CLOUD COMPUTING SERVICES LAB (AWS)

WEEK 9.1: Deployment of Machine Learning Model

OBJECTIVE: Design, Development and Deployment FastAPI Application on Windows EC2

PROCEDURE:
Phase 1: Build Machine Learning Model and create Pickle file (reg.pkl)
Phase 2: Create FastAPI Application
Phase 3: Create GitHub Repository
Phase 4: Create Windows EC2 Instance and Connect using RDP Client
Phase 5: Deploy FastAPI from GitHub Repository

PHASE 1: Build Machine Learning Model and create Pickle file (reg.pkl)
Notebook: https://github.com/Rambabu1969/fastapi/blob/main/Week%203.2.ipynb
Dataset: https://github.com/Rambabu1969/fastapi/blob/main/ca11-03homes.csv

PHASE 2: Create FastAPI Application
1. Download and Install Python from https://www.python.org/downloads
2. Create FastAPIDemo Folder
3. Copy reg.pkl file into the folder
4. Go to FastAPIDemo and type code . command to open project in VS Code
5. Create app.py file
6. Installing FastAPI Library and its Dependencies in Terminal
   pip install fastapi uvicorn
7. Create **index.js** file and Write "Hello World" JavaScript Code

```
# install libraries ---
# pip install fastapi uvicorn

# 1. Library imports
import uvicorn
from fastapi import FastAPI

from fastapi.middleware.cors import CORSMiddleware
import pickle

# 2. Create the app object
app = FastAPI()

app.add_middleware(
    CORSMiddleware,
    allow_origins=["*"],
    allow_credentials=True,
    allow_methods=["*"],
    allow_headers=["*"],
)
```

```
# 3. load the model
rgModel = pickle.load(open("reg.pkl", "rb"))

# 4. Index route, opens automatically on http://127.0.0.1:8000
@app.get('/')
def index():
    return {'message': 'Hello, World'}

@app.get("/predictPrice")
def gePredictPrice(Area: int, BedRooms: int, BathRooms: int):
    prediction = rgModel.predict([[Area,BedRooms,BathRooms]])
    return {'Price': prediction[0]}

# 5. Run the API with uvicorn
if __name__ == '__main__':
    uvicorn.run(app, port=80, host='0.0.0.0')

# uvicorn app:app --host 0.0.0.0 --port 80
# http://127.0.0.1/predictPrice?Area=1400&BedRooms=3&BathRooms=3
```

8. Run Project: uvicorn app:app --host 0.0.0.0 --port 80
9. Open Browser and Type 127.0.0.1/predictPrice?Area=1400&BedRooms=3&BathRooms=1

PHASE 3: Create GitHub Repository

1. Create GitHub Account
2. Login to your Account
3. Create Public Repository
4. Upload Files (app.py and reg.pkl only)

PHASE 4: Create Windows EC2 Instance and Connect using RDP Client

PHASE 5: Deploy FastAPI Application from GitHub Repository

1. Connect Windows EC2 instance using RDP Client
2. Download and Install Python from https://www.python.org/downloads
3. Download Git Repository (.zip) from https://github.com/Rambabu1969/FastAPIDemo → Extract into Project Folder
4. Go to Project Folder → run pip install fastapi uvicorn – to install dependencies
5. Run uvicorn app:app --host 0.0.0.0 --port 80
6. Open Browser and type http://127.0.0.1/predictPrice?Area=1400&BedRooms=3&BathRooms=3
7. Open Windows Firewall and Allow port 80
8. Configure AWS EC2 Security Group to allow Port 80
9. Browse Node.js Express Application using **http://Public IP Address**