University Campus Online Automation Using Cloud Computing

Major Project Report submitted in partial fulfillment of the requirements for the award of the Degree of B.E in Computer Science and Engineering

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Introduction

Project Overview

The "University Campus Online Automation using Cloud Computing" project aims to streamline the university placement process by using a cloud-based system that benefits students, faculty, and companies. The system includes separate portals for each user group: students can register, create profiles, and apply for jobs; faculty can manage student information and oversee applications; and companies can post job openings and view student applications. The admin has complete control over all portals, managing user accounts and data, and can add, edit, or delete information as needed. This cloud-hosted system, powered by Microsoft Azure, ensures high efficiency, accessibility, and scalability. By reducing manual tasks, automating processes, and providing easy access from anywhere, the system enhances the overall user experience. Future enhancements may include advanced analytics to track placement trends, AI integration for resume screening and user support, a mobile application for better accessibility, and enhanced security measures like multi-factor authentication and data encryption. This project modernizes the placement process, making it more efficient and user-friendly while providing room for continuous improvement and technological advancements.

Objectives:

1.Streamline the Placement Process: Automate the registration, application, and selection processes to reduce manual tasks and improve efficiency for students, faculty, and companies.

2.Enhance User Accessibility: Provide a user-friendly, cloud-based system accessible from anywhere, at any time, ensuring that all users can easily interact with the platform.

3.Centralize Data Management: Offer a centralized platform where all user data, job postings, and applications are stored securely in the cloud, allowing for easy access and management by authorized personnel.

4.Improve Communication: Facilitate better communication between students, faculty, and companies through instant notifications and real-time updates on job postings and application statuses.

5.Ensure Scalability and Reliability: Utilize Azure cloud services to ensure the system can scale to accommodate a growing number of users and maintain high performance and reliability.

6.Enhance Security: Implement robust security measures to protect user data, including encryption, multi-factor authentication, and regular security updates.

7.Provide Analytical Insights: Integrate data analytics to offer insights into placement trends, student performance, and company engagement, helping to inform decision-making and strategy.

8.Enable Continuous Improvement: Design the system to be flexible and adaptable, allowing for regular updates and the addition of new features based on user feedback and technological advancements

About Cloud Computing

Definition:

Cloud computing is a model for delivering computing services over the internet. Instead of owning and maintaining physical servers and data centers, organizations can access computing resources such as servers, storage, databases, networking, software, and analytics through a cloud service provider. These resources are delivered on-demand, allowing users to pay for only what they use.

Types of Cloud Computing:

Its classified into different types

1.Infrastructure as a service (IaaS): It is the on-demand availability of highly scalable computing resources as services over the internet.

2.Platform as a service (PaaS): It is a complete cloud environment that includes everything developers need to build , run ,and manage applications.

3.Software as a service (SaaS) : It allows users to connect to and use cloud-based apps over the internet.

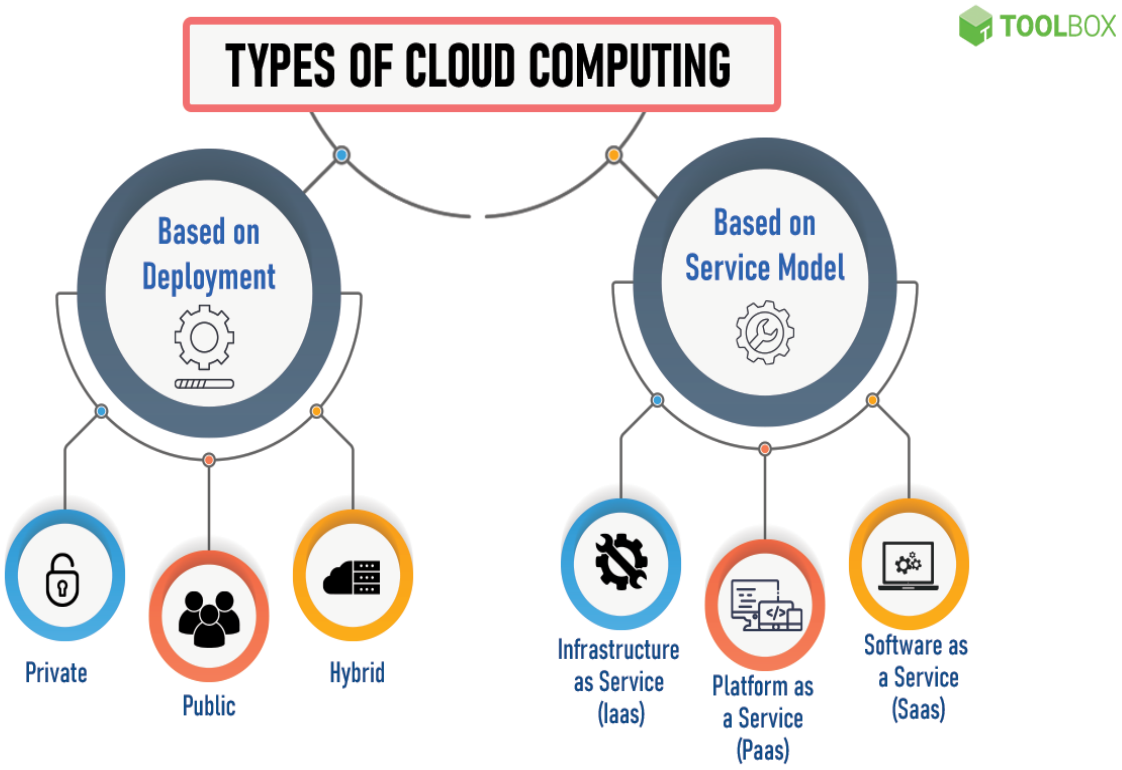
Deployment Models

1.Public cloud: It is a deliver resources, such as compute, storage, network, develop-and-deploy environments and applications over the internet.

2.Private cloud: Private clouds are built, run, and used by a single organization, typically located on-premises.

3.Hybrid cloud: Environments that mix at least one private computing environment with one or more public clouds.

4.Community cloud: It allow system and services to be accessible by a group of several org to share the information between yhe organization and a specific community.



Cloud Computing Platforms:

Some of the most popular cloud providers include Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), IBM Cloud, Oracle Cloud Infrastructure (OCI), and Alibaba Cloud.

Advantages and Disadvantages:

Advantages of Cloud Computing

Cost Efficiency: Pay only for what you use, reducing capital expenses on hardware.

Scalability: Easily scale resources up or down based on demand.

Accessibility: Access data and applications from anywhere with an internet connection.

Disaster Recovery: Automatic backups and disaster recovery options.

Collaboration: Facilitate real-time collaboration among teams.

Disadvantages of Cloud Computing

Internet Dependency: Requires a reliable internet connection.

Security Concerns: Potential risks of data breaches and cyber attacks.

Limited Control: Less control over the infrastructure compared to on-premises setups.

Cost Management: Unexpected costs can arise if usage is not monitored.

Compliance and Legal Issues: Ensuring compliance with data regulations can be complex.

University Campus Online Automation using Cloud Computing(Azure)

Key Features:

Student Portal: Students register by entering personal and professional details

Faculty Portal: Students can view job postings from companies and apply directly through the portal. b. Faculty Portal: Registration: Faculty members register by providing their employee ID, subjects taught, and position.

Company Portal: Registration: Companies register by providing company details, job title, number of vacancies, job description, job profile, and criteria.

Scope of the Project

ARM: [Azure Resource Manager]

- ARM you to define Infrastructure as a code
- ARM template format is JSON[Java Script Object Notation]
- JSON is used for key=value pair
- ARM Template used for automation tool.

JSON format maintain mainly

{

key-value ----> object

}

ARM Template structure & syntax

```
{
  "$schema":
"https://schema.management.azure.com/schemas/2019-04-
01/deploymentTemplate.json#",
  "contentVersion": "",
  "parameters": { },-------->fixed data
  "variables": { },---------> changed data
  "functions": [ ],
  "resources": [ ], ------>Array
  "outputs": { }
}
```

ARM Code:

```
{
    "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
    "contentVersion": "1.0.0.0",
    "parameters": {},
    "functions": [],
    "variables": {},
    "resources": [
        {
            "type": "Microsoft.Web/serverfarms",
            "apiVersion": "2022-03-01",
            "name": "plan787878",
            "location": "[resourceGroup().location]",
            "sku": {
                "name":"F1",
                "capacity":1
            },
            "properties":{
                "name":"plan787878"
            }
        },
        {
            "type": "Microsoft.Web/sites",
            "apiVersion": "2022-03-01",
            "name": "newapp445566",
            "location": "[resourceGroup().location]",
            "properties":{
                "name":"newapp445566",
                "serverFarmId":"[resourceId('Microsoft.Web/serverfarms','plan787878')]"
            },
            "dependsOn":[
                "[resourceId('Microsoft.Web/serverfarms','plan787878')]"
            ]
        }
    ],
    "outputs": {}
}
```

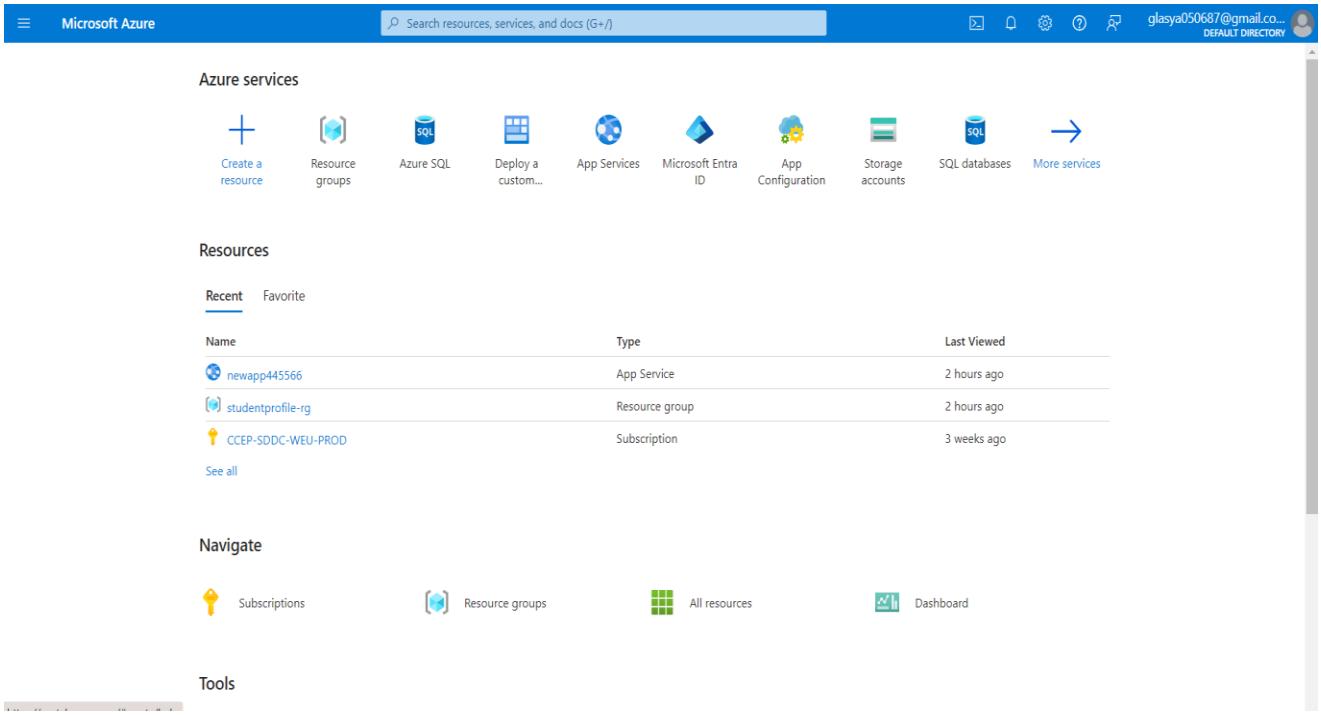
Open the powershell :

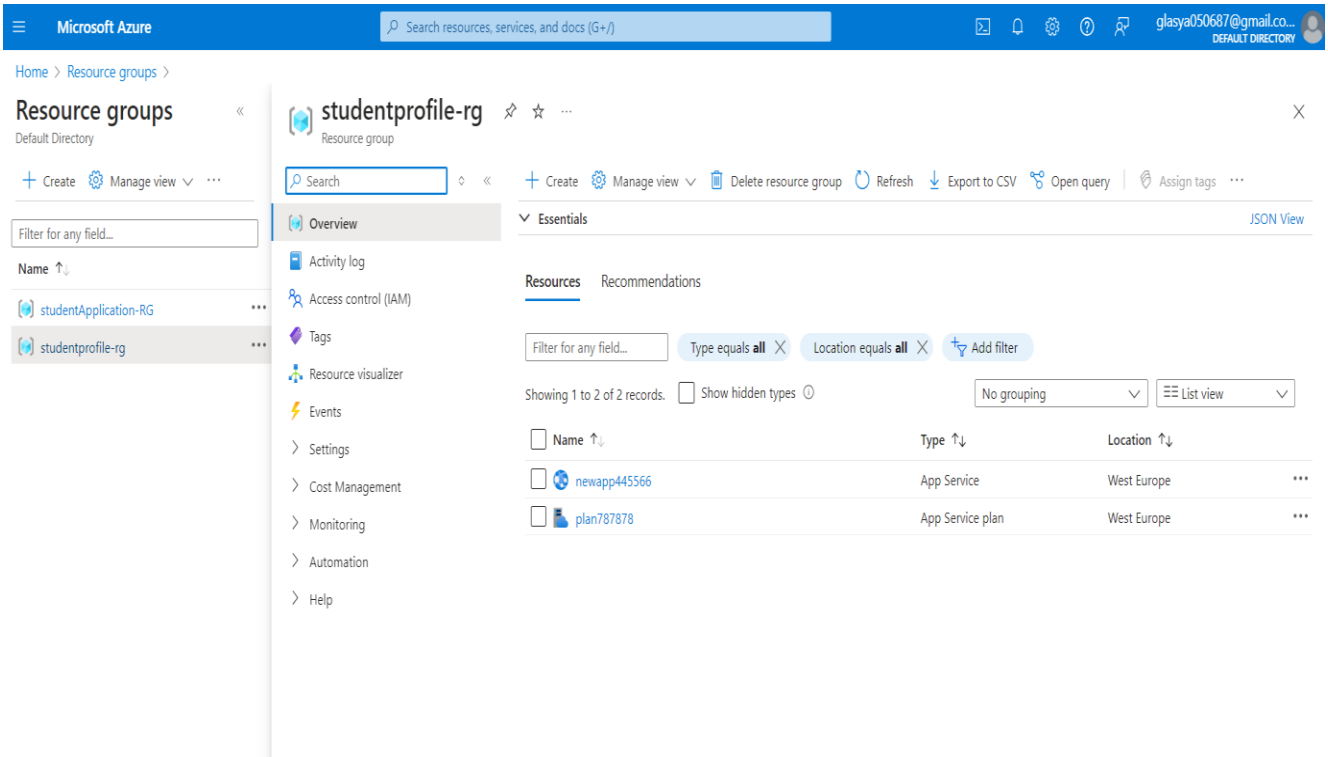
PS C:\Users\pc> az login

PS C:\Users\pc> Select-AzSubscription -SubscriptionName CCEP-SDDC-WEU-PROD

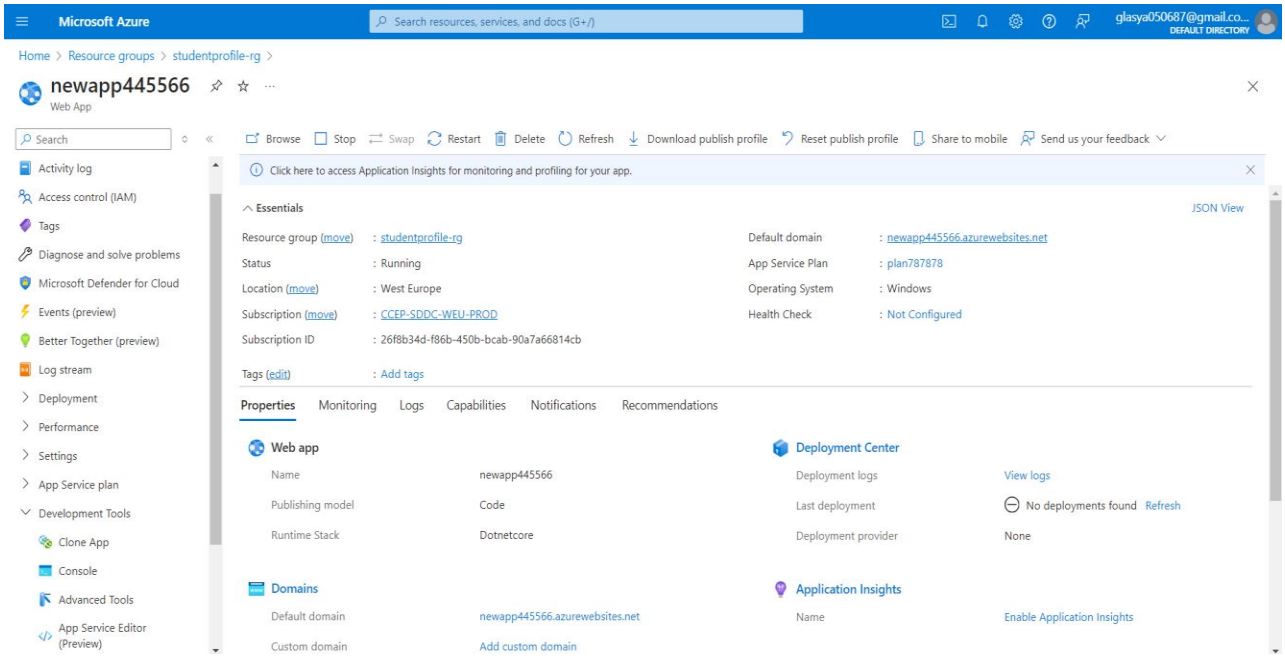
PS C:\Users\pc> New-AzResourceGroupDeployment -ResourceGroupName "studentprofile-rg" -TemplateFile "C:\Users\pc\OneDrive\Desktop\ARM Template code\100.Code\3. Lab - ARM Templates - Azure Web App\template01.json" -Verbose

Go to Azure Portal→ open the Resource Group→ Under ResourecGroup you can check the resources is available or not.





Go to Webapp→ In the left-hand menu, click on Development Tools→In Development Tools open the App Service Editor(Preview).



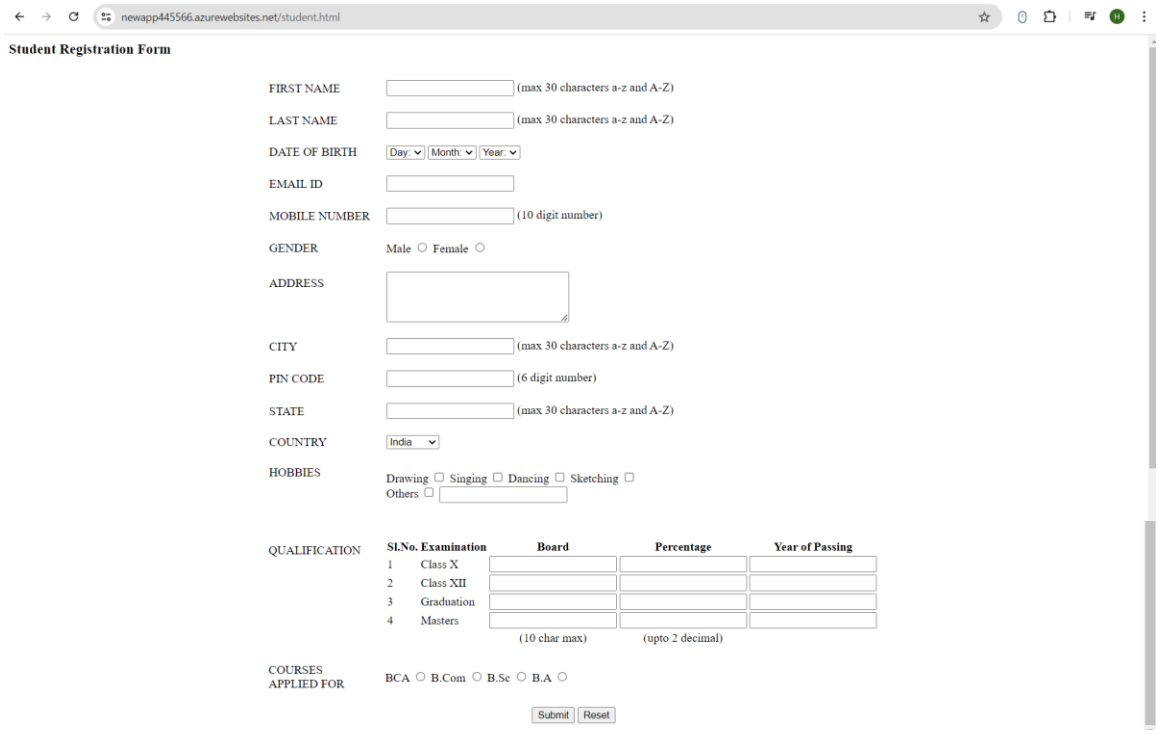
In App Service Editor (Preview)→open the Open Editor→After that enter the HTML Code based on student portal, faculity portal, company portal.

A

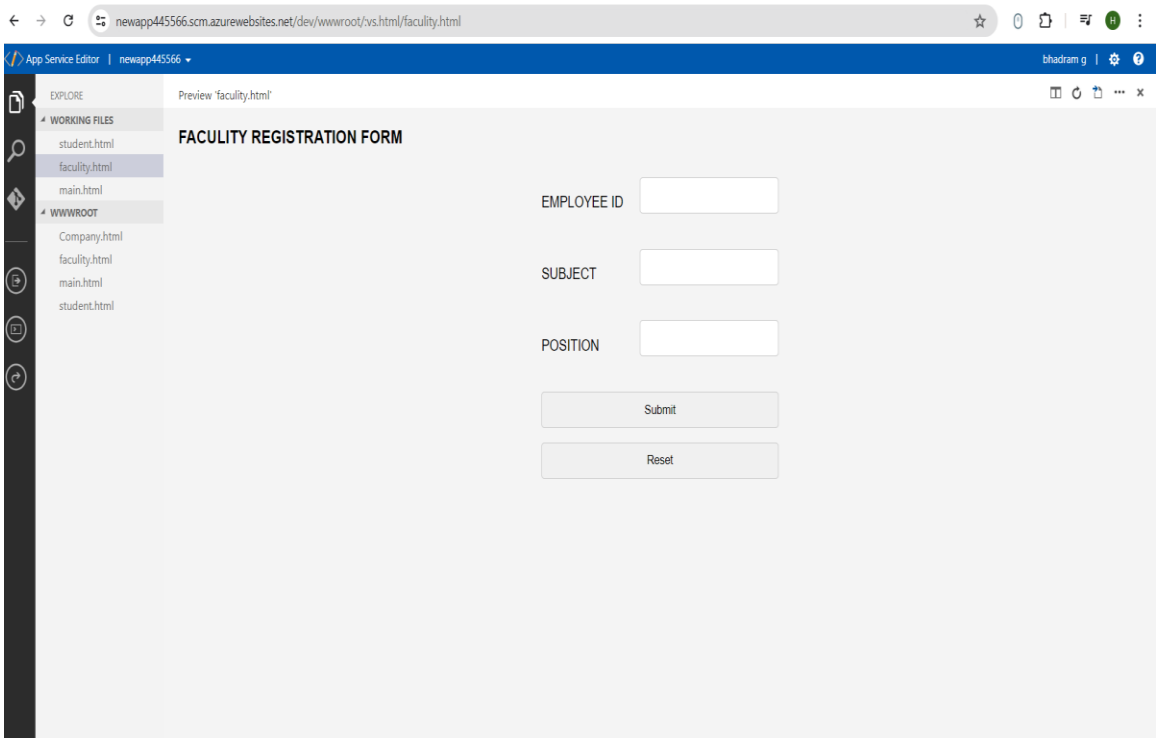
According to the code, the output will be in the below figure.

Link: https://newapp445566.azurewebsites.net

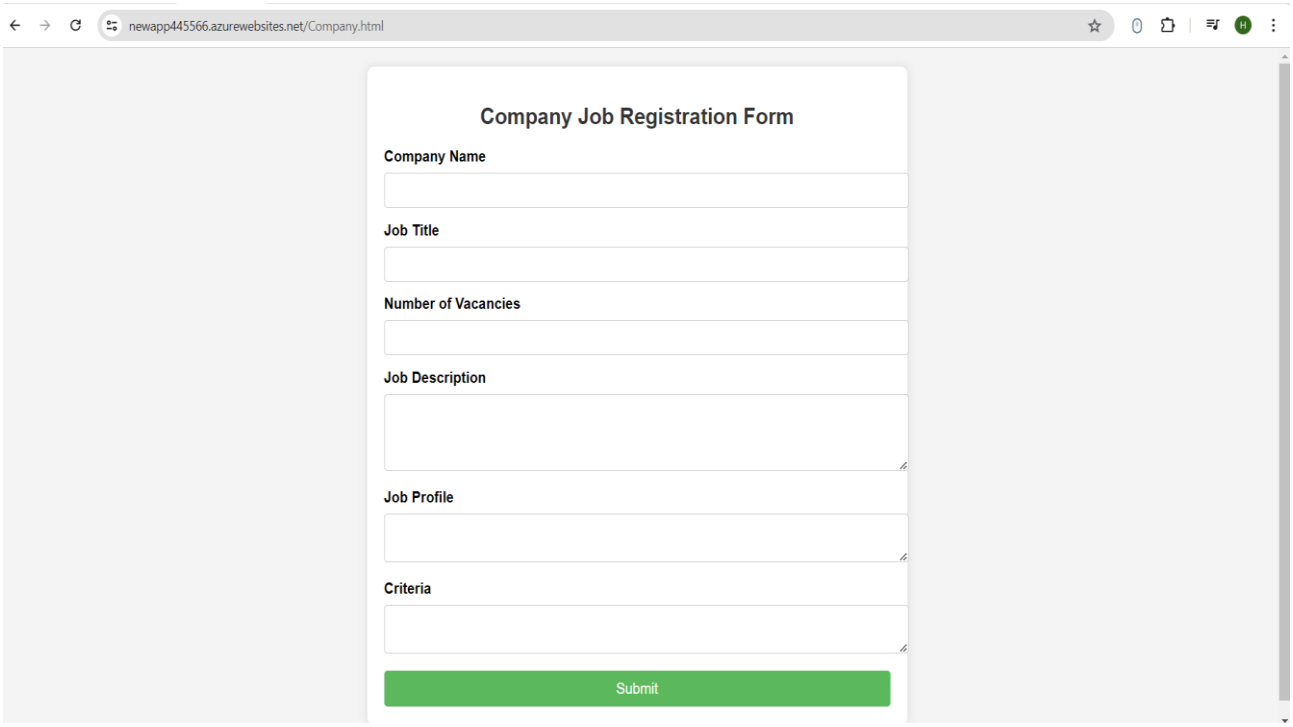
Student Portal:



Faculity Portal:



Company Portal:



Conclusion:

The "University Campus Online Automation using Cloud Computing" project is a testament to how technology can revolutionize traditional processes. By adopting cloud computing, universities can provide a more efficient, transparent, and user-friendly placement process. This not only benefits students and faculty but also strengthens the university's relationship with industry partners, enhancing overall educational and professional outcomes.

By focusing on continuous improvement and embracing future technological advancements, this project can serve as a model for other educational institutions aiming to modernize their processes and improve their service offerings.

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