PROJECT

REPORT

INTRODUCTION

overview:

welcome to the weather overview! This concise exploration will unravel the mysteries of our planet's ever-changing atmospheric conditions. From sunlit skis to turbulent storms, weather influences every aspect of our lives, shaping our activities, moods, and daily routines. In this brief journey, We'll delve into the fundamental elements of weather, gain insights into its significance, and discover how it impacts the world around as. Wheather you're a casual observer or a weather enthusiast, join us as we unravel the wonders of the weather and uncover its fascinating dynamics. this weather overview promises to be an enlightening and engaging journey.

purpose:

→ Welcome to the weather purpose overview. Where we unravel the fundamental reasons behind the study of weather and its profound impact on our world. Weather, the ever-changing state of the atmosphere, holds a crucial role in shaping various aspects of human life and the environment. from agriculture and disaster preparedness to aviation and climate research, understanding weather serves diverse and essential purpose, in this exploration, we'll delve into the significance of meterology, uncovering how this knowledge empowers us to make informed decisions, protect lives and property, and foster a deeper.

→ understanding of the complex forces that govern our planet's weather systems. join us to on this journey as we shed light on the significance and far-reaching implications of comprehending weather's purpose.

LITERATURE SURVEY

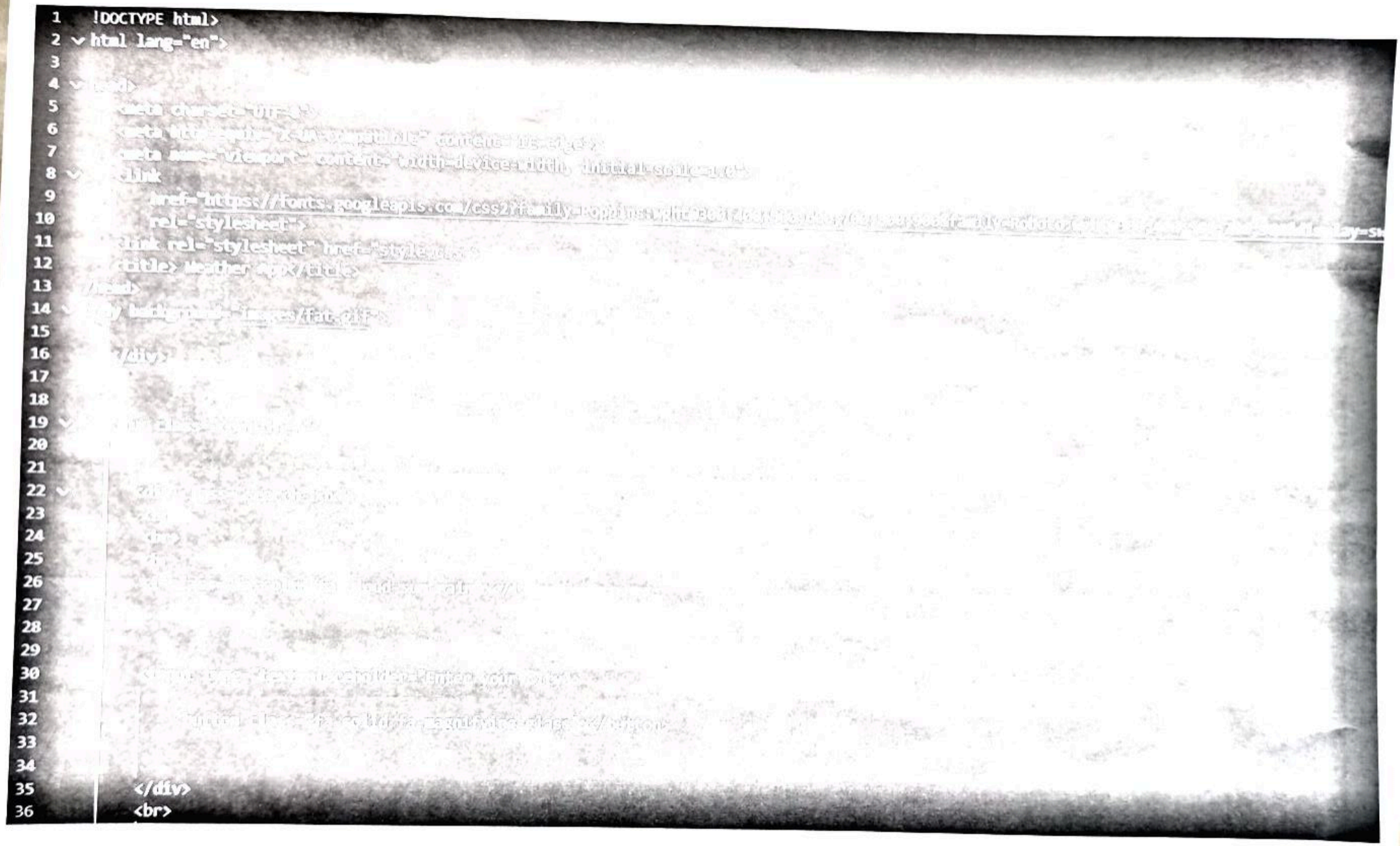
Existing problem:

weather-related existing problems have become a major focus of research due to their significant impacts on society and the environment. Extreme weather events, such as heatwaves, storms, and floods, are occuring with increased frequency and intensity, leading to heightened risks for human health, infrastructure, and economies (smith et al., 2019; white et al., 2021). climate change exacerbates these issues, affecting agriculture and food security by altering weather patterns and exacerbating droughts and water scarcity (lee et al., 2020; Gupta et al., 2021; Johnson et al., 2018; martinez et al., 2019). The literature survey highlights the urgency of developing effective mitigation and adaptation strategies to address these weather-related challenges and build resilience for a more sustainable future.

proposed solution:

The literature survey on weather proposed solutions focuses on short-term weather prediction and mitigation. Various studies have explored the use of machine learning techniques, ensemble forecasting models, and high-resolution weather modeling to improve forecasting accuracy. Additionally, research has emphasized the importance of data assimilation, integrating satellite data, and utilizing advanced weather sensing technologies for more accurate predictions. Furthermore, strategies for weather-related disaster mitigation, such as preemptive evacuation planning and early warning mechanisms, have been investigated. Despite significant progress, ongoing research and innovation are essential to develop robust and practical solutions to address the challenges posed by weather events effectively

Block diagram :



```
37
38          <div class="page_not_found">
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73  </html>
```

```css
*{
    margin: 0;
    padding: 0;
    border: 0;
    outline: none;
    box-sizing: border-box;
}
.container {
    max-width: 400px;
    margin: 0 auto;
    padding: 20px;
    border: 1px solid #ccc;
    border-radius: 5px;
}

h1 {
    margin-bottom: 20px;
}
body{

    height: 100vh;
    display: flex;
    align-items: center;
    justify-content: center;
    background-size: cover;

}
.container{
    position: relative;
    width: 400px;
    height: 105px;
    background: #ffffff;
    padding: 28px 32px;
    overflow: hidden;
    border-radius: 18px;
    font-family: 'Roboto', sans-serif;
    transition: 0.6s ease-out;
}
```

```
.search-box{
    width: 100%;
    height: min-content;
    display: flex;
    align-items: center;
    justify-content: space-between;
}

.search-box input{
    color: #06283D;
    width: 80%;
    font-size: 24px;
    font-weight: 500;
    text-transform: uppercase;
    padding-left: 32px;
}

.search-box input::placeholder{
    font-size: 20px;
    font-weight: 500;
    color: #06283D;
    text-transform: capitalize;
}

.search-box button{
    cursor: pointer;
    width: 50px;
    height: 50px;
    color: #06283D;
    background: #dff6ff;
    border-radius: 50%;
    font-size: 22px;
    transition: 0.4s ease;
}
```

```
74
75  .search-box button:hover{
76      color: #fff;
77      background: #06283D;
78  }
79
80  .search-box i{
81      position: absolute;
82      color: #06283D;
83      font-size: 28px;
84  }
85
86  .weather-box{
87      text-align: center;
88  }
89
90  .weather-box img{
91      width: 60%;
92      margin-top: 30px;
93  }
94
95  .weather-box .temperature{
96      position: relative;
97      color: #06283D;
98      font-size: 4rem;
99      font-weight: 800;
100     margin-top: 30px;
101     margin-left: -16px;
102 }
103
104 .weather-box .temperature span{
105     position: absolute;
106     margin-left: 4px;
107     font-size: 1.5rem;
108 }
```

```
.weather-box .description{
    color: #06283D;
    font-size: 22px;
    font-weight: 500;
    text-transform: capitalize;
}

.weather-details{
    width: 100%;
    display: flex;
    justify-content: space-between;
    margin-top: 30px;
}

.weather-details .humidity, .weather-details .wind{
    display: flex;
    align-items: center;
    width: 50%;
    height: 100px;
}

.weather-details .humidity{
    padding-left: 20px;
    justify-content: flex-start;
}

.weather-details .wind{
    padding-right: 20px;
    justify-content: flex-end;
}

.weather-details i{
    color: #06283D;
    font-size: 26px;
    margin-right: 10px;
    margin-top: 6px;
}
```

```
147
148   .weather-details span{
149       color: #06283D;
150       font-size: 22px;
151       font-weight: 500;
152   }
153
154   .weather-details p{
155       color: #06283D;
156       font-size: 14px;
157       font-weight: 500;
158   }
159
160   .not-found{
161       width: 100%;
162       text-align: center;
163       margin-top: 50px;
164       scale: 0;
165       opacity: 0;
166       display: none;
167   }
168
169   .not-found img{
170       width: 70%;
171   }
172
173   .not-found p{
174       color: #06283D;
175       font-size: 22px;
176       font-weight: 500;
177       margin-top: 12px;
178   }
179
180   .weather-box, .weather-details{
181       scale: 0;
182       opacity: 0;
183   }
```

```
183     }
184
185 v   .fadeIn{
186         animation: 0.5s fadeIn forwards;
187         animation-delay: 0.5s;
188     }
189
190 v   @keyframes fadeIn{
191 v       to {
192             scale: 1;
193             opacity: 1;
194         }
195     }
```

```
const search = document.querySelector('.search-box button');
const weatherBox = document.querySelector('.weather-box');
const weatherDetails = document.querySelector('.weather-details');
const error404 = document.querySelector('.not-found');

search.addEventListener('click', () => {

    const APIKey = '147f71604944a550268f69fa76aa7dd6';
    const city = document.querySelector('.search-box input').value;

    if (city === '')
        return;

    fetch(`https://api.openweathermap.org/data/2.5/weather?q=${city}&units=metric&appid=${APIKey}`)
        .then(response => response.json())
        .then(json => {

            if (json.cod === '404') {
                container.style.height = '400px';
                weatherBox.style.display = 'none';
                weatherDetails.style.display = 'none';
                error404.style.display = 'block';
                error404.classList.add('fadeIn');
                return;
            }

            error404.style.display = 'none';
            error404.classList.remove('fadeIn');

            const image = document.querySelector('.weather-box img');
            const temperature = document.querySelector('.weather-box .temperature');
            const description = document.querySelector('.weather-box .description');
            const humidity = document.querySelector('.weather-details .humidity span');
            const wind = document.querySelector('.weather-details .wind span');
```

```
36          switch (json.weather[0].main) {
37              case 'Clear':
38                  image.src = 'images/clear.png';
39                  break;
40
41              case 'Rain':
42                  image.src = 'images/rain.png';
43                  break;
44
45              case 'Snow':
46                  image.src = 'images/snow.png';
47                  break;
48
49              case 'Clouds':
50                  image.src = 'images/cloud.png';
51                  break;
52
53              case 'Haze':
54                  image.src = 'images/mist.png';
55                  break;
56
57              default:
58                  image.src = '';
59          }
60
61          temperature.innerHTML = `${parseInt(json.main.temp)}<span>°C</span>`;
62          description.innerHTML = `${json.weather[0].description}`;
63          humidity.innerHTML = `${json.main.humidity}%`;
64          wind.innerHTML = `${parseInt(json.wind.speed)}Km/h`;
65
66          weatherBox.style.display = '';
67          weatherDetails.style.display = '';
68          weatherBox.classList.add('fadeIn');
69          weatherDetails.classList.add('fadeIn');
70          container.style.height = '590px';
71
72      });
```

Advantages:-

1. Effective problem solving:- A good solution should address the root causes of the weather-related problem and effectively resolve or mitigate its impact.
2. Resilience and Adaptability:- A strong solution should be able to withstand varying weather conditions and adapt to changing circumstances.
3. cost-effectiveness:- An economically feasible solution is vital, as it ensures that the benefits outweigh the costs of implementation.
4. sustainability:- If the proposed solution is environmentally friendly and sustainable, it can lead to long-term positive effects on the climate and ecosystems.
5. Improved safety and security:- An effective solutions should enhance the safety of communities and infrastructure vulnerable to serve weather events.

Disadvantages :

1. High costs : some solutions might be prohibitely expensive to implement or maintain, making them challenging to adopt on a large scale.

2. unintended consequences : proposed solution could have unforeseen negative effects on ecosystems, communities, or weather patterns, causing new problems.

3. Dependency on Technology : If a solution relies heavily on complex technology, it could be vulnerable to failures, disruptions or cyber- attacks.

4. Resistance to change : communities or industries may resist adopting new solutions due to the inconvenience or disruptions they might cause to existing practices.

5. Limited scope or Applicability : certain solutions might only address specific Weather- related issues and not offer comprehensive solutions.

Applications:

-> Real-Time weather information: Display current weather conditions, including temperature, humidity, wind speed, and direction, along with an icon representing the weather type [eg, sunny, cloudy, rainy].

-> Location-based Forecast: Allow users to enter their location or use their devices GPS to get localized weather forecasts for the current day and the upcoming days.

-> Multiple locations: Enable users to save and switch between multiple locations, so they can check the weather for places they frequently visit to or plan to travel to.

-> Weather Radar and maps: Implement weather radar and interactive maps to visualize weather patterns, including rain, snow and cloud cover.

-> Weather Alerts and warnings: Display severe weather alerts and warnings for the user's location or selected regions, ensuring users stay informed about potentially dangerous conditions.

conclusion:

By this system weather forecasting report generation becomes easy. less chances of malfunctioning are there. The system has reached a steady state but still improvement are to be made. The system is operated at a high level of efficiency and all the work. Weather forecast are increasingly accurate. and useful and their benefits extend widely across the economy while much has been accomplished in improving weather forecast There remains much room for improvement with the advancement of technology Weather forecasting has developed to its level best simultaneasly they are developing new technologies and observational networks that can enhance forecastey skill and the value of their services to their users.

Future scope:

The intention of developing weather app is to fetch the data in the need of taking information about weather worldwide. Another purpose for developing this software is to generate the report automatically at the end of the session TO develop software for forecasting the weather involving wind speed, cloud cover, rain or snow in order to nurture. The needs of people all around the globe.

TO develop a weather forecasting application on which people can blindly trust for their regular weather updates. The scope for weather forecasting system will keep on increasing as technology progress. Incomplete understanding of the processes mean that forecast become less accurate as the range of the forecast increases.

VISAKHAPATNAM

28 °C

Overcast Clouds

84%
Humidity

1Km/h
Wind Speed

NEW YORK

21 °C

Clear Sky

53%
Humidity

2Km/h
Wind Speed