Cloud and Computer Architecture Microservices Assessment

Deploying a Microservice on AWS/Azure

Submission Date: 21/12/2024

Assessment Overview

In this assessment, you will demonstrate your understanding of Cloud Services and Microservices by deploying a simple microservice on a cloud platform (AWS or Azure). You are also required to demonstrate familiarity with basic Linux commands during the deployment process. You will submit:

1. **A Report** (approximately 1000 words): 40 Marks
    - Written in your own words, explaining key concepts and steps performed during the deployment.
    - Include screenshots, commands used, and any necessary explanations.
2. **A Screencast** (3–5 minutes): 60 Marks
    - Demonstrating key steps of the deployment process.
    - Showing a working microservice and the use of Linux commands as you explain steps.
    - You can split the screencast into small sections if you prefer (no need to have 1 continuous/nonstop video)

Assessment Requirements

Your submission must address the following topics:

1. **Cloud Services**:
    - Definition of cloud services and their importance in modern computing.
    - Benefits and challenges of using cloud platforms.
2. **Microservices**:
    - Definition of microservices and examples of use cases.
    - Why microservices are important in application development.

3. **Setting Up a Cloud Account and Instance**:
    - Explain the steps to set up a cloud service account (e.g., AWS or Azure).
    - Describe the instance setup (e.g., operating system used, Linux version).
    - No need to recreate your account. Just explain what is required when creating account and instance.
    - You can create a second instance to show those steps.
4. **Launching a New Instance**:
    - Define what an instance is.
    - Explain what you can do with an instance and why it's important in cloud computing.
5. **Using Linux Commands During Deployment**:
    - Use and demonstrate the following commands with appropriate explanations:
        - cat: Display the contents of a file.
        - grep: Search for a specific string within a file.
        - sudo: Execute a command with superuser privileges.
        - mkdir: Create directories.
        - cd: Navigate through directories.
        - vim: Edit files using the Vim editor.
        - yum: Install packages on a Linux-based system (e.g., yum install java).
    - Provide examples of how each command was used during the deployment process.
6. **Installation of Java and Database on the Instance**:
    - Demonstrate the installation of Java and a database (e.g., MySQL or PostgreSQL) using yum.
    - Provide commands and explain the setup process.

- Do this part in the second instance in case you don't want to miss any work previously done in your main instance.

7. **Database Creation**:
   - Describe how the database communicates with your service.
   - Provide details of any configurations required.
   - Create a new database to demonstrate this process
8. **Demonstrating Cloud Storage**:
   - Show how to create and use cloud storage.
   - Upload a file (e.g., a static website) to the storage bucket and demonstrate its availability (do not use the lab files)
9. **Uploading and Running a .jar File**:
   - Upload a .jar file to the cloud storage bucket.
   - Explain how you set up the rc.local file to run the .jar automatically upon instance restart.
10. **Using Postman**:
    - Demonstrate the use of Postman to interact with your deployed microservice via GET and POST requests.
    - Show that the .jar file runs automatically after restarting the instance.

Marking Breakdown (100 Marks Total)

Component	**Marks**	**Details**
Report (40 Marks Total)		
Cloud Services and Microservices (definition, importance)	5 Marks	Clear explanation of what cloud services and microservices are and why they are important.

Component	Marks	Details
Setting up account and instance	5 Marks	Clear steps on setting up the account and instance, with Linux version details, launching an instance.
Using Linux commands	10 Marks	Correct use and explanation of cat, grep, sudo, mkdir, cd, vim, and yum in the deployment.
Installation of Java and database	10 Marks	Commands, explanations, and evidence of successful installation of Java and the database using yum. Explanation of database creation and its communication with the microservice.
Cloud storage demonstration	5 Marks	Creating, uploading, and hosting files (static website) on cloud storage.
Uploading and running a .jar file	10 Marks	Explanation of .jar file upload, use of POSTMAN, and automatic execution setup using rc.local.
Screencast (40 Marks Total)		
Cloud service setup demonstration	20 Marks	Showing the setup of a cloud service account and launching a new instance.
Linux commands demonstration	10 Marks	Demonstrating the use of required Linux commands during the deployment.
Uploading a .jar file and using Postman	10 Marks	Demonstration of running the .jar file and interacting with it via GET and POST requests using Postman.
Clarity and structure	10 Marks	Overall clarity, logical flow, and quality of the screencast.
Understanding (10 Marks Total)		

Component	Marks	Details
Depth of understanding in deployment	10 Marks	Showing a clear understanding of cloud services, Linux commands, and microservices deployment.

Important Notes

1. **Linux Commands**: Ensure all listed commands (cat, grep, sudo, mkdir, cd, vim, yum) are used and demonstrated appropriately.
2. **Plagiarism**: Ensure that the report is in your own words. Submissions will be checked for originality.
3. **Referencing**: Use proper referencing for any resources, commands, or examples used (if any).