



# **Capital University of Science & Technology**

## **Term Project REPORT**

### **Department of EE and CE**

## **“Report for a Basic weather information display using Predefined Data”**

### **1. Title Page**

**Title:**

Basic Weather Information Display Using Predefined Data

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Capital University of Science & Technology

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### 3. Problem Statement

- **Problem:**

Many weather apps need live data from the internet to show weather conditions. But what if we want to make a simple weather app that works without the internet? This report explains how to make a basic weather display that shows information for a city using data already stored in the app (called predefined data).

- **Why is it important?**

It helps us learn how to build simple apps that don't need the internet.

It shows basic weather information like temperature, humidity, wind speed, and weather conditions (sunny, cloudy, etc.).

## 4. Methodologies Used

- Steps to create the app:

### **Predefined Weather Data:**

We use a small list of cities with weather data like temperature, humidity, and wind speed.

### **Tools Used:**

The programming language used is C++ because it's simple and easy to work with.

We use a library called C library and the C++ library to create a window where users can enter a city name and see the weather.

### **How the App Works:**

The user types a number of which city name is predefined into the app.

The app looks for that city's weather in the predefined data.

If the city is found, it shows the weather. If the city is not found, it shows an error message.

### **Error Handling:**

If the user types a city that is not in the list, the app will show an error message saying that data is not available.

## 5. Code

- Here's the code to create the weather app:

### C++ Code:

```
#include <iostream>

#include <string>

using namespace std;

// Structure to store weather information for a city
struct WeatherInfo {
    string city;    // Name of the city
    float temperature; // Temperature in Celsius
    int humidity;    // Humidity in percentage
    float windSpeed; // Wind speed in kilometers per hour
};

// Function to display the weather information for a selected city
void displayWeather(const WeatherInfo &weather) {
    cout << "-----\n";
    cout << "Weather Information for: " << weather.city << endl;
    cout << "Temperature: " << weather.temperature << "°C" << endl;
    cout << "Humidity: " << weather.humidity << "%" << endl;
    cout << "Wind Speed: " << weather.windSpeed << " km/h" << endl;
    cout << "-----\n";
}

int main() {
```

```

// Array of predefined weather data for different cities
WeatherInfo data[] = {
    {"Islamabad", 12.2, 55, 12.0}, // City: Islamabad
    {"Karachi", 24.5, 70, 15.5},   // City: Karachi
    {"Lahore", 13.5, 65, 18.0},    // City: Lahore
    {"Quetta", 18.6, 40, 10.2},    // City: Quetta
    {"Peshawar", 25.7, 60, 14.8}   // City: Peshawar
};

int n = sizeof(data) / sizeof(data[0]); // Calculate the number of cities
int choice; // Variable to store the user's choice

// Loop to display the menu repeatedly until the user exits
while (true) {
    cout << "\nAvailable Cities:\n";

    // Display the list of cities
    for (int i = 0; i < n; i++) {
        cout << i + 1 << ". " << data[i].city << endl;
    }

    cout << "0. Exit\n"; // Option to exit the program
    cout << "Select a city (1-" << n << ") or 0 to exit: ";
    cin >> choice; // Read the user's choice

    if (choice == 0) { // Exit condition
        cout << "Exiting program. Goodbye!\n";
        break;
    }
}

```

```
else if (choice > 0 && choice <= n) {  
    // If the user selects a valid city, display its weather information  
    displayWeather(data[choice - 1]);  
}  
else {  
    // If the user enters an invalid choice, display an error message  
    cout << "Invalid choice! Please try again.\n";  
}  
}  
  
return 0;  
}
```

## 6. Results

- After running the code, you will see a window where you can type any number, then you get a weather information of the selected number city. For example, if you type (1-5) the output will show the weather of selected desired city.

### OUTPUT:

Available Cities:

1. Islamabad
2. Karachi
3. Lahore
4. Quetta
5. Peshawar
0. Exit

Select a city (1-5) or 0 to exit:

- If we select 1, then we get the weather information of Islamabad.

Weather Information for: Islamabad

Temperature: 12.2°C

Humidity: 55%

Wind Speed: 12 km/h

- And if we select 0, program exit.

Exiting program. Goodbye!



# 7. References

## 1. C++ Documentation

### Official C++ Documentation:

<https://en.cppreference.com/w/>

This site is a comprehensive reference for C++ standard libraries, syntax, and more.

## 2. C++ Data Structures

### C++ Standard Library - Containers (For Storing Data):

<https://en.cppreference.com/w/cpp/container>

It covers containers like `std::vector`, `std::map`, and `std::array` that can be used for storing and handling weather data.

### C++ Tutorials (Official):

<https://www.learncpp.com/>

A good place for both beginners and advanced users to learn C++ syntax and techniques.

## 3. C++ Reference for Output and Input

### C++ I/O (Standard Input and Output):

<https://en.cppreference.com/w/cpp/io>

This provides details on how to work with streams (e.g., `std::cin`, `std::cout`) for input/output operations in C++.

1	<b>Project Title</b>	Basic weather information display using Predefined Data		
2	<b>Lab</b>	CYG1611- Applications of Information and Communication Technologies Lab	<b>Semester</b>	Fall 2024
3	<b>Student Name &amp; Registration No.</b>	Student 1	Student 2	
		M ABDUL REHMAN BCPE243021	M AYYAN SHAKEEL BCPE243013	
4	<b>Instructor Name &amp; Signature</b>	Mr. SM Waqas Ayub Shah		

## Project Demonstration

Assessment Criteria	Very Poor 0-1	Poor 2-3	Satisfactory 4-5	Good 6-8	Excellent 9-10	Score Student 1	Score Student 2
<b>Design Evaluation and Testing</b>	No or very poor design prototype and demonstration.	Design prototype is not working and no testing of design has been done	Design prototype is partially functional and little testing of design has been done.	Design prototype is functional and some testing of design has been done.	Design prototype is fully functional and design has been exhaustively tested.		
<b>Usage of software tools (Visual Studio, MS Office Applications) in design and evaluation</b>	No or very poor software tool (Visual Studio, MS Office Applications) usage in project design and results evaluation	Insignificant evidence of software tool (Visual Studio, MS Office Applications) usage in project design and results evaluation	Little evidence of ability to select appropriate software tools (Visual Studio, MS Office Applications), in project design and results evaluation	Some evidence of skills to use software tools (Visual Studio, MS Office Applications) in project design and results evaluation	Clear evidence of skills to use software tools (Visual Studio, MS Office Applications) in project design and results evaluation		

## Project Report

Assessment Criteria	Very Poor 0-1	Poor 2	Satisfactory 3	Good 4	Excellent 5	Score Student 1	Score Student 2
<b>Literature Survey, Problem Analysis and Design Procedure</b>	No or very poor literature survey done. No problem analysis performed. No worthwhile design procedure exists.	Insufficient literature survey. Problem analysis part is skipped or does not contribute to creating an effective design. Does not follow any design procedure.	Partial literature survey. Problem Analyses performed is haphazard and design parameter selection is spontaneous. Little use of design procedure.	Adequate literature survey. Problem analysis performed correctly. Project demonstrates some use of design process.	Clear and complete literature survey, effective problem analyses is performed to choose design parameters. Project demonstrates effective use of design process.		
<b>Language, Grammar and References</b>	A lot of spelling and grammatical mistakes with poor English. The list of references is clearly inadequate. Table of content missing.	Frequent spellings and grammatical errors. The list of references should be expanded.	Occasional spellings and grammatical errors. The list of references appears reasonable but citation does not follow standard format.	Very few spellings and grammatical errors. Organization is good. The list of references appears reasonable and citation follow standard format.	Almost no spelling or grammatical mistake. Excellent organization. A comprehensive list of references is cited using the standard format.		

## Viva Voce

Assessment Criteria	Very Poor 0-1	Poor 2	Satisfactory 3	Good 4	Excellent 5	Score Student 1	Score Student 2
<b>Knowledge of Project Implementation details (Q/A)</b>	No or very poor knowledge of implementation and design process.	Poor knowledge of implementation and design with wrong/no answers	Satisfactory knowledge of implementation, vague answers	Adequate knowledge of project implementation with majority of correct answers	Exceptional knowledge of implementation and overall design with clear and spontaneous answers.		