

COSC 416 - Special Topics in Databases

Assignment 9 - DynamoDB

Part I: Create your own AWS account (5 marks)

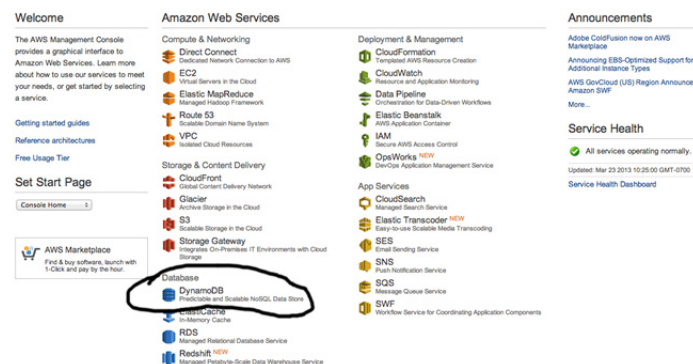
Task #1: (1 mark)

Create an account (one account per group) with Amazon Web Services by following this link <http://aws.amazon.com/dynamodb/>

Note: You will need to input credit card information! You will also need a cell phone that can take calls...

Task #2: (3 marks)

From the AWS console (<https://console.aws.amazon.com>), select “DynamoDB” under the Database category. This brings you to the Amazon user interface system of DynamoDB where you can simply create your database system to be hosted on the Amazon web servers.



Create two tables:

The first table will be called Students with a Hash Primary Key type that uses a unique integer attribute called “**studentID**”. *Make sure your Read and Write Capacity Units are set to 1.*

- Attributes of this table must include:
 - studentID {Number}
 - fname {String}
 - lname {String}
 - age {Number}
 - gender {String}
 - classes{String set}
- Insert yourself and your group members to this tableS

The second table will be called Movies with a Hash and Range Primary Key Type that uses a unique string Hash attribute called “mNames” and a unique integer Range attribute called “ranking”. Make sure your Read and Write Capacity Units are set to 1.

- Insert 5 of your favorite movies and rank them from your most favorite to least favorite

Submit a screenshot of both your tables as part of your submission

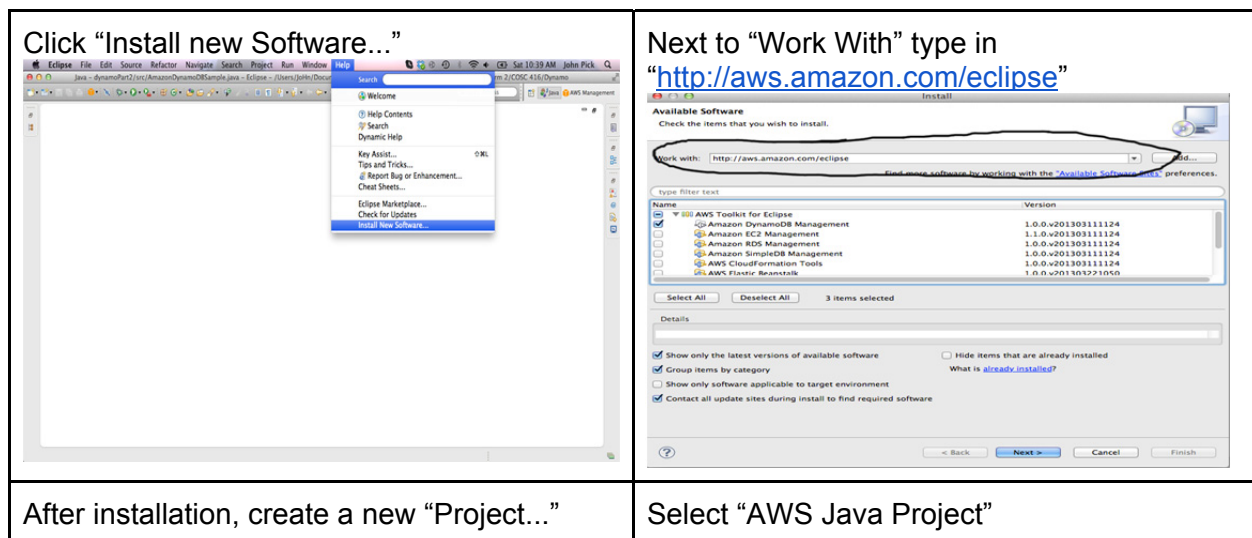
Task #3: (1 mark)

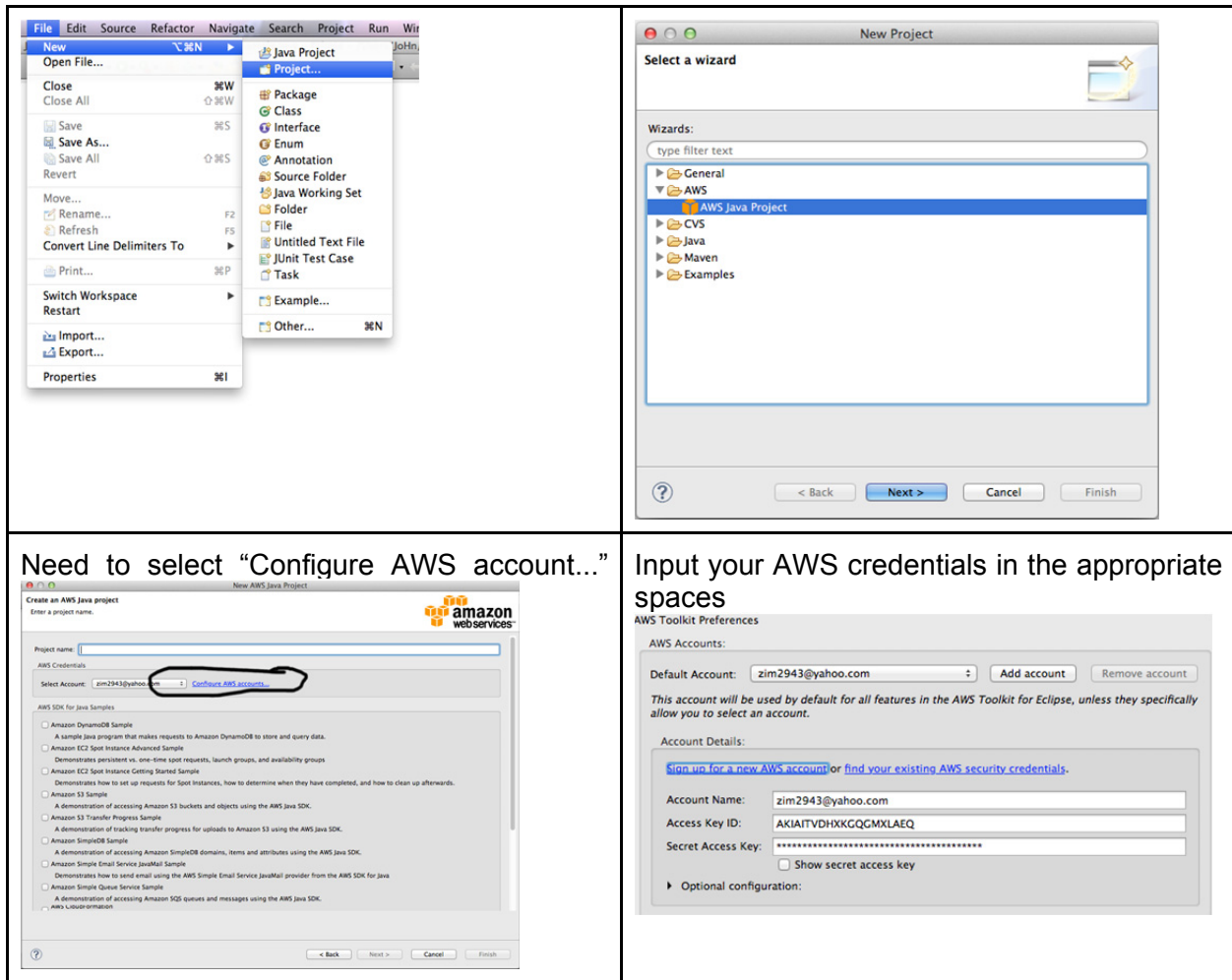
Explain the difference between using only a “Hash” Primary Key and using a “Hash and Range” Primary Key. Include an explanation of a possible use of having a Range in your table.

Part II: Writing programs with DynamoDB (10 marks)

For this part of the assignment you may want to install the AWS toolkit for Eclipse onto your machine. Follow these steps to install the AWS toolkit

- 1 Open eclipse and under the “Help” tab click “Install New Software...”
- 2 Next to “Work With” type in “<http://aws.amazon.com/eclipse>” and hit enter.
- 3 When the AWS Toolkit for Eclipse appears, open its tab and only select “Amazon DynamoDB Management”, “AWS SDK for Java”, and “AWS Toolkit for Eclipse Core”
- 4 Follow the remaining onscreen instructions and let the installation complete.
- 5 After installation, create a new “Project...” and select “AWS Java Project”
- 6 When you see the window to input your project name you will first need to select “Configure AWS account...”
- 7 Input your AWS credentials in the appropriate spaces, if you don’t know where to find your AWS credentials you can click the link “find your existing AWS credentials”
- 8 Click apply and you are finished!





Notes:

The most useful sample to help you answer this part would be the “Amazon DynamoDB Sample”

You can do the 4 tasks in a single program if you wish to.

Task #1 (2 marks)

Write a program that creates a table to your AWS DynamoDB server. The table should be called “Games” and contain a Hash key called “gid” that will store Numbers.

Note that the sample provides a method that tells its program to “wait” until a newly created table becomes active, which you may find useful.

Task #2 (2 marks)

Write a program that *inserts at least 2 items* of your choice to the table “Games”. When you insert be sure to include the following columns

- gid {Number}
- gname {String}
- publisher {String}
- rating {Number}
- releasedate {String}
- genres {String Set}

For the first insert, set your Hash key ‘gid = 1’ and for the second set ‘gid = 2’ and so on...

Task #3 (3 marks)

Write a program that reads your table “Games” from your AWS Dynamo Database and prints out the ‘gname’ and the ‘rating’ *only*.

If you are using the AWS toolkit on Eclipse, be aware that data pulled from your Dynamo database is stored using a HashTable and you will have to find your own way to read through it and print out the data *nicely*. (I.E., Don’t just print by using ‘out.print(HashTable);’)

Task #4 (3 marks)

Write a program that reads your table “Games” from your AWS Dynamo Database and returns only the game where ‘gid = 2’

You are going to need to access the “Filter” feature Dynamo has through your program.

Part III: (10 marks):

Write a program that accesses a relational database containing GameList. In your program, transfer the 100 items in this table to your own Dynamo database server. You will need to create a new table in your Dynamo server called ‘ListGames’ and find a way to simultaneously connect to the relational database and your Dynamo database to transfer the items successfully. Transfer each item at a rate of 1 - 2 writes per second as to avoid risking going over your read/write limit and being charged.

Relational Database details:

Host: `mysql://cs-suse-4.ok.ubc.ca/rlawrenc`

Username: `rlawrenc`

password: `test`

Tblname: `GameList` (contains 100 items)