Kobe Maristela
CS 442
3/7/2023

CS 442/642, Cloud Computing – Homework 2

Instructions:

- Maximum Score: 10 points
- Write your answers under each question in this file.
- Due date: 3/7/2023 at 7:00pm
- Submit your homework (as Word or PDF document) in Canvas, under Assignments→Homework 2. Name your file: CS 442-HW2-FirstName-LastName

Questions:

1. (3 points) What is the purpose of update domains in Azure Cloud Services? How are they used?

   The purpose of update domains in Azure Cloud Services is to ensure high availability and minimize downtime during updates and maintenance tasks. Update domains are a logical grouping of compute resources, such as virtual machines, that are updated and rebooted together to minimize disruption of services. When a cloud service is created, it is divided into several update domains. Each update domain contains a subset of the virtual machines in the service. During a service update, only a portion of the virtual machines is updated and restarted at any given time, leaving the remaining virtual machines available to continue serving traffic.

   Update domains are used when rolling forward or backward updates and the developer assigns the number required by each role. For example, there may be ten front-ends across five update domains, with the allocation across the update domains. By using update domains and reliable communication between roles, Azure Cloud Services ensures that updates and maintenance tasks are rolled out in a controlled and phased manner, minimizing the risk of downtime and service interruptions and improving the overall availability and reliability of services.

2. (4 points) Name one positive and with FaaS billing.

   One positive aspect associated with Function-as-a-Service (FaaS) billing is that it is a cost-effective solution for specific use cases, in which it allows users to pay only for the utilized compute resources rather than the resources allocated.

   On the other hand, one negative aspect associated with FaaS billing can be challenging to predict and manage costs accurately, especially if there are sudden spikes in usage or if the code being executed has unexpected resource requirements. As a result, this can cause unexpected charges and potentially higher costs than anticipated.

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3. (3 points) Name and explain three advantages of FaaS over PaaS.

   One advantage of Function-as-a-Service (FaaS) over Platform-as-a-Service (PaaS) is its cost-effectiveness with its pay-as-you-go model resulting in the customer only paying for the execution time of the function. Additionally, FaaS can scale down to zero resources, meaning there will be no cost for the customer as no function is being executed. On the other hand, PaaS has servers always running regardless of the workload resulting in a waste of resources.

   A second advantage of FaaS over PaaS is its quick deployment time. The cloud providers are responsible for managing and provisioning servers, so the customer can focus more on writing the code for their function without worrying about the underlying infrastructure. As a result, faster development cycles result in quicker time to market for new features and products.

   A third advantage of FaaS over PaaS is that it allows for more flexible development. For example, specific functions or microservices can be deployed rather than an entire application. In addition, FaaS allows developers to bring their custom libraries, giving them even more flexibility for them to build their applications. Finally, FaaS allows developers to choose the best tool for each specific task instead of being restricted to a single platform.