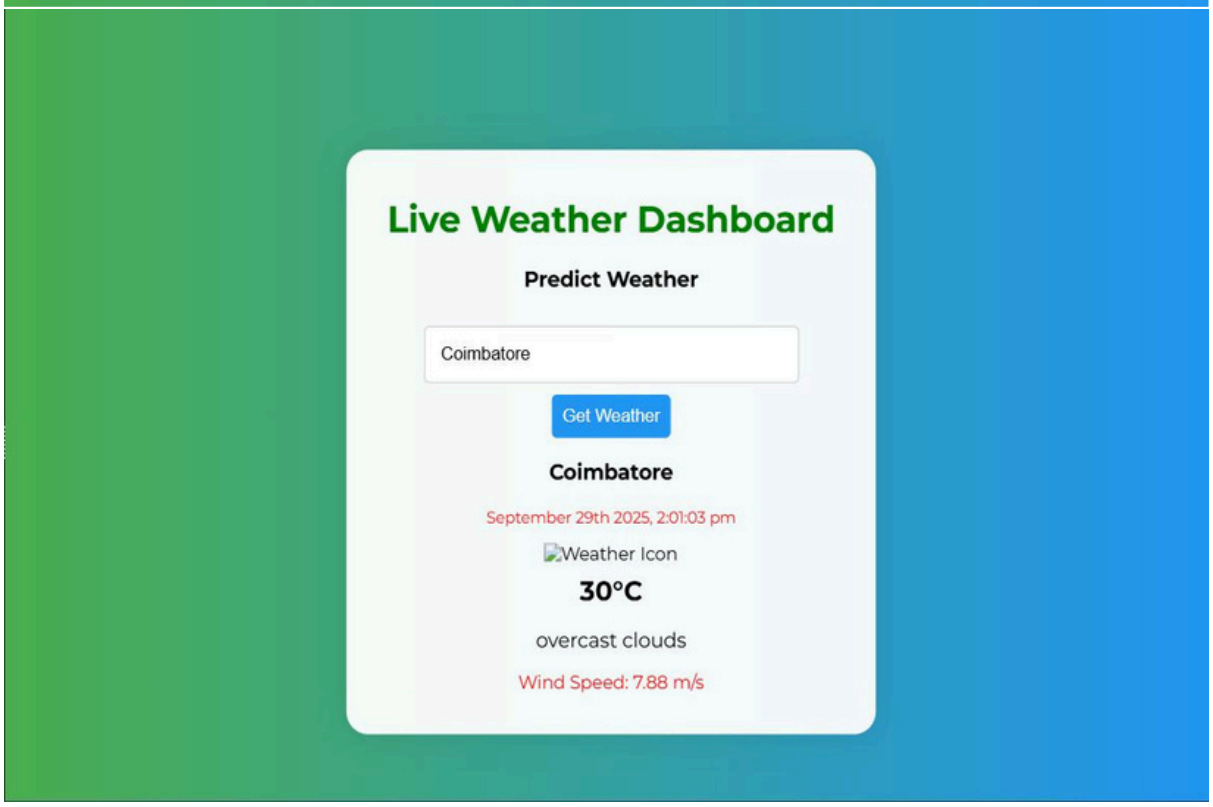
Domain&SSL:
Secure a custom domain and configure SSL certificates for secure connections.

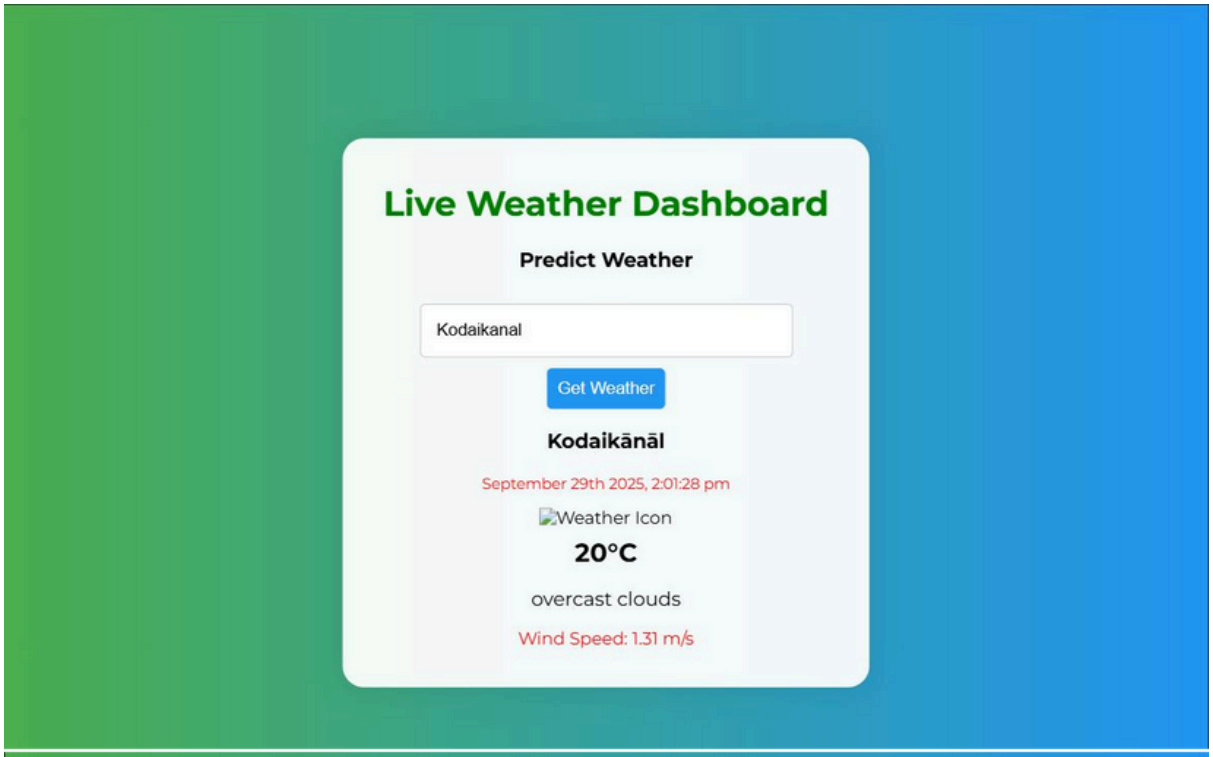
Backup&Recovery:
Implement backup strategies for data and configurations.

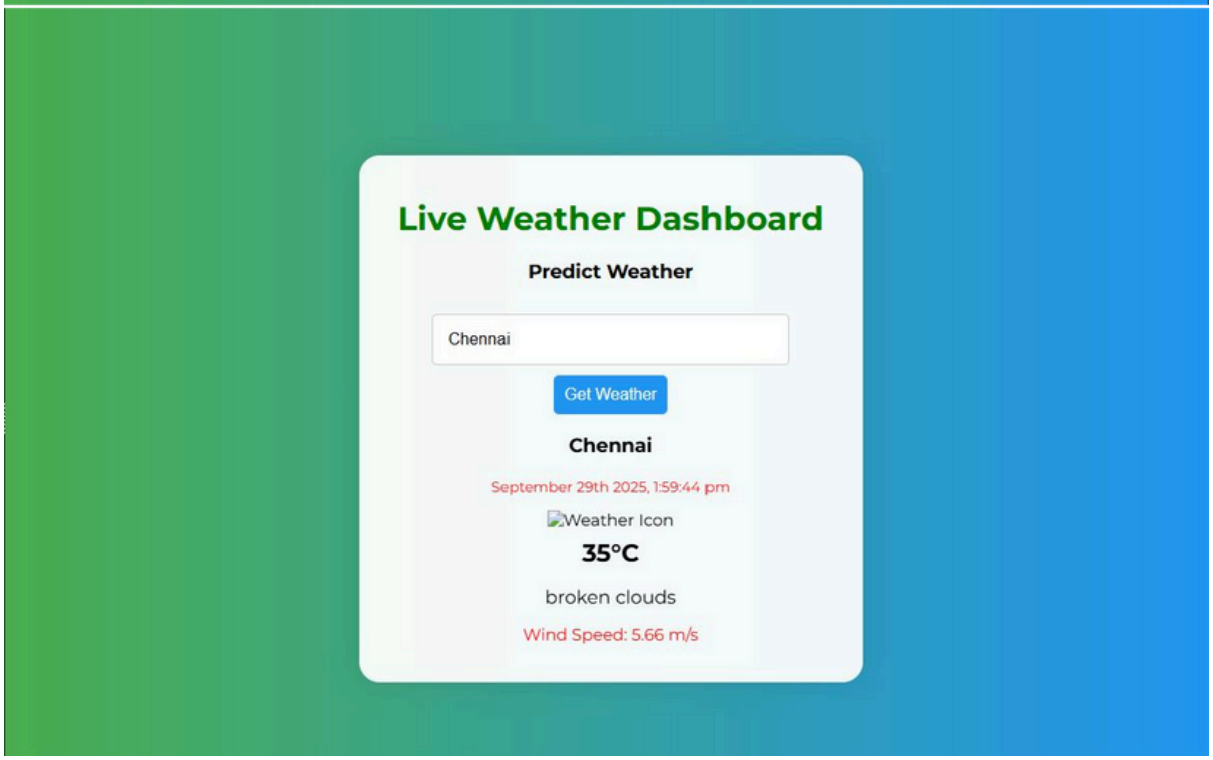
Post-DeploymentTesting:
Conduct smoke tests and user acceptance tests in the production environment.

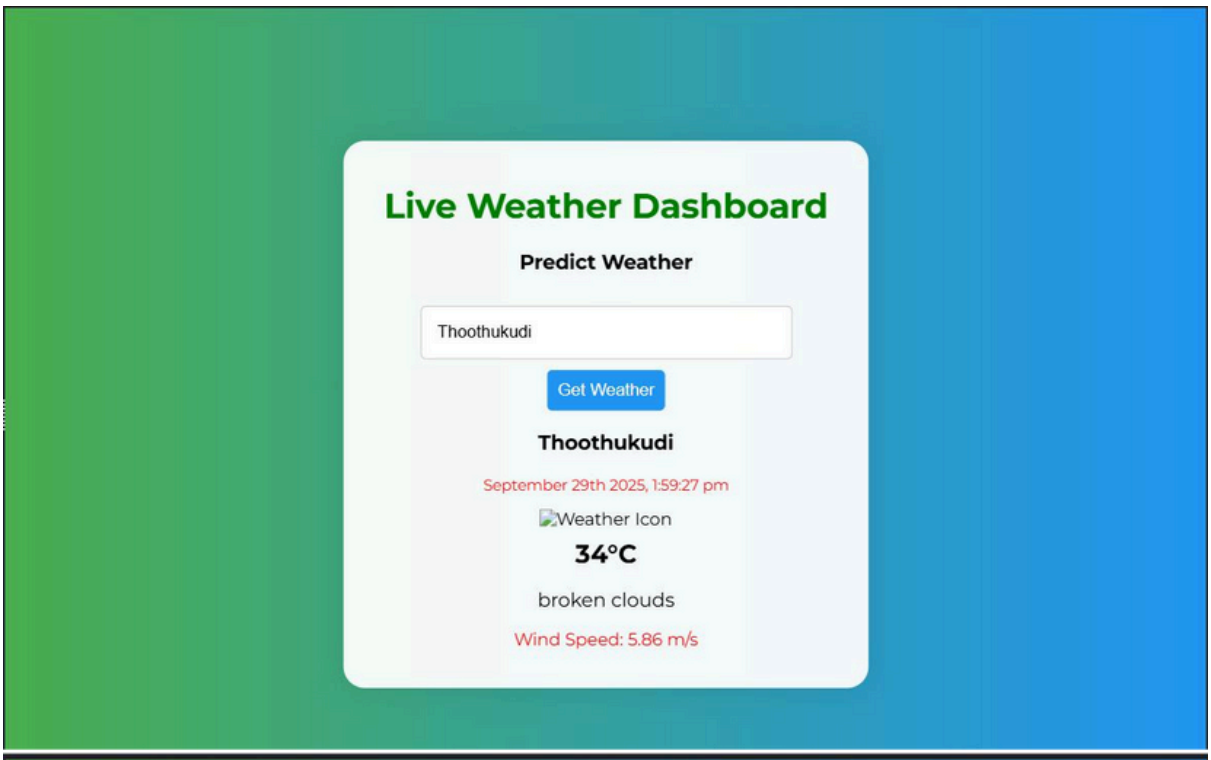
OUTPUT

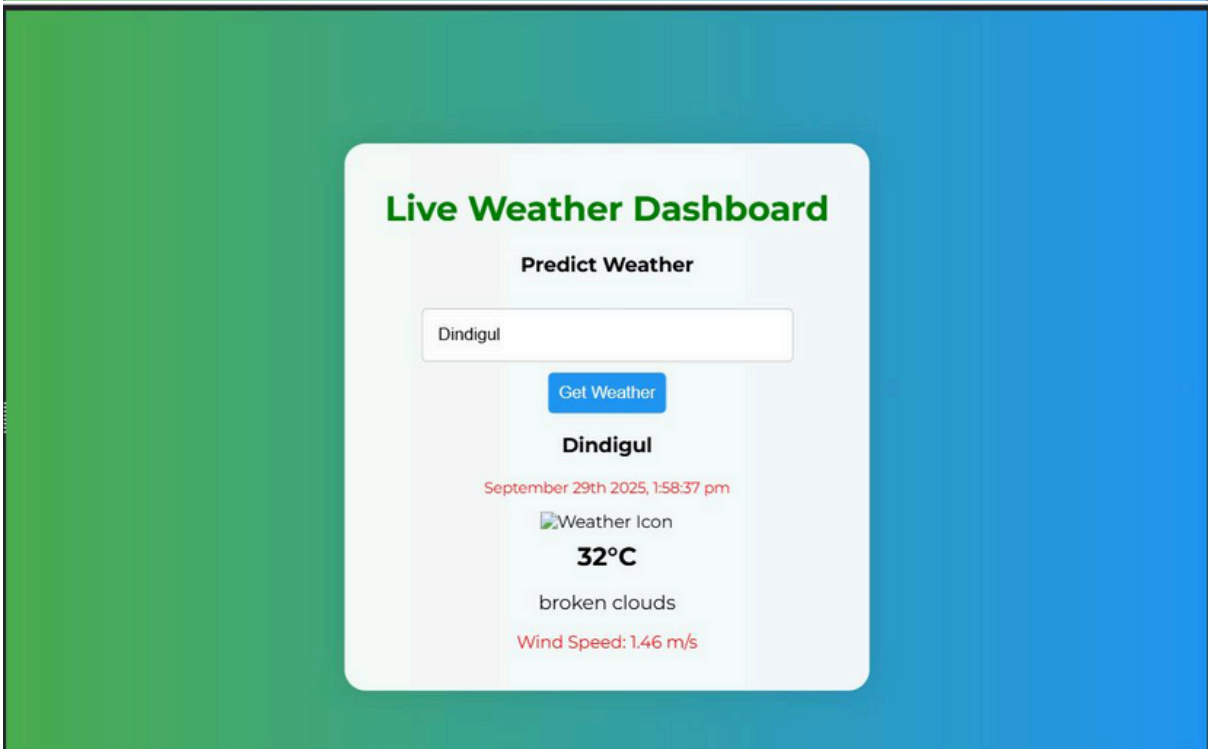

Live Weather Dashboard
Predict Weather
Ooty
Get Weather
Ooty
September 29th 2025, 2:01:50 pm
Weather Icon
19°C
broken clouds
Wind Speed: 2.93 m/s


Live Weather Dashboard
Predict Weather
Coimbatore
Get Weather
Coimbatore
September 29th 2025, 2:01:03 pm
Weather Icon
30°C
overcast clouds
Wind Speed: 7.88 m/s


Live Weather Dashboard
Predict Weather
Kodaikanal
Get Weather
Kodaikānāl
September 29th 2025, 2:01:28 pm
Weather Icon
20°C
overcast clouds
Wind Speed: 1.31 m/s


Live Weather Dashboard
Predict Weather
Chennai
Get Weather
Chennai
September 29th 2025, 1:59:44 pm
Weather Icon
35°C
broken clouds
Wind Speed: 5.66 m/s





GitHub link 🔗 :

Priyadharshini R S : https://github.com/Priya-23-03/Project-

Priyadharshini S B : https://share.google/2iiEEzcEcsgknPZNP

Devis Akalya Pushpam D : https://github.com/devisakalya/Project-/tree/main

Kiruthikha T D B : https://github.com/kiruthikha15/Project/tree/main