School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	13
Title of Experiment	Provide the details of Architecture Design/Framework/Implementation
Name of the candidate	**Kumari Harshita**
Team Members	**BHANU PRAKASH, NANDAVARDHAN, MAHESH REDDY KUMARI HARSHITA**
Register Numbers	**RA2111028010060**
Date of Experiment	

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To provide the details of architectural design/framework/implementation

Team Members:

S No	Register No	Name	Role
1	RA2111028010043	NANDAVARDHAN R	Rep/Member
2	RA2111028010060	HARSHITA	Member
3	RA2111028010041	BHANU PRAKASH	Member
4	RA2111028010056	MAHESH REDDY	Member

< Provide the details of architectural design/framework/implementation with screenshots - Minimum three modules to be completed (excluding login page) use of software on their choice to implement>

Architectural design:

- Smart Electrical Meters: These meters are deployed at wind farms and locations of interest. They collect real-time data on wind energy parameters and publish data messages using MQTT.
- AWS IoT Core: It acts as a message broker and IoT gateway. The smart meters connect to AWS IoT Core and publish their data messages to an MQTT topic.
- Data Ingestion: AWS IoT Core Rules Engine is used to route the data messages to storage. The messages are stored in AWS DynamoDB, a NoSQL database service.
- Backend Processing: A backend application, hosted locally or in the cloud, consumes the data from DynamoDB. It includes an AI prediction model to analyse the wind energy data and make predictions.
- Frontend Application: A user interface is developed to visualize the analysed data and predictions. The frontend application retrieves data from the backend or DynamoDB for display.

HOME ABOUT SERVICES CONTACTS LOGIN SINGUP

WIND ENERGY

The wind energy industry has grown rapidly in recent years, as the cost of generating electricity from wind has decreased.
Wind energy is now one of the cheapest sources of electricity in many parts of the world, and it is also one of the cleanest, producing no greenhouse gas emissions or other air pollutants.

WFM

- Dashboard
- Production
- Finances
- Statistics

Wind farm management

Turbine 1	45%
Turbine 2	20%
Turbine 3	25%
others	10%

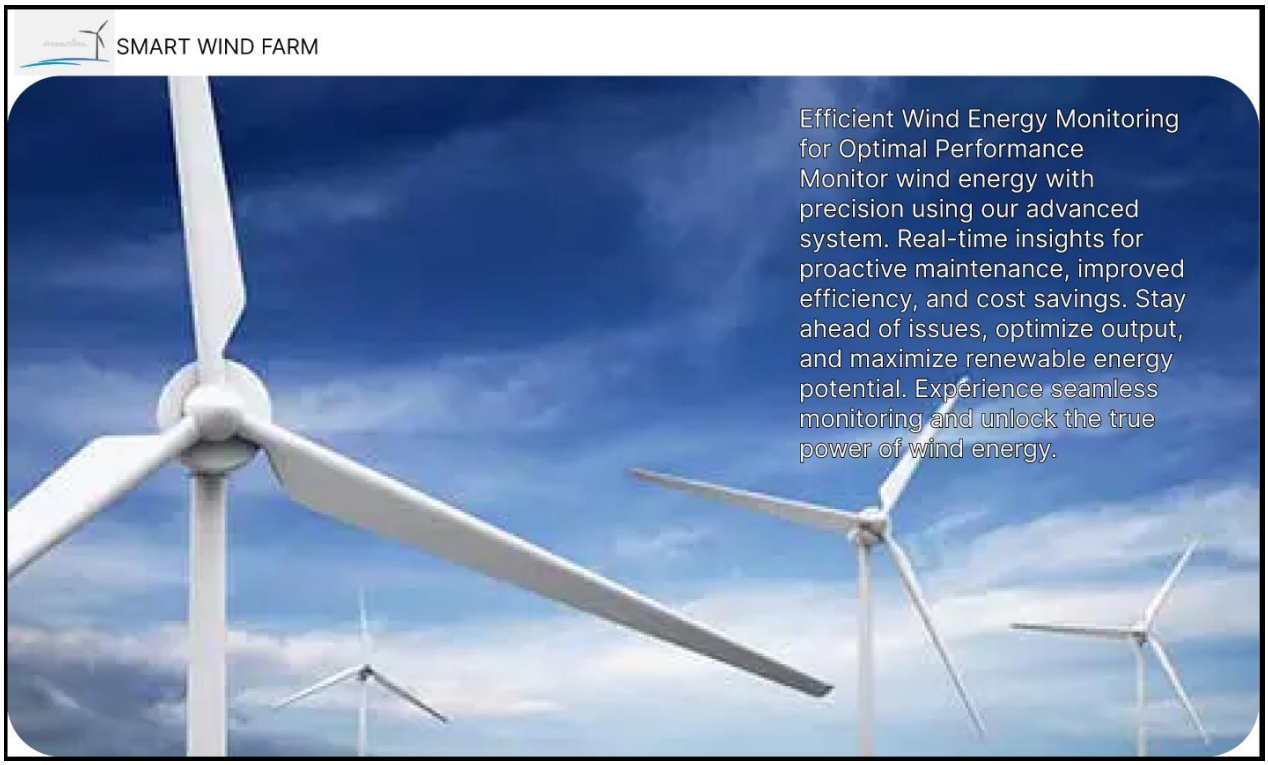
Weather Parameters

Wind speed 5.6m/s	Wind direction NE	Humidity 48%
cloud cover 78%	Pressure 1024 hpa	Temperature 12deg C

Production vs demand

Production Demand

SMART WIND FARM



```
<div class="frame-1 screen">
  <div class="overlap-group">
    <div class="rectangle-12"></div>
    <div class="rectangle-13"></div>
    <div class="turbine-1 turbine inter-normal-black-40px">
      <span class="inter-normal-black-40px">Turbine</span><span class="inter-normal-black-80px"> 
</span
      ><span class="inter-normal-black-40px">1</span>
    </div>
    <div class="percent inter-normal-black-40px">45%</div>
    <div class="percent-1 percent-6 inter-normal-black-40px">20%</div>
    <div class="percent-2 percent-6 inter-normal-black-40px">25%</div>
    <div class="percent-3 percent-6 inter-normal-black-40px">10%</div>
    <div class="turbine-2 turbine inter-normal-black-40px">
      <span class="inter-normal-black-40px">Turbine</span><span class="inter-normal-black-80px"> 
</span
      ><span class="inter-normal-black-40px">2</span>
    </div>
    <div class="turbine-3 turbine inter-normal-black-40px">
      <span class="inter-normal-black-40px">Turbine</span><span class="inter-normal-black-80px"> 
</span
      ><span class="inter-normal-black-40px">3</span>
    </div>
    <div class="others inter-normal-black-40px">others</div>
    <div class="ellipse-2"></div>
    <div class="ellipse-3"></div>
    <div class="ellipse-4"></div>
    <div class="ellipse-5"></div>
    <img
      class="image-5"
      src="https://anima-
uploads.s3.amazonaws.com/projects/645b674f1c3980762121e09e/releases/645b688e2b627b51fa792e73/img/image-
502x.png"
      alt="image 5"
    />
    <h1 class="title">Wind farm management</h1>
    <img
      class="image-6"
      src="https://anima-
uploads.s3.amazonaws.com/projects/645b674f1c3980762121e09e/releases/645b688e2b627b51fa792e73/img/image-
602x.png"
      alt="image 6"
    /><img
      class="image-7"
      src="https://anima-
uploads.s3.amazonaws.com/projects/645b674f1c3980762121e09e/releases/645b688e2b627b51fa792e73/img/image-
7.png"
      alt="image 7"
    />
    <div class="production-vs-demand">Production vs demand</div>
    <div class="rectangle-14"></div>
    <div class="rectangle-15"></div>
    <div class="production inter-normal-black-50px">Production</div>
    <div class="demand inter-normal-black-50px">Demand</div>
    <img
      class="image-8"
      src="https://anima-
uploads.s3.amazonaws.com/projects/645b674f1c3980762121e09e/releases/645b688e2b627b51fa792e73/img/image-
8.png"
      alt="image 8"
    />
    <div class="rectangle-16"></div>
    <div class="rectangle-17"></div>
    <div class="rectangle-18"></div>
    <div class="rectangle-19"></div>
    <div class="rectangle-20"></div>
    <div class="rectangle-21"></div>
    <div class="wind-speed wind inter-normal-black-40px">Wind speed</div>
    <div class="cloud-cover inter-normal-black-40px">cloud cover</div>
    <div class="pressure inter-normal-black-40px">Pressure</div>
    <div class="temperature inter-normal-black-40px">Temperature</div>
    <div class="wind-direction wind inter-normal-black-40px">Wind direction</div>
    <div class="humidity inter-normal-black-40px">Humidity</div>
    <div class="x56ms inter-normal-black-40px">5.6m/s</div>
```

```
    <img
      class="image-11"
      src="https://anima-
uploads.s3.amazonaws.com/projects/645b674f1c3980762121e09e/releases/645b688e2b627b51fa792e73/img/image-
11@2x.png"
      alt="image 11"
    /><img
      class="image-12"
      src="https://anima-
uploads.s3.amazonaws.com/projects/645b674f1c3980762121e09e/releases/645b688e2b627b51fa792e73/img/image-
12@2x.png"
      alt="image 12"
    /><img
      class="image-13"
      src="https://anima-
uploads.s3.amazonaws.com/projects/645b674f1c3980762121e09e/releases/645b688e2b627b51fa792e73/img/image-
13@2x.png"
      alt="image 13"
    /><img
      class="image-14"
      src="https://anima-
uploads.s3.amazonaws.com/projects/645b674f1c3980762121e09e/releases/645b688e2b627b51fa792e73/img/image-
14@2x.png"
      alt="image 14"
    /><img
      class="image-15"
      src="https://anima-
uploads.s3.amazonaws.com/projects/645b674f1c3980762121e09e/releases/645b688e2b627b51fa792e73/img/image-
15@2x.png"
      alt="image 15"
    />
    <div class="ne inter-normal-black-40px">NE</div>
    <div class="percent-4 percent-6 inter-normal-black-40px">48%</div>
    <div class="x12deg-c inter-normal-black-40px">12deg C</div>
    <div class="address inter-normal-black-40px">1024 hpa</div>
    <div class="percent-5 percent-6 inter-normal-black-40px">78%</div>
    <div class="weather-parameters">Weather Parameters</div>
    <div class="dashboard inter-normal-cultured-pearl-40px">Dashboard</div>
    <div class="production-1 inter-normal-cultured-pearl-40px">Production</div>
    <div class="finances inter-normal-cultured-pearl-40px">Finances</div>
    <div class="statistics inter-normal-cultured-pearl-40px">Statistics</div>
    <div class="ellipse-6"></div>
    <div class="ellipse-7"></div>
    <div class="ellipse-8"></div>
    <div class="ellipse-9"></div>
    <img class="star-1" src="star-1.svg" alt="Star 1" /><img
      class="image-9"
      src="image-9.png"
      alt="image 9"
    />
  </div>
</div>
```

Result:

Thus, the details of architectural design/framework/implementation along with the screenshots were provided.