

**MINOR PROJECT REPORT**  
**ON**  
**“4-DAY WEATHER REPORT WEBSITE”**

Submitted in partial fulfilment of the requirements for the award of  
degree of

**Bachelors of Technology**  
**IN**  
**Computer Science & Engineering**

**Submitted To: -**

**Mrs. Gundeep Kaur**

**HOD of Computer Department**

**Submitted By: -**

**Rajni (2219116)**



***LUDHIANA GROUP OF COLLEGES, CHAUKIMAAN PUNJAB 142023***

**Affiliated To**

**I.K. GUJRAL PUNJAB TECHNICAL UNIVERSITY, KAPURTHALA**

## DECLARATION

I hereby declare that the project entitled “**4-DAY WEATHER REPORT WEBSITE**” submitted in partial fulfillment of the requirements for the award of the degree is the result of my own work carried out under the guidance of my respected faculty.

This project work has not been submitted to any other University or Institution for the award of any degree or diploma. All information and content used in this project have been properly acknowledged wherever applicable which is submitted by me to Department of computer science and engineering, **Ludhiana Group of Colleges, Chaukimaan, Punjab** , Affiliated to **I.K. Gujral Punjab Technical University, Kapurthala**.

**Signature of Student**

**Name:** Rajni

**Roll No.:** 2219116

**Class & Dept:** B.Tech in Computer Science & Engineering

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Rajni (2219116).  
B.Tech in CSE

Signature of HOD of Computer Science & Engineering

Mrs. Gundeep Kaur

Signature of Project In-charge

Mr. Abhishek Bansal

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## ABSTRACT

The project titled “**4-Day Weather Forecast Website**” is a web-based application designed to provide users with real-time weather information along with a reliable four-day forecast for any searched city. The main objective of this project is to develop a simple, user-friendly, and responsive weather forecasting system using modern web technologies.

The website allows users to search for a city and instantly view current weather conditions such as temperature, wind speed, humidity, cloudiness, and approximate sunshine percentage. Along with the current conditions, the system also displays a four-day weather forecast including date, day, temperature range, wind speed, and precipitation probability.

The project uses **HTML** for structuring the web pages, **CSS** for styling and responsive design, and **JavaScript** for implementing application logic and API integration. Weather data is fetched dynamically using a weather API, ensuring real-time and accurate information. Input validation and proper error handling are implemented to enhance usability and reliability.

Overall, this project demonstrates the practical implementation of API-based web applications and highlights the importance of user interface design, real-time data processing, and error handling in modern web development.

## CHAPTER 1 – INTRODUCTION

### ❖ Background

Weather forecasting plays a vital role in daily life, helping people plan activities, travel, agriculture, and disaster management. With the growth of internet technologies, weather information has become easily accessible through web-based applications. A weather forecasting website provides instant and reliable information to users worldwide.

This project focuses on developing a **4-Day Weather Forecast Website** that allows users to search any city and view both current weather conditions and upcoming forecasts. The system emphasizes simplicity, accuracy, and ease of use while following modern UI standards.

### ❖ Need for the Project

Many existing weather platforms are complex and overloaded with unnecessary features. This project aims to provide a **clean, fast, and informative** solution that focuses only on essential weather parameters.

The project also serves as a learning platform for understanding:

- API integration
- Real-time data handling
- Front-end development concepts

### ❖ Objectives

The objectives of this project are:

- To design a user-friendly weather forecasting website
- To fetch real-time weather data using APIs
- To display current weather and a 4-day forecast
- To implement proper validation and error handling
- To develop a responsive and accessible interface

## ❖ Problem Definition

**“To design and implement a web-based weather forecasting system that provides current weather details and a four-day forecast for any searched city using modern web technologies.”**

### 1.5 Scope of the Project

The scope of the project includes:

- City-based weather search
- Real-time data fetching
- Weather parameter visualization
- Error handling for invalid searches

Future enhancements may include:

- Automatic location detection
- Air quality index
- Hourly forecast
- Mobile application integration

## ❖ Significance of the Project

This project helps users make informed decisions based on weather conditions. It also helps students understand real-world web application development using APIs and front-end technologies.

## CHAPTER 2 – METHODOLOGY / SYSTEM DESIGN

### ❖ Introduction

This chapter describes the methodology used in designing and developing the weather forecasting website. The system follows a structured and modular approach for better scalability and maintenance.

### ❖ System Design Approach

The project follows a simple **Waterfall Model**, including:

- Requirement analysis
- System design
- Implementation
- Testing
- Deployment

### ❖ System Architectures

The system consists of three layers:

1. **User Interface Layer (HTML)**
2. **Presentation Layer (CSS)**
3. **Application Logic Layer (JavaScript & API)**

*(Architecture diagram can be inserted here)*

### ❖ Flowchart Explanation

The flow of the system:

1. User enters city name
2. System validates input
3. API request is sent



4. Weather data is received
5. Data is displayed to the user

## ❖ Algorithm

### Algorithm: Weather Forecast System

1. Start
2. Accept city name from user
3. Validate input
4. Fetch weather data using API
5. Display current weather
6. Display 4-day forecast
7. Handle errors if any
8. End

## ❖ Technologies Used

Technology	Purpose
HTML5	Structure
CSS3	Styling & responsiveness
JavaScript	Logic & API handling
Weather API	Real-time data
Browser	Execution

## CHAPTER 3 – IMPLEMENTATION & RESULTS

### ❖ Implementation Details

- HTML used for layout
- CSS for modern UI design
- JavaScript for API calls and DOM updates

### ❖ Output Description

The website displays:

- Current temperature
- Wind speed
- Humidity
- Sunshine percentage
- 4-day forecast cards

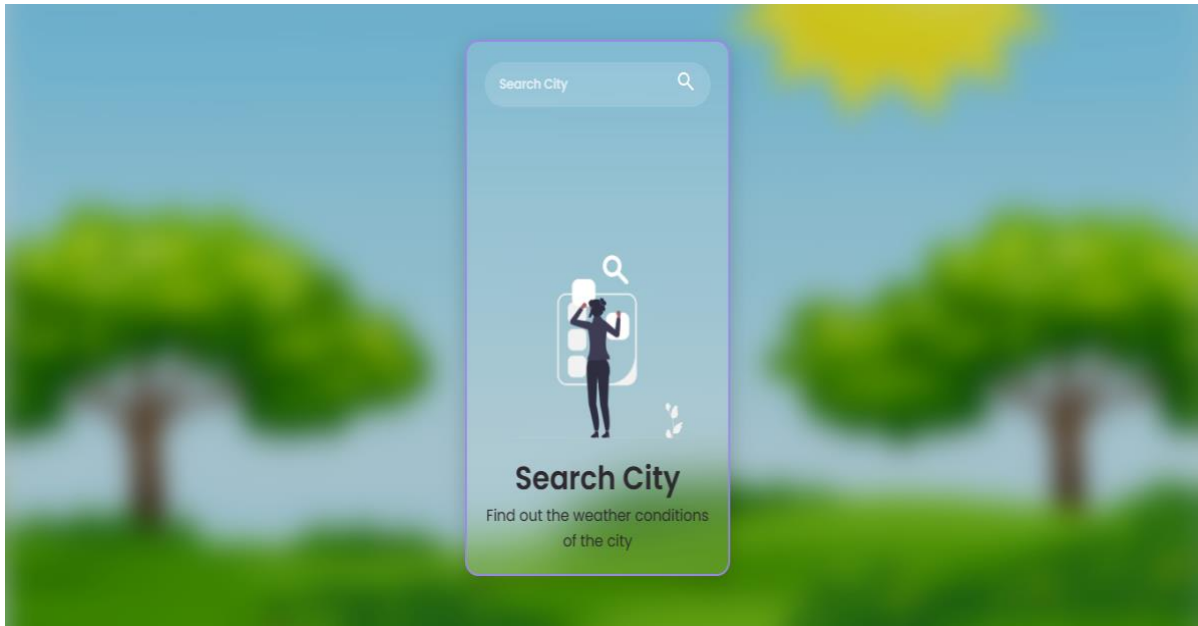
### ❖ Results and Testing

The system was tested for:

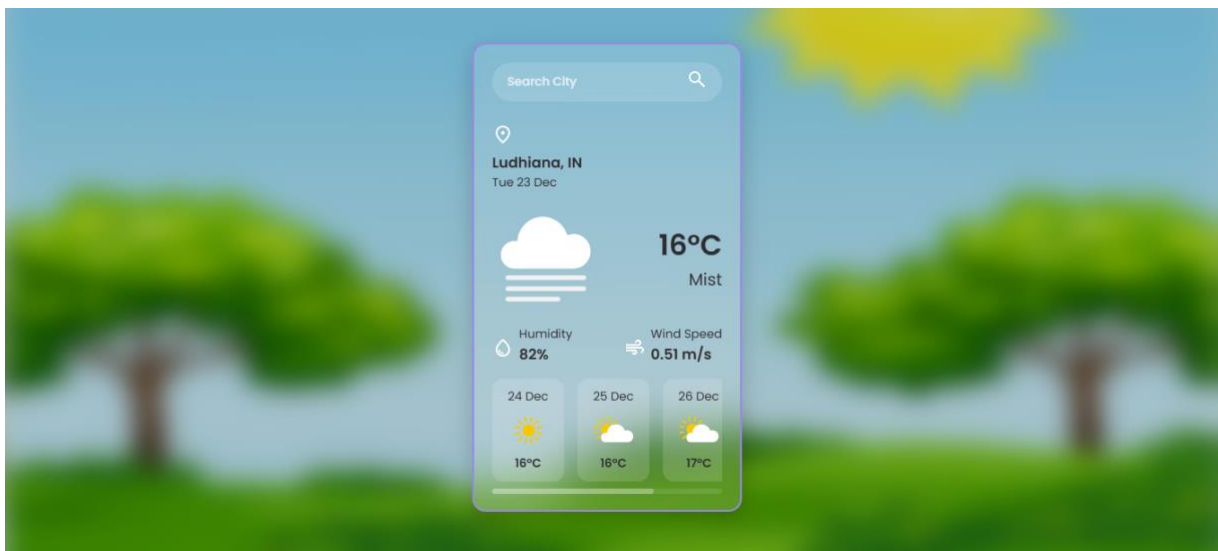
- Valid city searches
- Invalid input handling
- Network errors
- Responsiveness

All test cases were successfully passed.

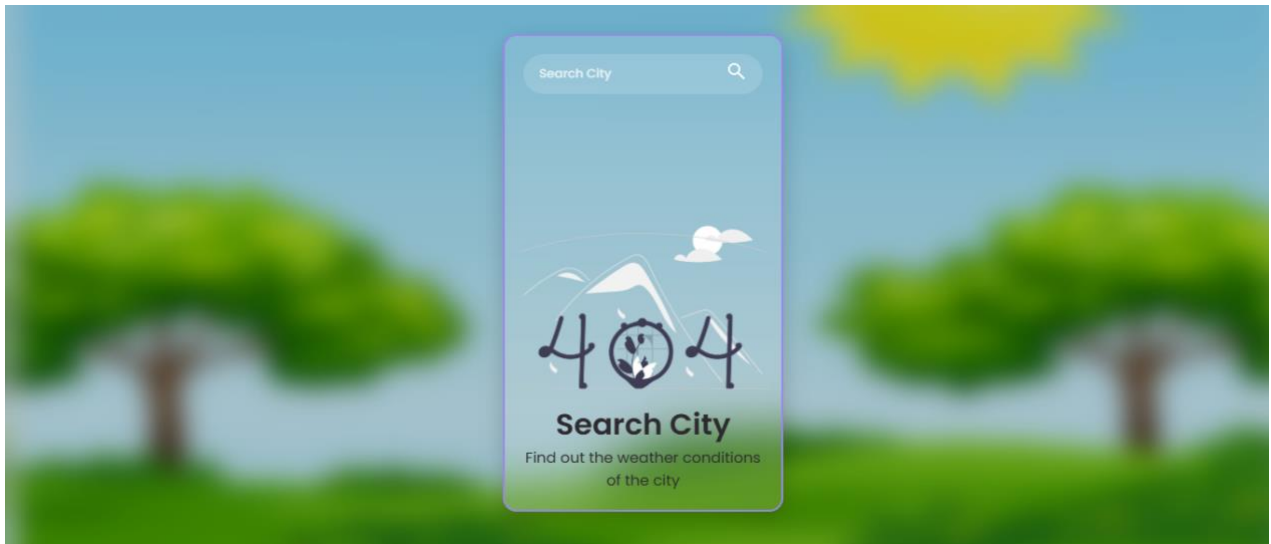
## Screenshots



**Search On the location**



**Search location and given all Weather information**



**Wrong search location show this error**

## CHAPTER 4 – CONCLUSION & FUTURE SCOPE

### ❖ Conclusion

The **4-Day Weather Forecast Website** has been successfully designed and developed using modern front-end web technologies such as **HTML, CSS, and JavaScript**. The primary objective of this project was to create a simple, user-friendly, and efficient web-based system that allows users to search for any city and obtain accurate real-time weather information along with a four-day forecast. The project effectively fulfills all the defined objectives and demonstrates the practical application of web development concepts.

This weather forecasting system provides users with essential weather parameters including current temperature, minimum and maximum temperature, wind speed, humidity, cloudiness, sunshine percentage, and precipitation probability. By integrating a weather API, the system ensures that the data displayed is up-to-date and reliable. The use of API-based data fetching highlights the importance of real-time data handling in modern web applications.

One of the major strengths of this project is its **clean and intuitive user interface**, which makes it accessible to users of all age groups. The website layout is responsive and adapts well to different screen sizes, making it suitable for desktops, tablets, and mobile devices. Proper input validation and error handling mechanisms have been implemented to manage invalid city names, network issues, and unexpected responses, thereby improving the overall reliability of the system.

From a learning perspective, this project has provided valuable experience in integrating external APIs, handling JSON data, manipulating the Document Object Model (DOM), and designing responsive web interfaces. It also helped in understanding the importance of modular coding, debugging, and testing in real-world applications. The project demonstrates how front-end technologies alone can be used to develop functional and informative applications without the need for complex backend systems.

Overall, the 4-Day Weather Forecast Website is a lightweight, efficient, and practical application that serves both functional and educational purposes. It successfully combines accuracy, simplicity, and performance, making it a useful tool for everyday weather monitoring as well as a strong academic project.

## ❖ Future Scope

Although the current version of the weather forecasting website meets its objectives, there is significant scope for further improvement and enhancement. Several advanced features can be incorporated to make the system more powerful and user-centric.

In the future, **automatic location detection** using GPS or browser location services can be added to display weather information without requiring manual city input. This will enhance user convenience and improve the overall experience. Another important enhancement could be the integration of **hourly weather forecasts**, which would provide more detailed insights into short-term weather changes.

The system can also be extended to include **Air Quality Index (AQI)** data, UV index, and weather alerts, which are especially useful for health-conscious users and during extreme weather conditions. Adding **graphical representations**, such as temperature and wind charts, would improve data visualization and user understanding.

From a technical perspective, backend integration using technologies like **Node.js**, **Firebase**, or **cloud databases** can allow user authentication, data storage, and personalized weather dashboards. Features such as saving favorite cities, notification alerts, and historical weather data can further enhance usability.

Additionally, the website can be converted into a **Progressive Web Application (PWA)**, enabling offline access and mobile installation. Multilingual support and voice-based search can also be implemented to reach a wider audience.

In conclusion, with continuous improvements and technological upgrades, this weather forecasting system has the potential to evolve into a comprehensive and advanced weather information platform suitable for real-world deployment.

## **REFERENCES**

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