COMP 4980-03 Applied Cloud Computing

Midterm Exam 1

Name: Student ID:

1. (2 marks) Define what cloud computing is. Use just one sentence.

CC is the on-demand availability of computer system resources, especially data storage (cloud storage) and computing power, without direct active management by the user.

1. (2 marks) What pricing model is used in Cloud Computing?

“Pay-as-you-go” – customers pay for the services they use without upfront costs, based on factors like compute time, storage capacity, data transfer, and request volume.

1. (2 marks) List 4 service models with one example each.
2. Infrastructure as a Code (IaaS) – Amazon EC2, S3
3. Platform as a Service (PaaS) – Web Browser, Google App Engine
4. Software as a Service (SaaS) – Dropbox
5. Function as a Service (FaaS) – AWS Lambda
6. (4 marks) List 4 advantages and 4 disadvantages of Cloud Computing

|  |  |
| --- | --- |
| * Easy Up/Down Scalability * Easy development and deployment * Cost-effective by pay-per-use * No physical maintenance | * Security risks (data loss, date theft, DoS attack to servers) * Privacy risks (sensitive information leakage, ownership of data) * Depends on speed of internet connection * Not easy to switch to another service providers |

1. (2 marks) Explain how virtual machines and containers are different.

Virtualization enables you to run multiple OS on the hardware of a single physical server. On the other hand, Containerization enables you to deploy multiple applications using the same OS on a single VM/server.

1. (2 marks) Explain what AWS IAM, EC2, and S3 are.

- IAM (Identity and Access Management) – Used for managing access to AWS services and resources. Allows you to create and manage users, groups, roles, and permissions.  
- EC2 (Elastic Compute Cloud) – Provides resizable compute capacity in the cloud, offering virtual servers (instances) to run applications  
- S3 (Simple Storage Service) – An object storage service for storing and retrieving any amount of data, with a simple web services interface.

1. (2 marks) List 3 ways to access AWS cloud computing.

- Web Console: AWS Management Console through a web browser

- AWS CLI

- AWS SDKs and APIs

1. (2 marks) In AWS S3, what are bucket, folder, and object?

- Bucket: Container that stores objects (files) in S3. Each bucket has a unique name across all of AWS and serves as the top-level namespace for organizing data.  
- Folder: A logical grouping within a bucket, used to organize objects in a hierarchy similar to a file system.  
- Object: Storage unit in S3, consisting of the data itself (file content) and associated metadata. Objects are stored inside buckets.

1. (6 marks) Complete the next JavaScript code that includes

a function that

is given two numbers and

returns the **Promise** object that adds two numbers and passes the result.  
The caller code uses the above function to add 30 and 20, and alerts the addition result using alert(). The caller code should use **async** and **await**.

function add(n1, n2) {

const promise = new Promise((resolve, reject) => {

let result = n1 + n2;

resolve(result);

});

return promise;

}

document.getElementById('button-add').addEventListener('click', async () => {

let result = await add(30, 20);

alert(“Sum: ” + result);

});