University of Washington Bothell
CSS 436: Cloud Computing
Program 4: Website + Storage

Purpose

This programming assignment will introduce the student to using multiple services in the cloud working together. In particular the student will use S3 or Blob Storage, DynamoDB or Azure Tables or CosmosDB, and website technology which allows server side code (ASP.Net, MVC, etc…).

Problem Statement / Overview

Create and host a Website which has three sections:
1) A button call **Load Data**
2) A button call **Clear Data**
3) Two input text boxes labeled **First Name** and **Last Name**
4) A button called **Query**

When the "Load Data" button is hit the website will load data from an object stored at a given URL. I will have the data both in Azure as well as Amazon S3.   The CORS (Cross-Origin Resource Sharing) header has been added to the bucket so that the object can be accessed from different regions.

First you will copy this data (a test file) into Object storage (S3 or Blob).   You will also be required to parse and load into a <Key, Value> NoSQL store (Dynamo DB or Azure Tables). Note that the load button can be hit multiple times. Each time the test file should be parsed and the NoSQL DB should be updated. Do not erase the existing data in the NoSQL database when the Load button is hit. Add in any new items found and update existing items. You may overwrite the file in S3/Blob storage.

When the "Clear Data" button is hit the blob is removed from the object store. The NoSQL table is also emptied or removed.

Once the data has been loaded in the NoSQL store the Website user can type in either one or both a First and Last name. When the Query button is hit results are shown on the Website. For the queries the names should be exact matches. Note that you do not need to fill in both query boxes to query.

This lab will require both the working Website as well as a design document and report.

The lecture slides from class give students links to ASP.Net website tutorials if they need them to get started.   That said, ASP.Net is not required and the student can use any web site infrastructure that they would like. The website should be hosted in either Amazon or Azure.

Problem Statement Details

Data Format
    The blob/object can be found at the URLs noted below. The format will be a text file with one line per item. Each line will have a last name, a first name and then a variable number of attributes:
    lastName firstName [attribute1=value1 attibrute2=value2 attribute3=value3 …]

The attributes will not have spaces in them.

Example Data:
    Dimpsey Robert id=65764 phone=4528769876 office=trulyhouse
    Winfrey Opal id=87643 phone=8769870987   age=57
        Trevor Billy id=7638 age=81 gender=M
    Munro Alice   id=9876 age=65 gender=F
    Dimpsey   Pearl id=98776 phone=4528769876 office=none

Query
    The last name / first name combination are guaranteed to be unique. A query of "Winfrey" and "Opal" should return the attributes: id=87643 phone=8769870987 age=57. A query of "Dimpsey" "" should return both:
    Dimpsey Robert id=65764 phone=4528769876 office=trulyhouse
    Dimpsey Pearl id=98776 phone=4528769876 office=none

Location
    The website should expect to find the data at these two locations. You will only have to read from one location.
        https://s3-us-west-2.amazonaws.com/css490/input.txt
        https://css490.blob.core.windows.net/lab4/input.txt

Report
    You will turn in a report which will be part of the grade. The report must include the following:
    • Location of the URL for you site

- Location of where the blog/object is stored (make this public). We'll check to make sure it is loaded there
- Clear design diagrams of final project
- Discussion of how the site will scale with load
- Discussion on how monitoring is done on the site
- Estimate of your SLA

Keep in mind
- Each item will have a first name and a last name
- An item may have 0 or more attributes
- Make sure the WebSite provides good feedback to the user. For instance, make sure useful messages are shown when the load is complete.
- The load button can be hit multiple times.
    - Do not clear NoSQL DB on load. Add in new items, update existing ones.
    - You may overload the file in S3/Object Storage
- If only one of the first name or last name is given then all matches should be shown

Turn In
- Zip file containing
    - All code written
    - Report as described above
- Make sure your website is running