Rakshitha Devi J

WEEK-5 Pipeline Automation with Azure DevOPs

Objective:

1.To automate the weekly energy monitoring workflow using Azure DevOps
2.Loads smart home energy usage data.
3.Transforms and checks for overuse.
4.Triggers alerts for devices consuming more than a set threshold.
5.Automates execution via Azure DevOps pipelines.

Pre-requisites:

Before you begin, make sure you have:
-Authentication: SSH Key or Personal Access Token (PAT) configured.
-Tools Installed:
Git
Python 3.x
VS Code or any preferred IDE
-Local Project Folder contains:
-Python script: alert_threshold.py
-Azure DevOps pipeline config file: azure-pipelines.yml

Step-by-Step Execution :

Step 1: Create Python Script & YAML in Local Folder
report_generate.py:

```
import pandas as pd


df = pd.read_csv("final_Course_Output.csv")
```

```
low_progress = df[df["progress"] < 50]

low_progress.to_csv("progress_report.csv", index=False)

print("progress_report.csv generated.")
```

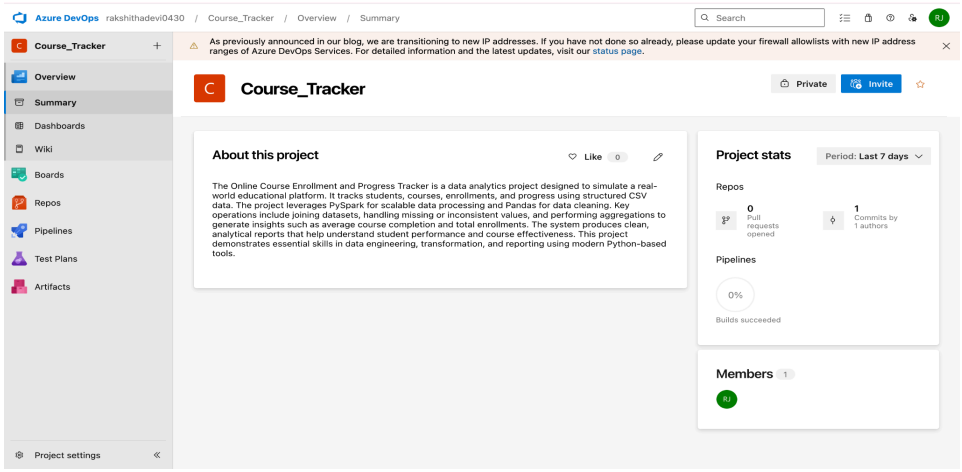
Azure-pipelines.yml:

```
trigger:
  schedule:
    - cron: "0 8 * * 1"  # Runs every Monday at 8 AM UTC
      displayName: Weekly Monday Run
      branches:
        include:
          - main
      always: true

pool:
  vmImage: 'ubuntu-latest'

steps:
  - task: UsePythonVersion@0
    inputs:
      versionSpec: '3.10'

  - script: |
      pip install pandas
    displayName: 'Install pandas'

  - script: |
      python check_progress.py
    displayName: 'Run Weekly Progress Check'

  - task: PublishBuildArtifacts@1
    inputs:
```

PathtoPublish: 'weekly_progress_report.csv'
ArtifactName: 'WeeklyProgressReport'
publishLocation: 'Container'
displayName: 'Publish Weekly Progress Report'

Step 2: Create Azure DevOps Project

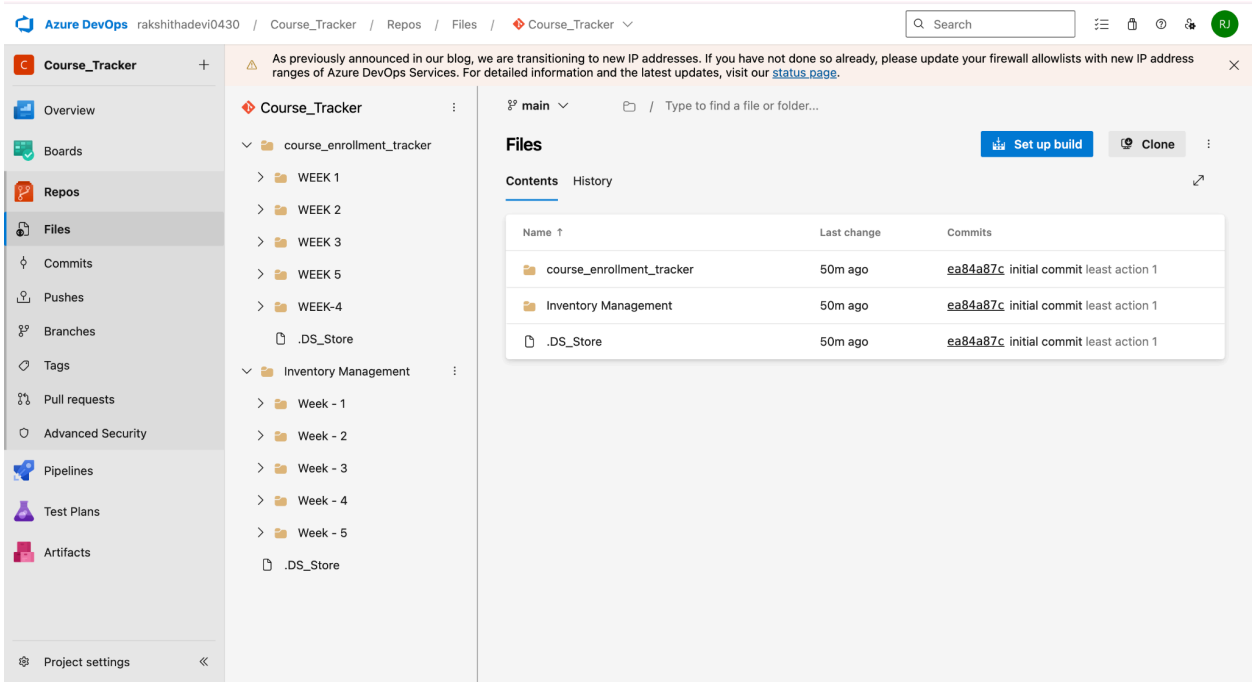
1.Go to Azure DevOps Portal.
2.Click "New Project".
3.Enter project name and visibility.
4.Click "Create".



Step 3: Push Local Code to Azure Repo via SSH

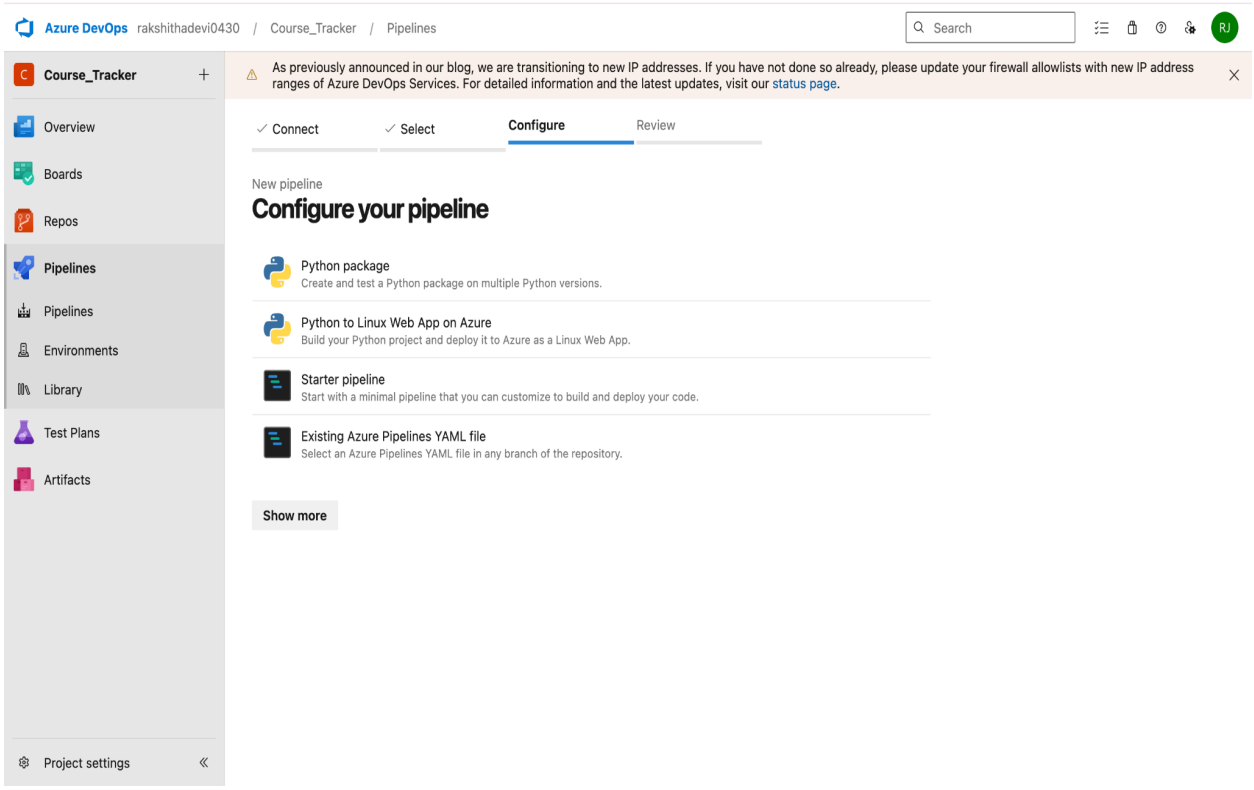
cd cd "/Users/leastaction1/Desktop/Data-Warehouse-Training/Capstone Projects"
git init
git add .
git commit -m "Initial commit"
git remote add origin
"git remote add origin "git@ssh.dev.azure.com:v3/rakshithadevi0430/Course_Tracker/Course_Tracker"

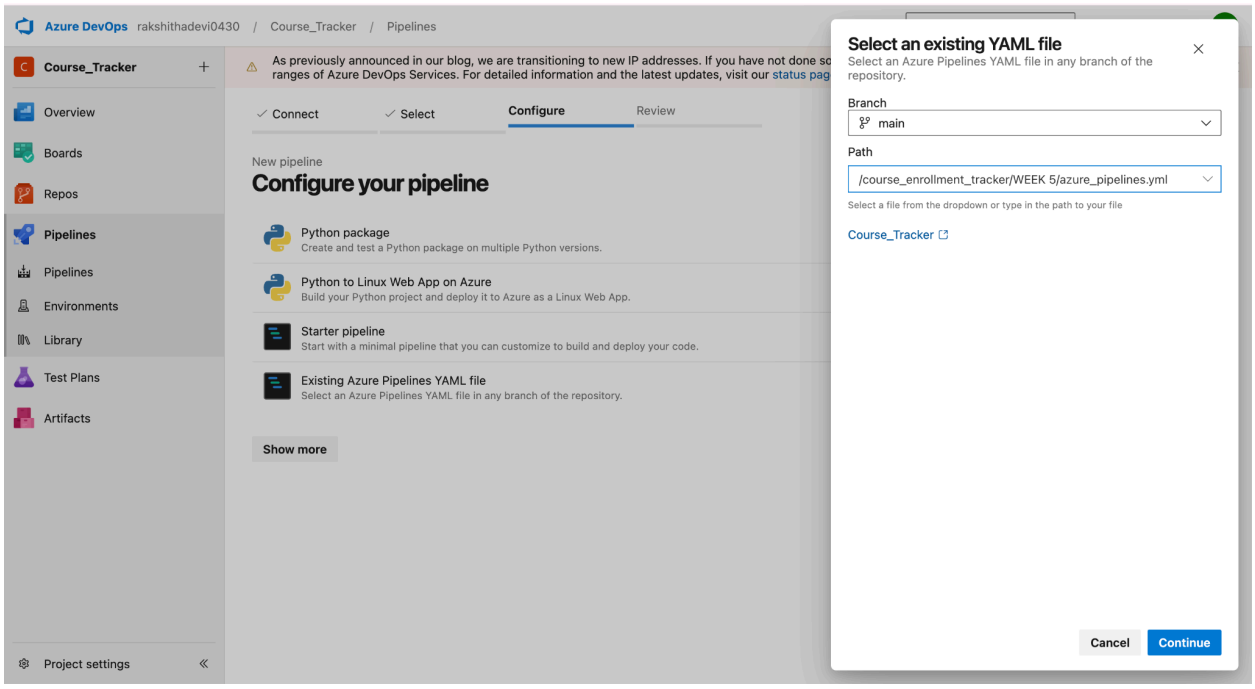
git push -u origin main



Step 4: Configure and Run Azure Pipeline

1.In Azure DevOps, go to Pipelines → Create Pipeline.
2.Select:
Code source: Azure Repos Git
Your repository
Choose: "Existing Azure Pipelines YAML file"
3.Specify:
Branch: main
YAML Path: /Week 5/azure-pipelines.yml
4.Click Continue → Run.


Azure DevOps rakshithadevi0430 / Course_Tracker / Pipelines
Search
RJ
Course_Tracker
Overview
Boards
Repos
Pipelines
Pipelines
Environments
Library
Test Plans
Artifacts
Project settings
As previously announced in our blog, we are transitioning to new IP addresses. If you have not done so already, please update your firewall allowlists with new IP address ranges of Azure DevOps Services. For detailed information and the latest updates, visit our status page.
Connect
Select
Configure
Review
New pipeline
Configure your pipeline
Python package
Create and test a Python package on multiple Python versions.
Python to Linux Web App on Azure
Build your Python project and deploy it to Azure as a Linux Web App.
Starter pipeline
Start with a minimal pipeline that you can customize to build and deploy your code.
Existing Azure Pipelines YAML file
Select an Azure Pipelines YAML file in any branch of the repository.
Show more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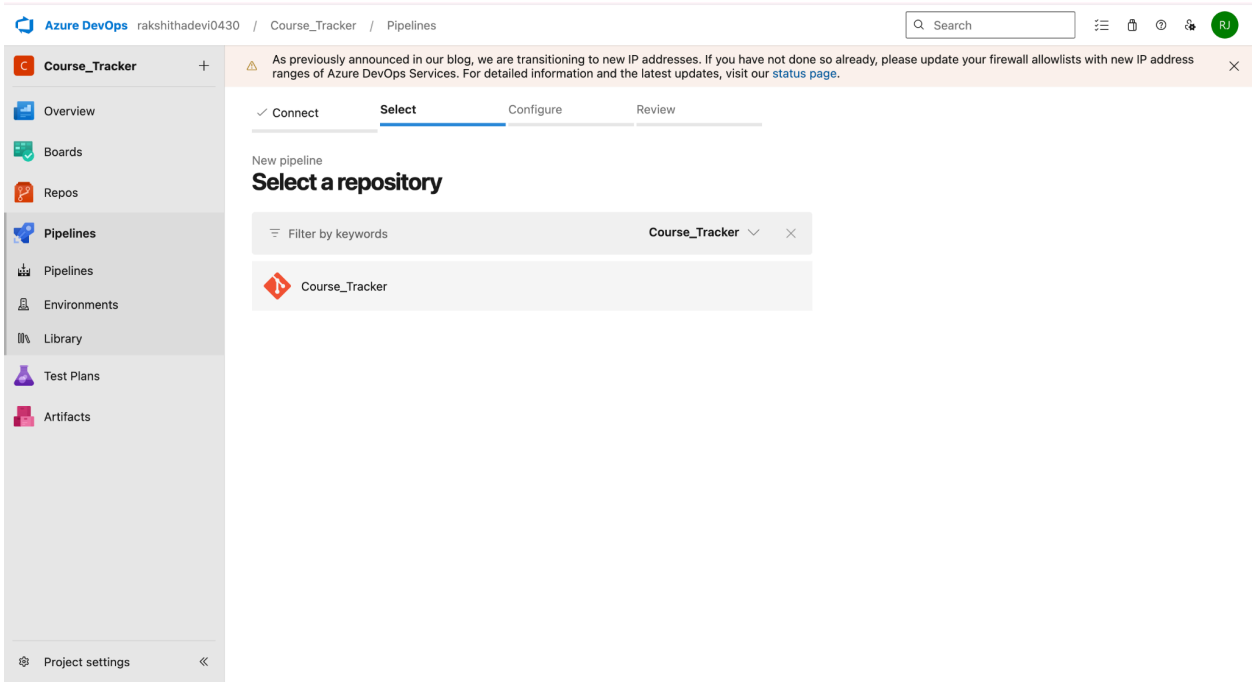
Branch
main
Path
/course_enrollment_tracker/WEEK 5/azure_pipelines.yml
Select a file from the dropdown or type in the path to your file
Course_Tracker
Cancel
Continue



Final Output

1.Azure DevOps pipeline automatically runs:
-Sets up Python environment.
-Installs dependencies (pandas).
-Executes elt_energy_alert.py.
2.Log displays:
-"Successfully Run"
-"Run ELT + Alert Script"
If energy consumption > 10 kWh for any device, alert message appears:
-ALERT: WM02 used 12.4 kWh on 2025-07-01!