A
PROJECT REPORT
ON

# WEATHER FORECASTING APPLICATION

***Submitted in partial fulfilment of the requirements for the award of the degree of***
**BACHELOR OF TECHNOLOGY**

***by***

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# DECLARATION

I, **Pranjali Kothari,** student of **B. Tech CS V Semester**, Department of Computer Science and Engineering, Graphic Era Hill University, Dehradun, declare that the technical project work entitled "Weather Forecasting Application" has been carried out by me and submitting partial fulfilment of the course requirements for the award of degree in Bachelor Of Technology of **Graphic Era Hill University, Dehradun** during the academic year **2022-2023**. The matter embodied in this synopsis has not been submitted to any other university or institution for the award of any other degree or diploma.

**Place: Dehradun**
**Date: 28 January 2023**

# ACKNOWLEDGEMENT

Here by I am submitting the project report on "Weather Forecasting Application", as per the scheme of Graphic Era Hill University, Dehradun.

I express the deepest sense of gratitude to Mr. Aniruddha Prabhu, Asst. Professor, Department of Computer Science and Engineering for the invaluable guidance extended at every stage and in every possible way.

I am very much thankful to all the faculty members of the Department of Computer Science and Engineering, friends and my parents for their constant encouragement, support and help throughout the period of project conduction.

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# Abstract

Weather forecasting is the application of science and technology to predict the state of the atmosphere for a given location. Ancient weather forecasting methods usually relied on observed patterns of events, also termed pattern recognition. For example, it might be observed that if the sunset was particularly red, the following day often brought fair weather. However, not all of these predictions prove reliable. Here this system will predict weather based on parameters such as temperature, humidity and wind. User will enter current temperature; humidity and wind, System will take this parameter and will predict weather (rainfall in inches) from previous data in database (dataset). The role of the admin is to add previous weather data in database, so that system will calculate weather (estimated rainfall in inches) based on these data. Weather forecasting system takes parameters such as temperature, humidity, and wind and will forecast weather based on previous record therefore this prediction will prove reliable. This system can be used in Air Traffic, Marine, Agriculture, Forestry, Military, and Navy etc.

# Project Aim

To make a real time weather application that takes user's exact location and provides weather forecast for the day and upcoming days also. We also tried to design a simple but visual UI that provides comprehensive data. Also, the application provides suggestions to users based on weather conditions. And lastly, user can search and access data for custom locations (string based).

# Requirements of project

## 2.1 Hardware Requirements:

### Device specifications:

- Processor: 11th Gen Intel(R) Core(TM) i3-1115G4 @ 3.00GHz 3.00GHz
- System: 64-bit operating system, x64-based processor
- Installed Ram 8.00 GB

### Windows Specifications:

- Edition: Windows 10 Home Single Language
- Version: 21H2
- OS Build: 19044.1766

## 2.2 Software Requirements:

1. Python IDE should be installed.
2. Some Python Libraries

## 2.3 Libraries Installed:

1. tkinter
2. geopy
3. timezonefinder
4. datetime
5. requests
6. pytz

# Libraries Used

1. tkinter - Tkinter is the standard GUI library for Python. Python when combined with Tkinter provides a fast and easy way to create GUI applications. Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit.

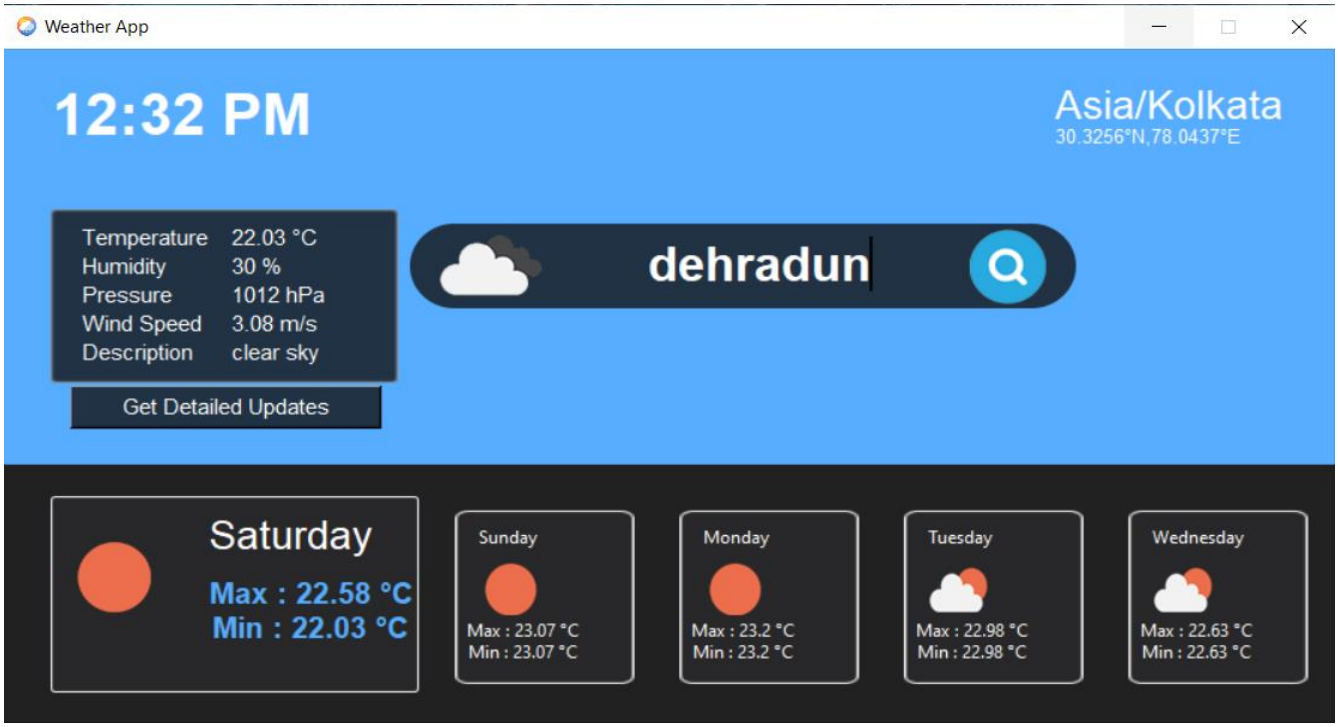
2. geopy - geopy is a Python client for several popular geocoding web services. geopy makes it easy for Python developers to locate the coordinates of addresses, cities, countries, and landmarks across the globe using third-party geocoders and other data sources.

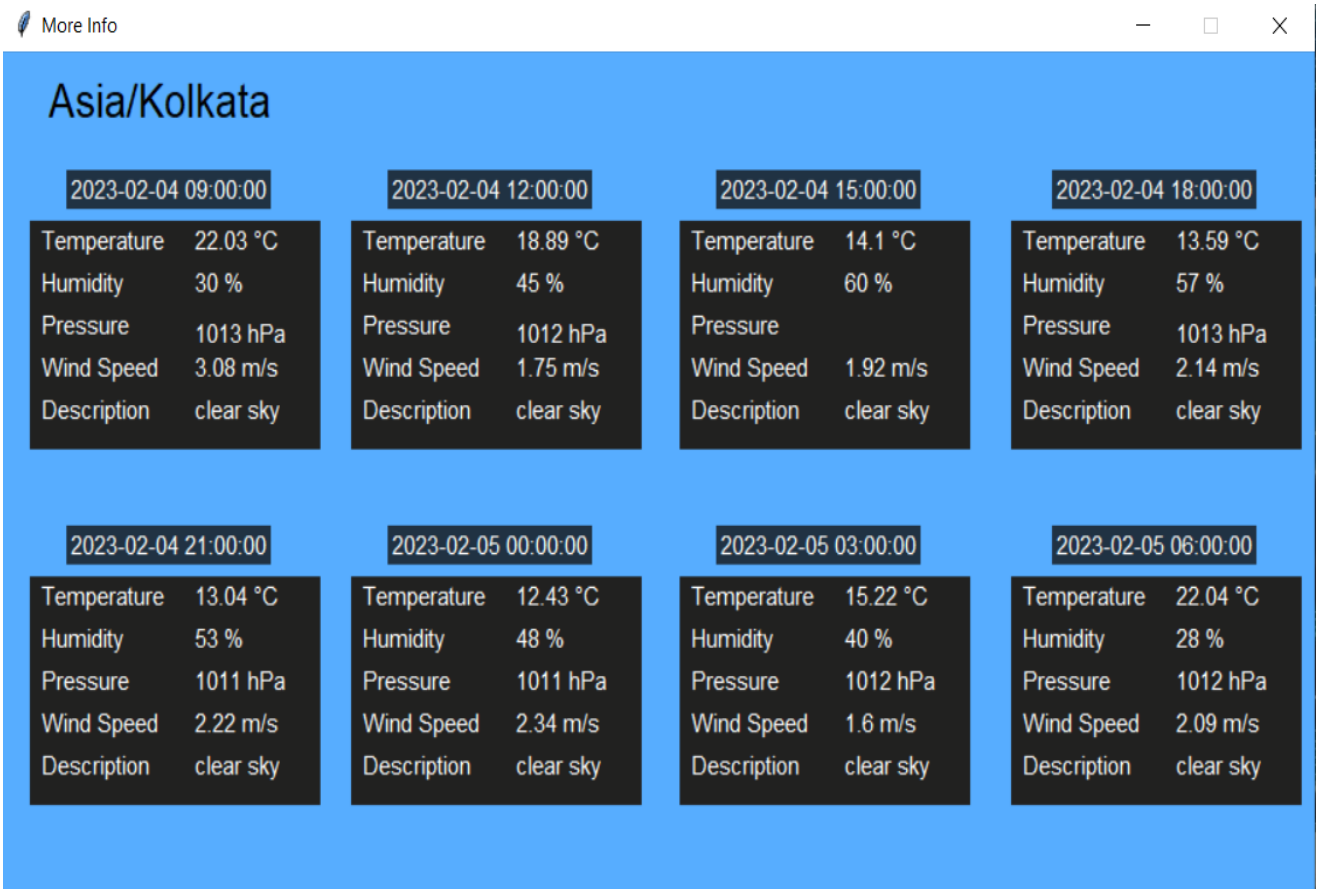
3. timezonefinder - This is a fast and lightweight python package for looking up the corresponding timezone for given coordinates on earth entirely offline.

4. datetime - The datetime module supplies classes for manipulating dates and times. While date and time arithmetic is supported, the focus of the implementation is on efficient attribute extraction for output formatting and manipulation.

5. pytz - This library allows accurate and cross platform timezone calculations using Python 2.4 or higher. It also solves the issue of ambiguous times at the end of daylight saving time, which you can read more about in the Python Library Reference.

# Application View



# Benefits Of Weather Forecast In Python

- **People can make smart choices about when and where to go on vacation** – People's work schedules are so full that they rarely have time to rest or even spend time with each other. Most of the time, workaholics like this use their vacation time to go on a relaxing trip.
- **The weather forecast helps keep people safe** – When it rains a lot, rivers and other bodies of water flood, sending water into people's homes, gardens, and even public spaces. This affects a lot of people. If flooding comes out of nowhere, it can kill a lot of people.
- **Weather forecasting is important in the transportation sector** – There have been reports of ships turning over and planes crashing in different parts of the world. Most of the time, bad weather is the main cause of these kinds of accidents.
- **Benefits of Agriculture** – In the past, farmers lost a lot of money because of changes in the weather. Now, farmers use new technology to plan their schedules. Farmers can plan what to plant and when to plant it by looking at weather forecasts.