

University of Washington Bothell

CSS 436: Cloud Computing

Program 5: Final Project

Purpose

This programming assignment will bring together many of the concepts that we have studied throughout the quarter. It is more open-ended than previous assignments so the hope is that students will follow a new area or passion of theirs.

Problem Statement / Overview

This is a group project. Please create groups of 2 or 3 to complete this project.

The group will plan, design, build, publish and run a cloud service of their own choosing. The cloud service will be made available to all students in the class for usage.

Problem Statement Details

The cloud service should be hosted on either Azure or Amazon. It can utilize any RESTful services that are available. It should be available to the public during the evaluation period. The usage should be approachable/understandable by a student in the class.

It is required that the cloud service utilize at least 6 services, including one that has not been covered in class.

Example Services Utilized

Here are some examples of services which can be utilized:

- S3 or Azure Blob Storage
- DynamoDB or Table Storage
- RDS or SQL DB
- Queues: Amazon or Azure or Service Bus
- Web Site Hosting: AppServices or Elastic BeanStalk
- CloudFront or other CDN
- Web API (count as a separate service if you are exposing a Web API)
- GitHub or BitBucket if you are utilizing for developing

- Notifications
- Consuming a RESTful API
- AWS lambda or Azure Web Jobs

Keep in mind

Feel free to grab modules or code from other locations as you build your service. Development these days is as much about glue as it is about the code itself.

The following aspects should be addressed in your service.

- Usability: can a user easily consume the service
- Elasticity: can the service grow with load
- Monitoring: Can you easily monitor Usage
- Alerting: what if things go wrong, will you be notified
- Fun: Why not?

Report

You will turn in a report which will be part of the grade. The report must include the following:

- Location of the URL of the site
 - List of the 6+ services utilized
 - Clear design diagrams of final project
 - Explanation as to why you chose Azure or Amazon
 - Articulation of how you monitor the system for availability and what kind of alerting is in place for issues
 - Clear statement of the SLA for your service and a discussion as to why the SLA is achievable
 - This will necessarily require understanding the availability of the underlying services and how they interact
 - Discussion on how you could scale your system with load if it becomes very popular
- POINTS WILL BE ASSIGNED TO EACH TOPIC ABOVE SO MAKE SURE THEY ARE CLEARLY SHOWN

An Example

One could build a service which is a repository of pictures which have information about the people in the picture. These pictures are backed up to a different region occasionally. When one uploads a new picture to the repository a notification is sent to all subscribers. The pictures are exposed over a RESTful interface and there is also a query which allows one to find pictures containing individuals. For geo-scale the pictures use CloudFront.

Grading Rubric

The following will be considered while grading:

- Design
- Usability
- # of services utilized
- Correctness – does it work as expected
- Functionality – how much does it do
- Originality
- Report quality and correctness

Turn In

- Zip file containing
 - All code written; do not turn in binaries – don't make the .zip too huge
 - Report as described above
 - Make sure your service is running.