

# **Deploying Weather Search Tool to Amazon Web Services (AWS) Documentation**

**Technologies of Virtualised Networks and Data Centers - 2023/24/1**

**Al-Absi Manar Hani Ghazi Ali (CYYVG6)**

## Contents

Overview .....	3
Features .....	3
Usage.....	3
Application Tools.....	3
Default City Setting .....	4
Weather Information Display .....	4
Integration with OpenWeatherMap .....	4
Dynamic City Background Photos from Unsplash.....	5
Deployment on AWS S3.....	5
1. S3 Bucket Creation .....	5
2. Access Permissions Configuration .....	5
3. IAM User Creation and Policy Assignment .....	6
4. Access Point Creation .....	6
Testing.....	7
Test case 1:.....	7
Test case 2:.....	7
Conclusion .....	8

## Table of Figures

Figure 1 Block Public Access (Bucket Settings) .....	6
Figure 2 Weather Static Website .....	7
Figure 3 Test IAM User's Permissions .....	8

## Overview

This documentation provides an in-depth understanding of my Weather Search Tool, a web application designed to provide users with real-time weather information for cities worldwide. Developed using HTML, CSS, and JavaScript, the tool offers a user-friendly interface with a dynamic background and beautiful photos of the cities.

This documentation outlines the process of deploying a Weather Application website to an Amazon Simple Storage Service (S3) bucket on Amazon Web Services (AWS).

## Features

**Global Weather Search:** Users can explore weather details for cities globally.

**Background Photos:** Stunning city images from Unsplash enhance the visual experience.

**Default City:** Budapest, Hungary, is the default city on website launch.

**Weather Information:** The application lies in its ability to present comprehensive and accurate weather information for the selected city.

**Responsive Design:** Access the tool seamlessly across various device types (laptop, iOS, Android) for a consistent experience.

## Usage

The Weather Search Tool is designed for simplicity and ease of use. Users can search for other cities and utilize the search functionality to retrieve weather information for different cities. They can explore dynamic backgrounds and enjoy the visual appeal of dynamically changing city backgrounds.

## Application Tools

The Weather Search Tool comprises three main components:

**HTML:** Responsible for the structure and layout of the website.

**CSS:** Serves as a styling language, elevating the visual presentation of the Weather Search Tool.

**JavaScript:** Enhances user interactions and dynamically updates the webpage.

## Default City Setting

Upon opening the website, Budapest is set as the default city for weather information display. This default city provides users with immediate relevant information.

## Weather Information Display

The application lies in its ability to present comprehensive and accurate weather information for the selected city. The displayed weather details include:

**Location:** Clearly states the city and country for quick identification.

**Temperature:** Presents the current temperature in Celsius, providing a snapshot of the current weather conditions.

**Weather Conditions:** Describes the current state of the weather, such as "Light Rain," offering users a quick understanding of the atmospheric conditions.

**Temperature Range:** Displays the maximum and minimum temperatures, giving users insights into the expected temperature fluctuations throughout the day.

**"Feels Like" Temperature:** Provides information on how the weather might feel to users, accounting for factors like wind and humidity.

**Humidity:** Indicates the percentage of humidity, influencing the perceived comfort of the weather.

**Wind Speed:** Informs users about the speed of the wind, contributing to a more comprehensive understanding of the weather conditions.

By presenting this detailed weather information, the weather application ensures that users have access to all the key elements necessary for making informed decisions, whether planning outdoor activities or staying prepared for varying weather conditions.

## Integration with OpenWeatherMap

The weather application utilizes weather data from OpenWeatherMap. The following code snippet illustrates how weather information for a specific city is fetched using the OpenWeatherMap API:

Javascript:

```
let weather = {  
  apiKey: "fa3a28fc983e9aa1a93928146c0fec55",  
  fetchWeather: function (city) {  
    fetch(  
      "https://api.openweathermap.org/data/2.5/weather?q=" +
```

```
city +  
"&units=metric&appid=" +  
this.apiKey  
)
```

This integration ensures accurate and up-to-date weather information for the chosen city, enhancing the application's reliability.

## Dynamic City Background Photos from Unsplash

To elevate the visual appeal, the weather application incorporates background photos sourced from Unsplash using the following link:

```
"url('https://source.unsplash.com/1600x900/?" + city + "')";
```

To enhance the user experience, the application features a dynamic background that showcases a beautiful photo of the selected city. This visual element adds a touch of aesthetics to the tool, making it more engaging for users. The photo dynamically changes based on the city being viewed, providing a visually engaging element.

## Deployment on AWS S3

### 1. S3 Bucket Creation

**1.1 Bucket Naming:** A new S3 bucket named "manar-weather-application" is created to host the static website.

**1.2 File Upload:** The three files of the weather website were uploaded to the S3 bucket; HTML, CSS, and JS.

**1.3 Static Website Hosting:** Static website hosting is enabled on the S3 bucket using the provided endpoint (<http://manar-weather-application.s3-website.eu-central-1.amazonaws.com>).

### 2. Access Permissions Configuration

#### 2.1 Block Public Access (Bucket Settings):

**Block All Public Access:** This setting is turned off to allow public access to the Weather Application website. However, access controls are implemented using IAM policies and Access Points.

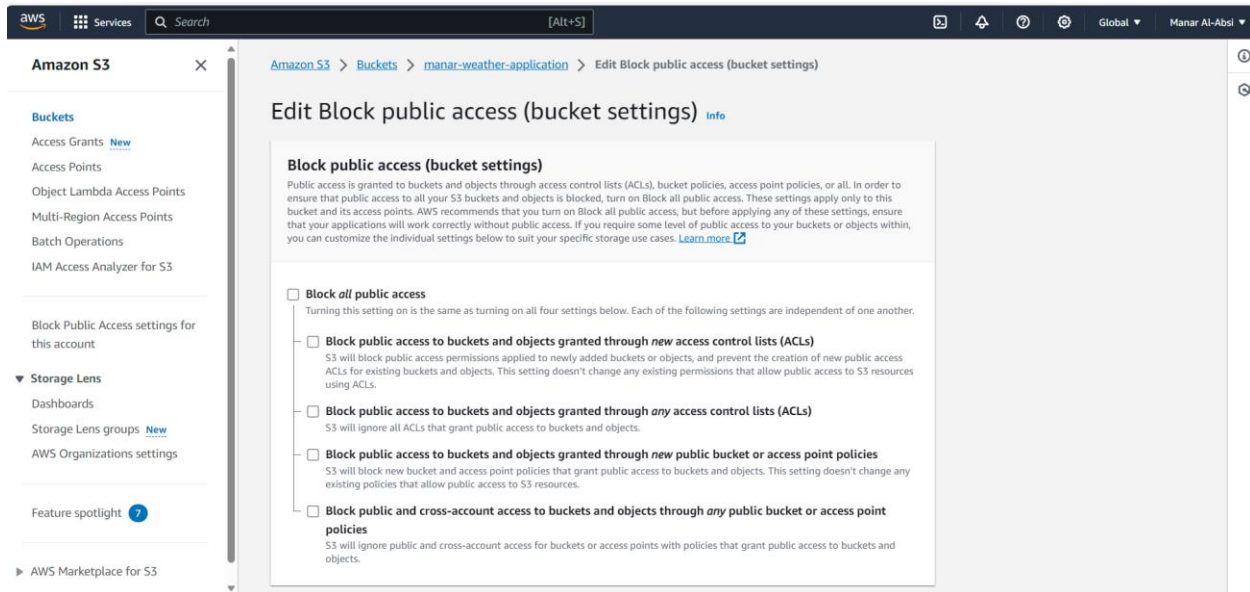


Figure 1 Block Public Access (Bucket Settings)

### 3. IAM User Creation and Policy Assignment

#### 3.1 IAM User Creation:

An IAM user named "weather-app-user" is created to manage the content of the S3 bucket.

#### 3.2 Policy Assignment:

The "weather-app-user" is assigned the "AdministratorAccess" policy to grant broad administrative privileges. This policy allows the user to manage S3 resources and perform other administrative tasks.

### 4. Access Point Creation

#### 4.1 Access Point Configuration:

An Access Point named "admin-access-point" is created to control access to the S3 bucket.

#### 4.2 IAM User Assignment:

The IAM user "weather-app-user" is assigned permission to access the S3 bucket through the "admin-access-point." This provides a granular and controlled access point for managing the S3 content.

The deployment on AWS S3 ensures reliable and scalable hosting, allowing users to access the Weather Search Tool globally.

## Testing

### Test case 1:

Static website hosting is tested by using the link: <http://manar-weather-application.s3-website.eu-central-1.amazonaws.com> , the website is successfully displayed and users can smoothly look up for specific city's weather details:

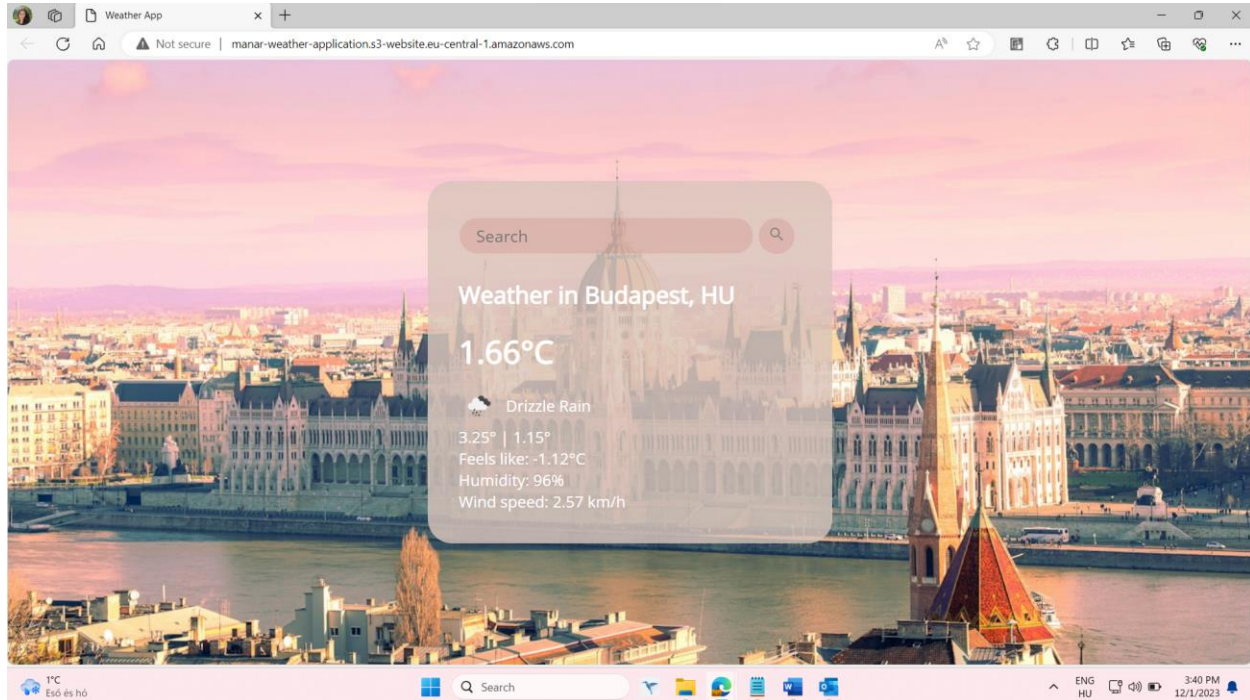


Figure 2 Weather Static Website

### Test case 2:

Testing if the IAM user "weather-app-user" can edit manar-weather-application bucket with the privileges he has:

I tried to upload a new .docx file under the weather-app-user using the access point that was created. And the test was successfully done:

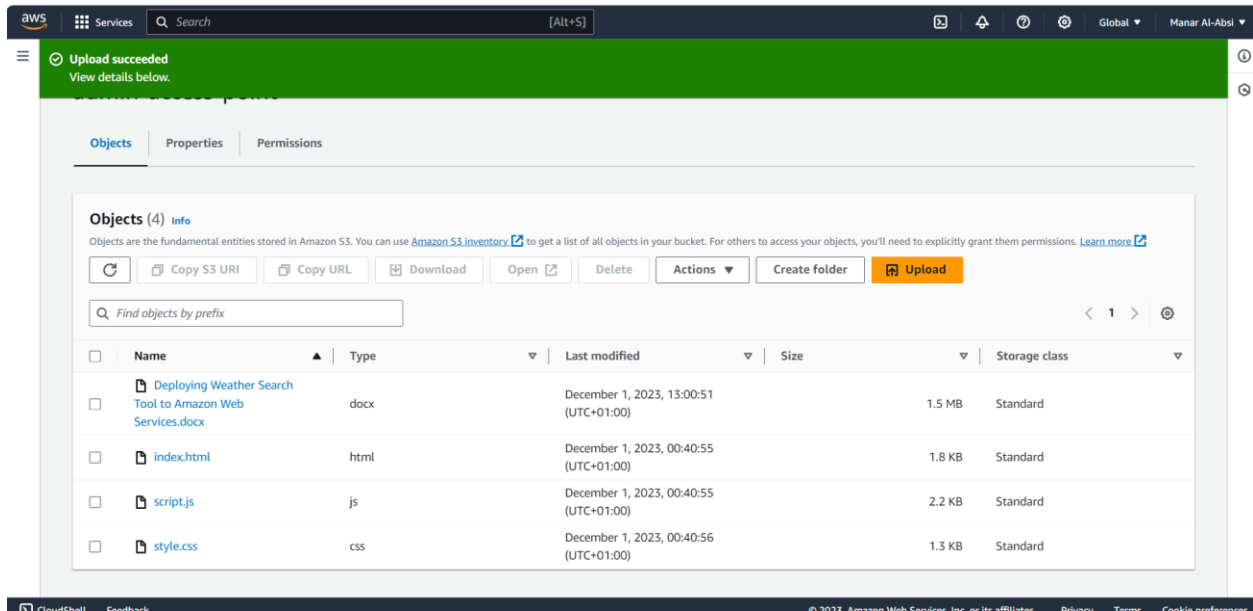


Figure 3 Test IAM User's Permissions

## Conclusion

The Weather Search Tool combines functionality with aesthetics, offering users a visually pleasing and informative experience. Whether checking the weather in Budapest or exploring conditions in other cities, this web application provides a seamless and engaging platform for users to stay informed about weather conditions.

With its deployment on AWS S3, the application benefits from the scalability and reliability of cloud hosting. Feel free to explore the diverse weather conditions of cities worldwide using this user-friendly web tool.