

Enterprise Standards and Best Practices for IT Infrastructure

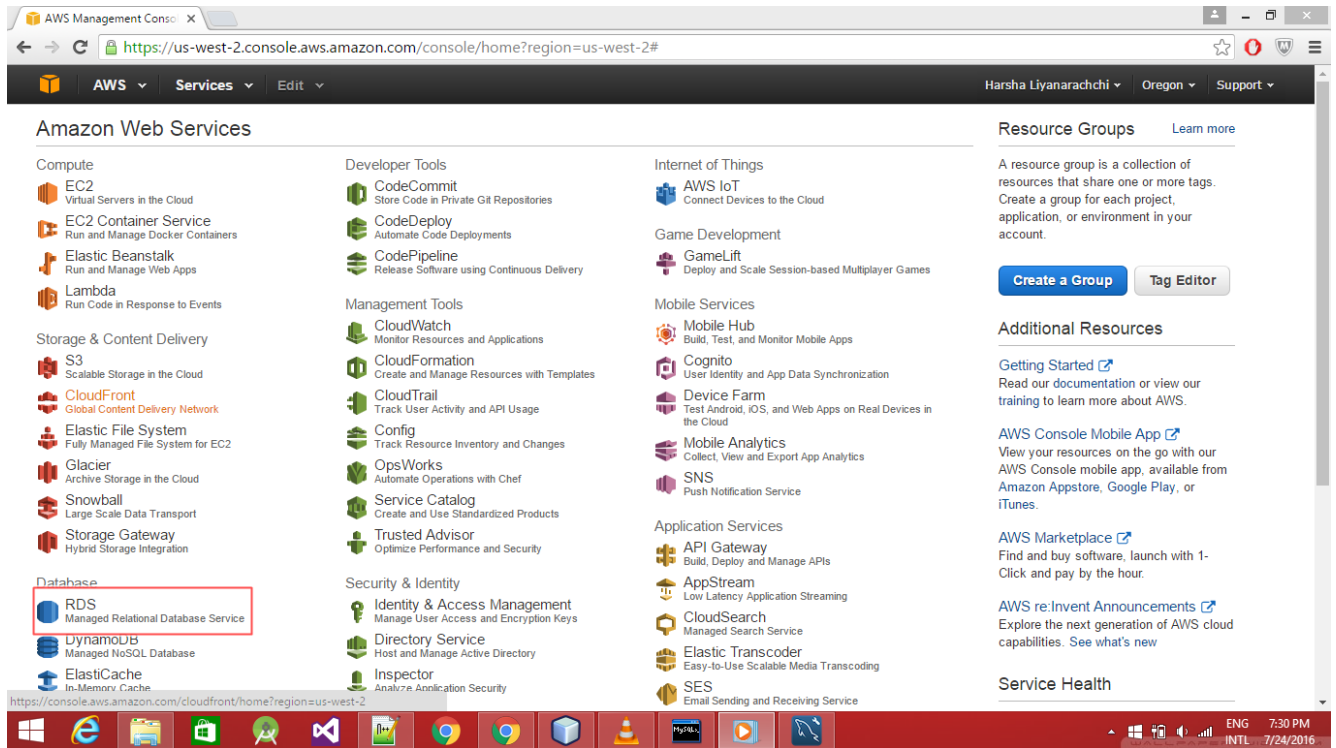
Lab 3 – Creating an Amazon RDS database

Sri Lanka Institute of Information Technology
B.Sc. Special (Honors) Degree in Information Technology
Specialized in Information Technology

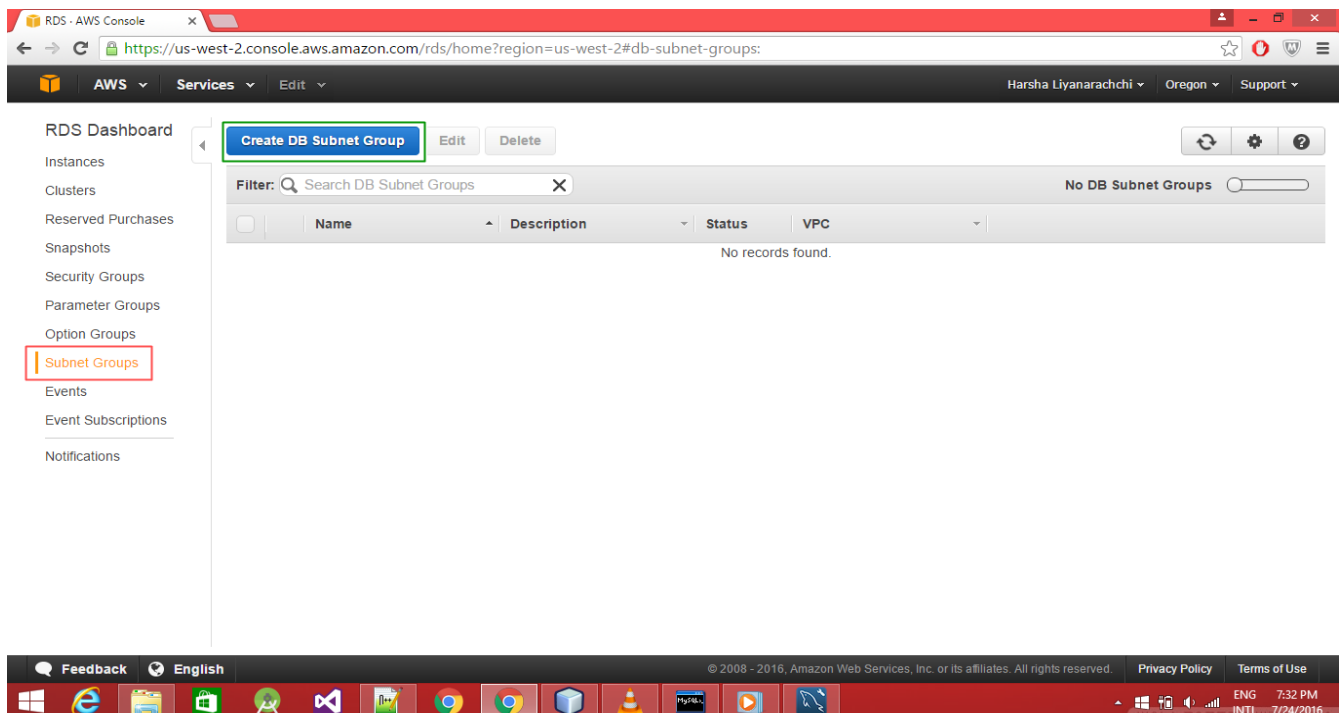
Liyanarachchi H.P - IT13119836

Create an Amazon RDS database

Step 01 – Select RDS from the Amazon Web Services Console.



Step 02 – Select subnet groups from the menu and click create DB subnet group.



Step 03 – Fill the create DB subnet group form and VPC ID select the available one.

At least minimum two subnets required.

RDS Dashboard

Instances

Clusters

Reserved Purchases

Snapshots

Security Groups

Parameter Groups

Option Groups

Subnet Groups

Events

Event Subscriptions

Notifications

Create DB Subnet Group

To create a new Subnet Group give it a name, description, and select an existing VPC below. Once you select an existing VPC, you will be able to add subnets related to that VPC.

Name: lab3Mysql

Description: sliitMysql

VPC ID: vpc-24235940

Add Subnet(s) to this Subnet Group. You may add subnets one at a time below or [add all the subnets](#) related to this VPC. You may make additions/edits after this group is created. A minimum of 2 subnets is required.

Availability Zone: us-west-2a

Subnet ID: subnet-47df5d31 (172.31.32.0/2)

Add

Availability Zone	Subnet ID	CIDR Block	Action
us-west-2a	subnet-47df5d31	172.31.32.0/20	Remove

Cancel Create

RDS Dashboard

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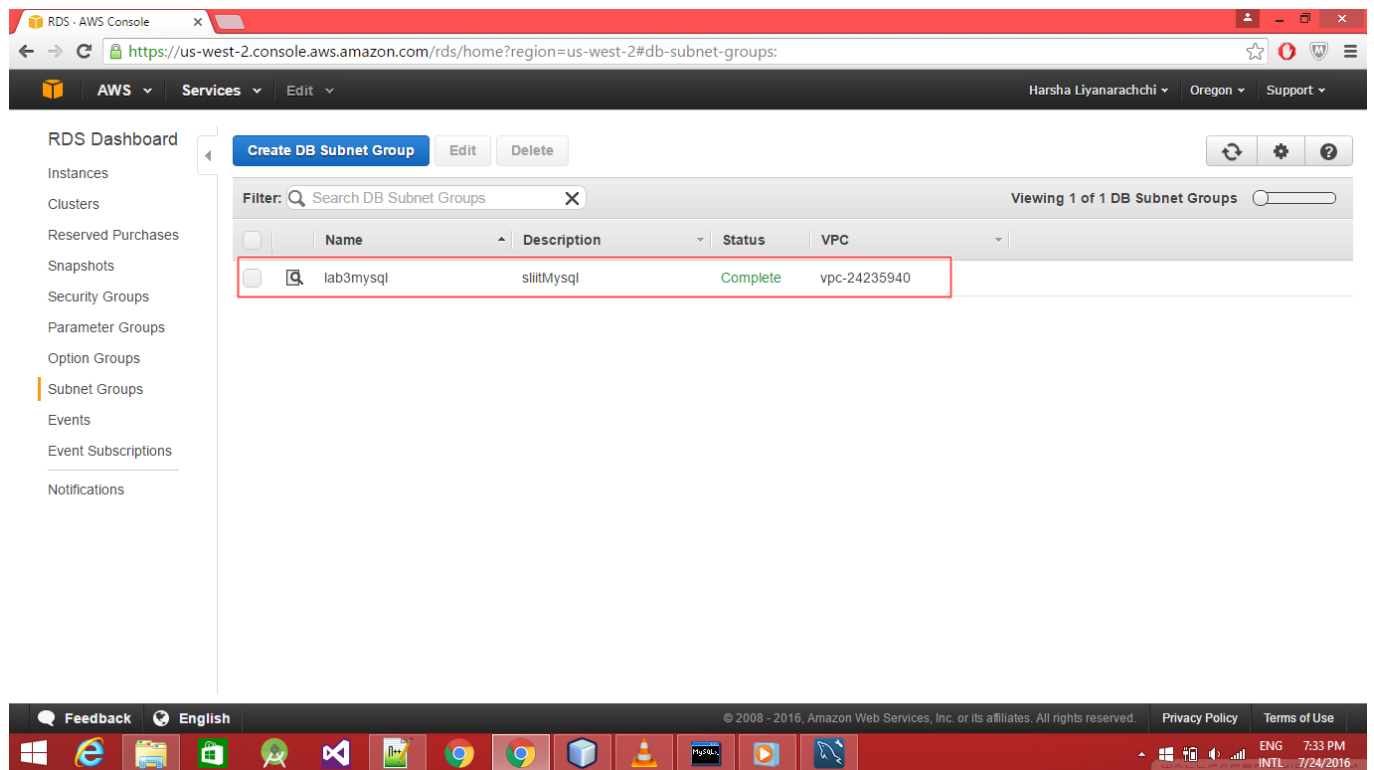
Availability Zone: us-west-2b

Subnet ID: subnet-4c325928 (172.31.16.0/2)

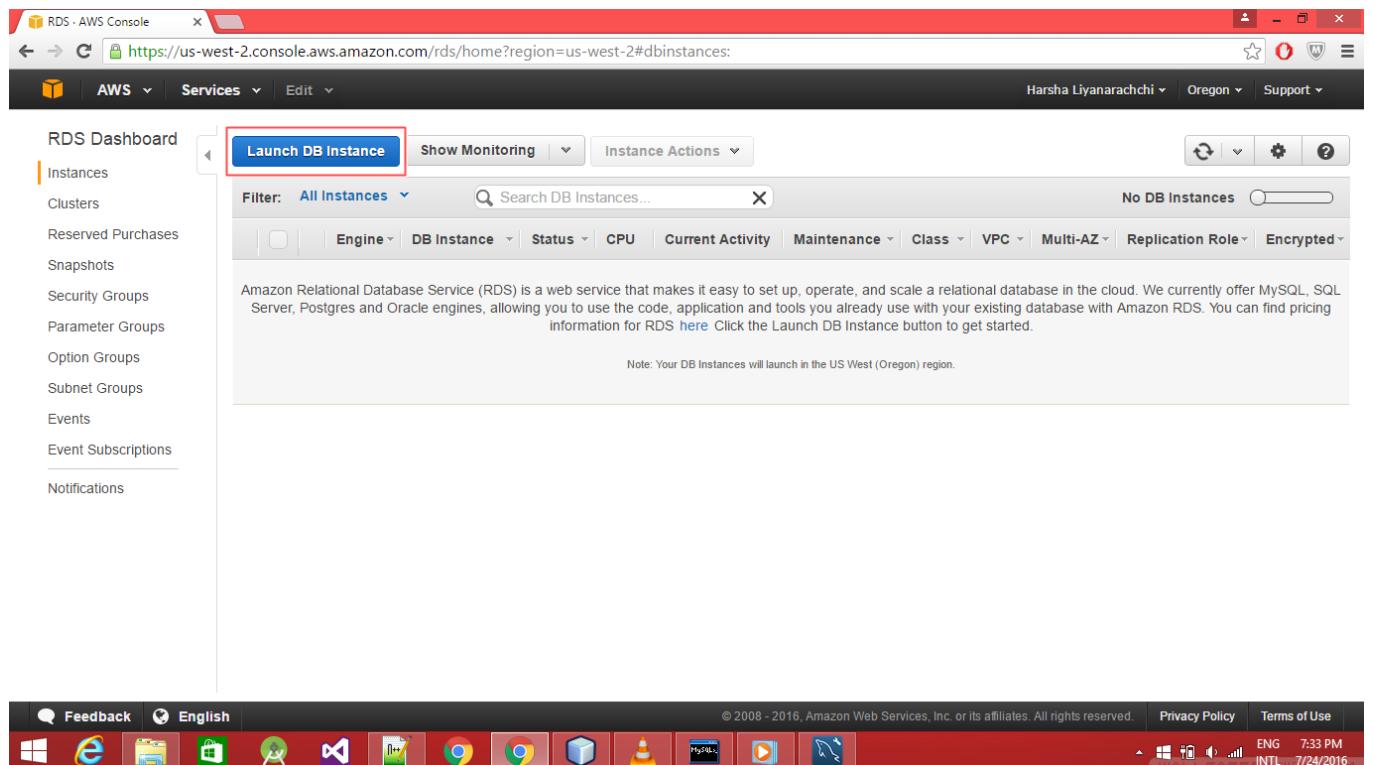
Add

Availability Zone	Subnet ID	CIDR Block	Action
us-west-2b	subnet-4c325928	172.31.16.0/20	Remove
us-west-2a	subnet-47df5d31	172.31.32.0/20	Remove

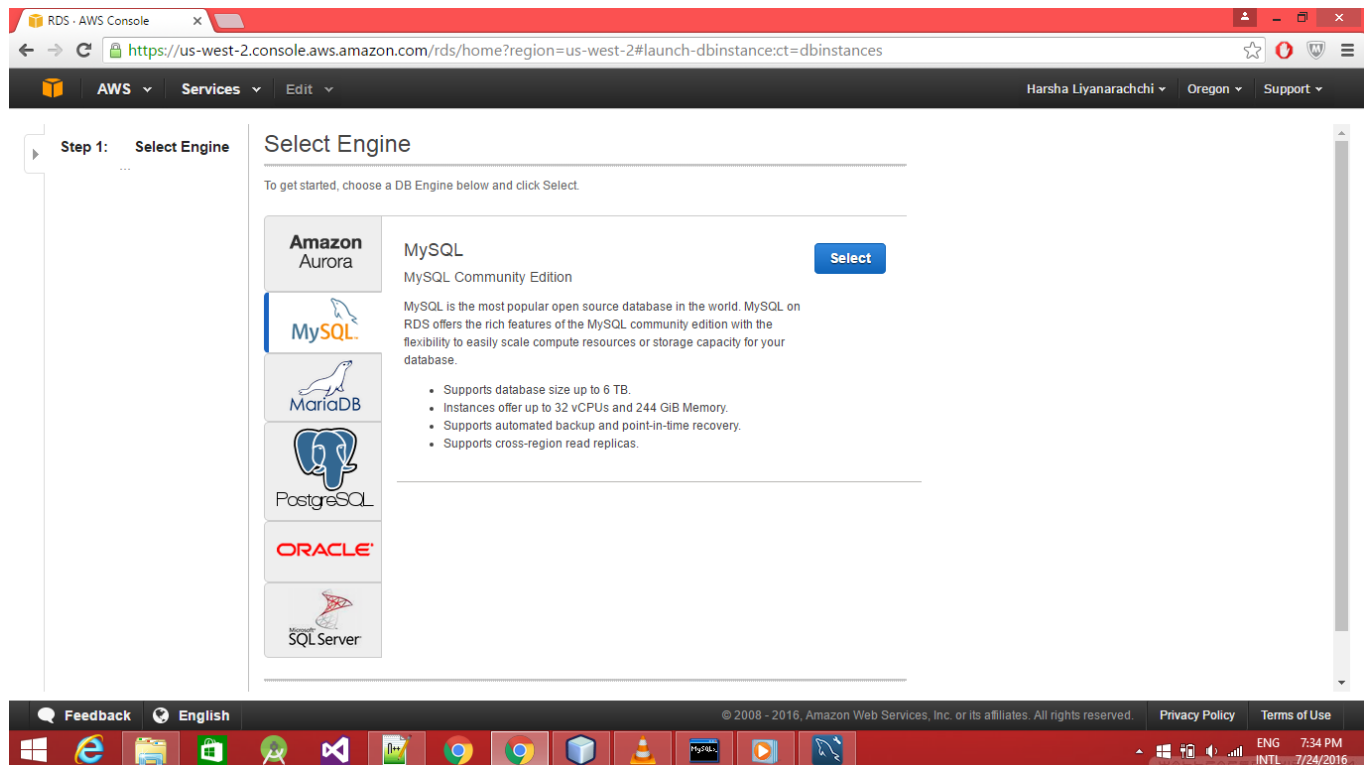
Cancel Create



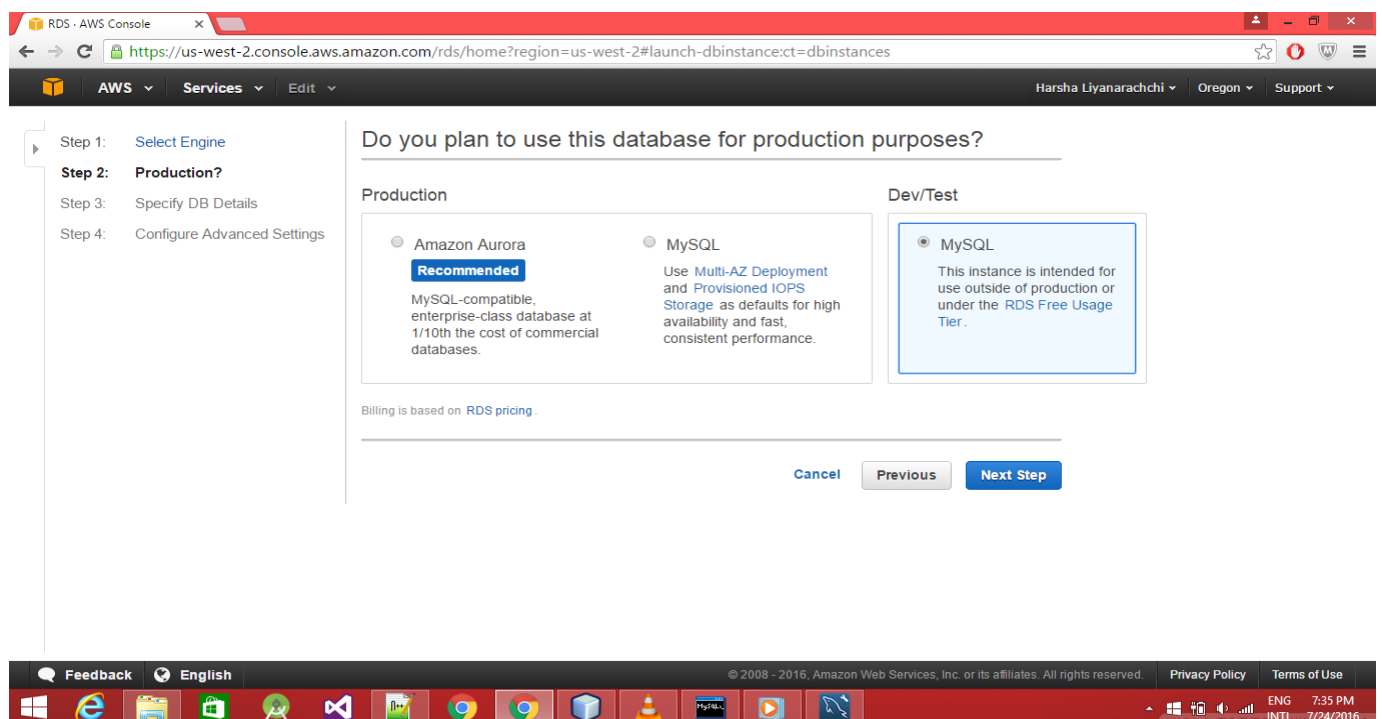
Step 04 – Click the Instance option from side menu and then click the create DB instance.



Step 05 – Select MySQL from the database selection list.



Step 06 – Tick the Dev/Test MySQL option in specify DB detail and click NEXT step button as shown in the figure below.



Step 07 – Configure the DB setting of MySQL server deployment as below and click Next Step button.

- License Model: **general-public-license**
- DB Engine Version: **select the latest one**
- DB Instance Class: **db.t2.micro**
- Multi-AZ Deployment: **No**
- Storage Type: **General Purpose (SSD)**
- Allocated Storage: **5GB**
- DB Instance Identifier: **any name**
- Master Username: **any user name**
- Master Password: **password with more than 8 characters**

The screenshot shows the AWS RDS console interface for configuring a new DB instance. The browser address bar shows the URL: <https://us-west-2.console.aws.amazon.com/rds/home?region=us-west-2#launch-dbinstance:ct=dbinstances>. The console header includes the AWS logo, navigation tabs (AWS, Services, Edit), and user information (Harsha Uyanachchi, Oregon, Support).

On the left sidebar, there are informational messages: "Your current selection is eligible for the free tier." and "Estimate your monthly costs for the DB Instance using the RDS Instance Cost Calculator." with a "Learn More" link.

The main content area is titled "Only show options that are eligible for RDS Free Tier" and "Instance Specifications". It contains the following configuration options:

- DB Engine: mysql
- License Model: general-public-license
- DB Engine Version: 5.6.27
- DB Instance Class: db.t2.micro — 1 vCPU, 1 GiB RAM
- Multi-AZ Deployment: No
- Storage Type: General Purpose (SSD)
- Allocated Storage*: 5 GB

A warning message is displayed: "Provisioning less than 100 GB of General Purpose (SSD) storage for high throughput workloads could result in higher latencies upon exhaustion of the initial General Purpose (SSD) IO credit balance. Click here for more details."

The "Settings" section includes:

- DB Instance Identifier*: pathumDB
- Master Username*: harsha123
- Master Password*: [masked]
- Confirm Password*: [masked]

A note states: "Retype the value you specified for Master Password."

At the bottom, there are buttons for "Cancel", "Previous", and "Next Step". A footnote indicates "* Required".

The footer of the console shows copyright information: "© 2008 - 2018, Amazon Web Services, Inc. or its affiliates. All rights reserved." and links for "Privacy Policy" and "Terms of Use".

The Windows taskbar at the bottom shows the system clock as 8:42 AM on 7/23/2016, with language set to ENG and region to INTL.

Step 08 - Configure the Advanced DB setting of MySQL server deployment as below and click Launch DB Instance.

- VPC: **select the available one**
- Subnet Group: **lab3mysql**
- Publicly Accessible: **No**
- Availability Zone: **us-west-2a**
- VPC Security Group(s): **Create new Security Group**
- Database Name: **any name**
- Database Port: **3306**
- DB Parameter Group: **default**
- Option Group: **default**
- Enable Encryption: **No**
- Backup Retention Period: **0 days**
- Backup Window: **No preference**
- Auto Minor Version Upgrade: **Yes**
- Maintenance Window: **No preference**

RDS - AWS Console

https://us-west-2.console.aws.amazon.com/rds/home?region=us-west-2#launch-dbinstance:ct=dbinstances

Harsha Liyanarachchi Oregon Support

Step 1: Select Engine
Step 2: Production?
Step 3: Specify DB Details
Step 4: Configure Advanced Settings

Configure Advanced Settings

Network & Security

VPC* Default VPC (vpc-24235940)

Subnet Group lab3mysql

Publicly Accessible Yes

Availability Zone us-west-2a

VPC Security Group(s) Create new Security Group default (VPC)

Database Options

Database Name users

Note: if no database name is specified then no initial MySQL database will be created on the DB Instance.

Database Port 3306

DB Parameter Group default.mysql5.6

Option Group default.mysql5-6

Select the security group or groups that have rules authorizing connections from all of the EC2 instances and devices that need to access the data stored in the DB instance. By default, security groups do not authorize any connections; you must specify rules for all instances and devices that will connect to the DB instance. [Learn More.](#)

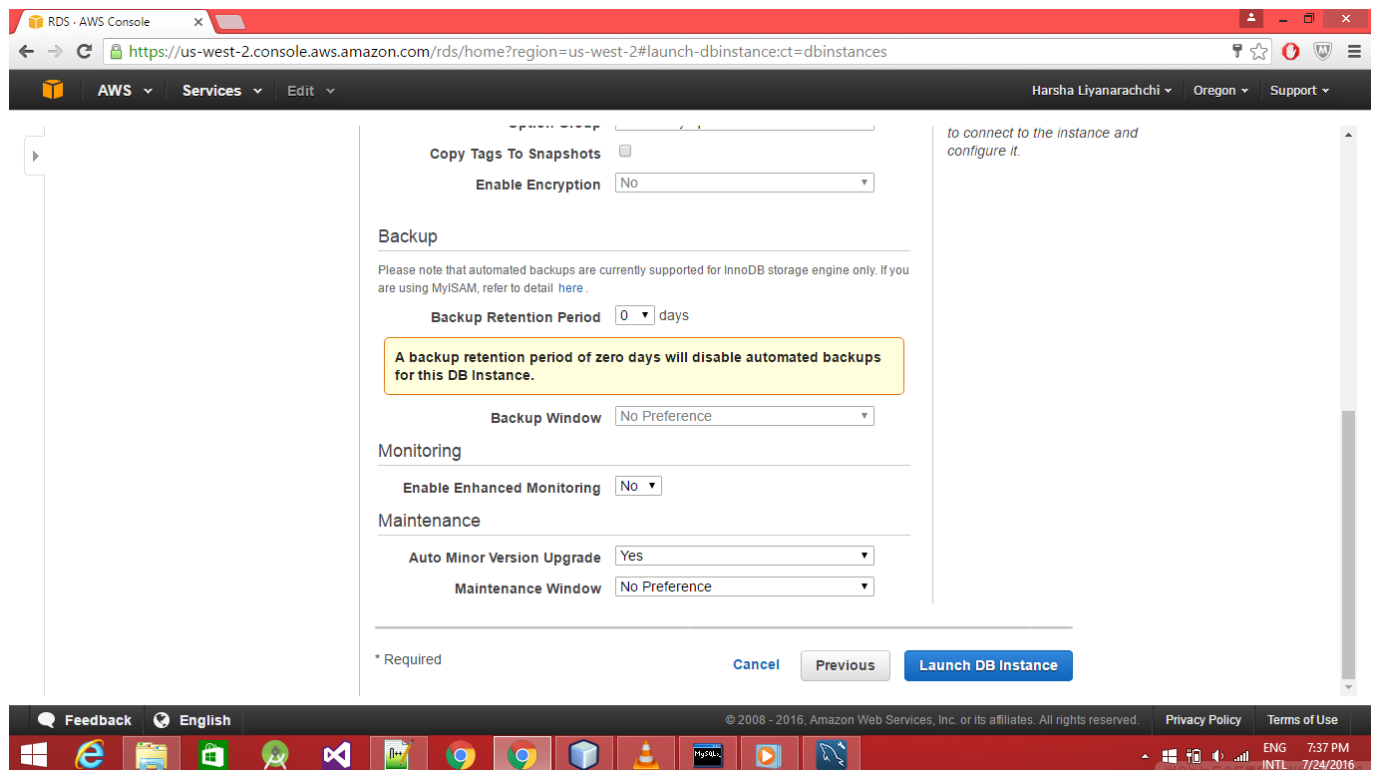
Connection Information

Security Group Rules:
A security group allowing your current IP address (103.21.166.18) to connect to your instance will be created. This will make it easier for you

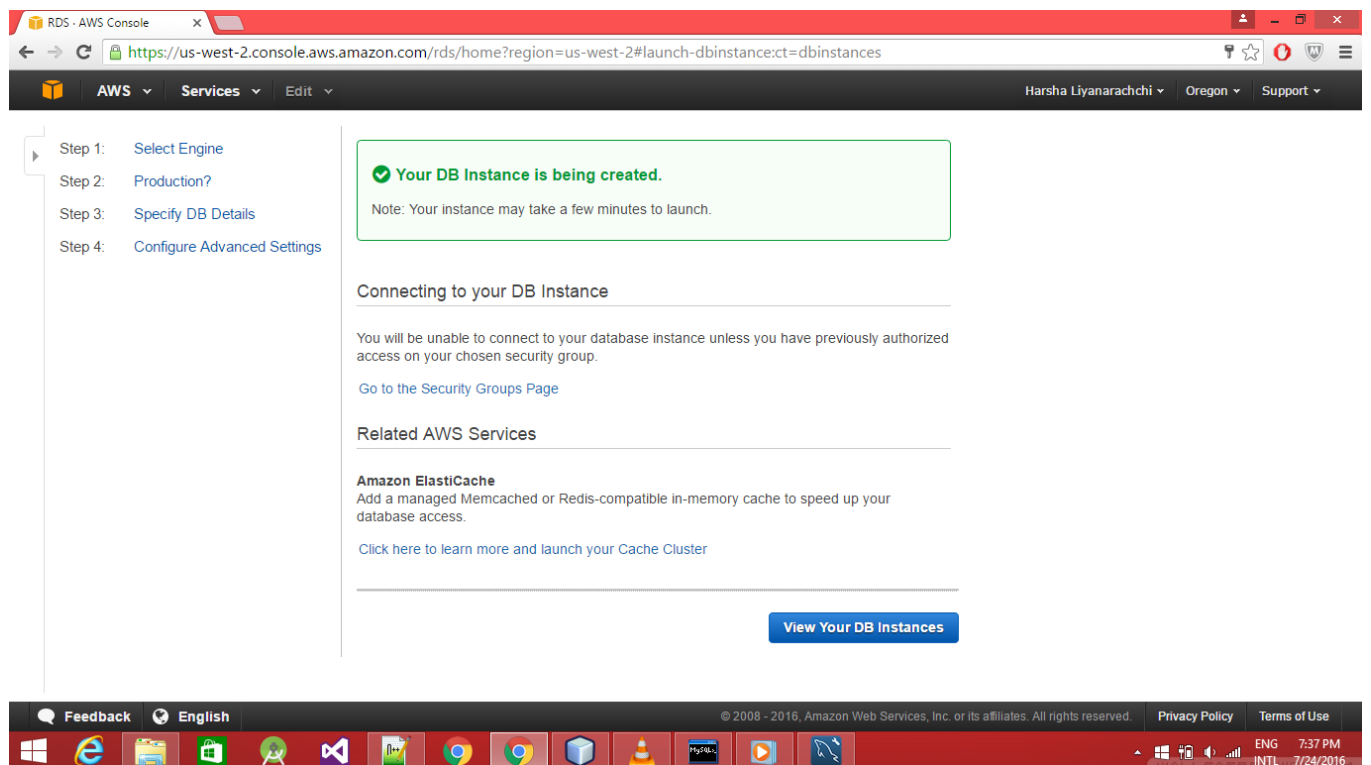
Feedback English

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ENG 7:37 PM
INTL 7/24/2016



Step 09 – Click the View Your DB Instance button.



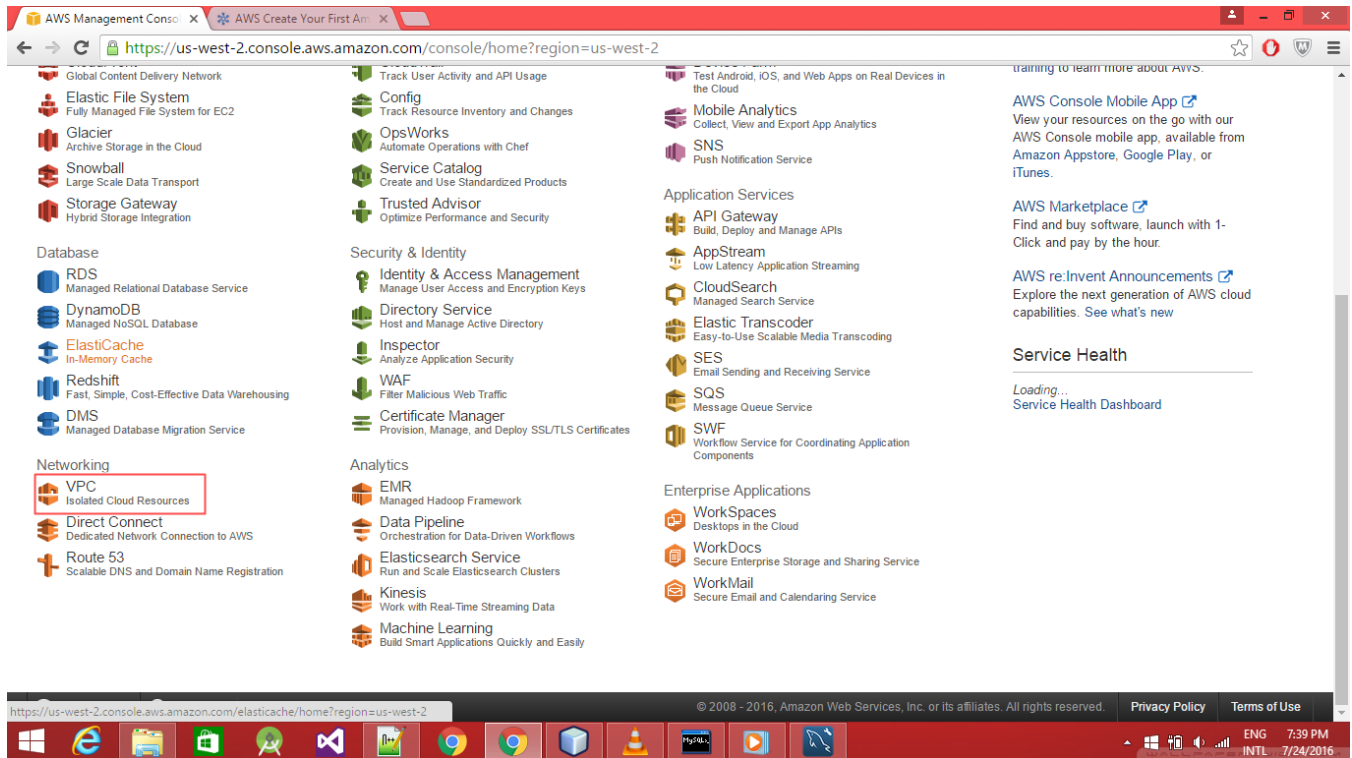
Step 10 – Again click Instances in side menu and then can see the created DB instance.

Note - RDS instance creation requires **up to 10 minutes** for completion. Wait until its status becomes *available*

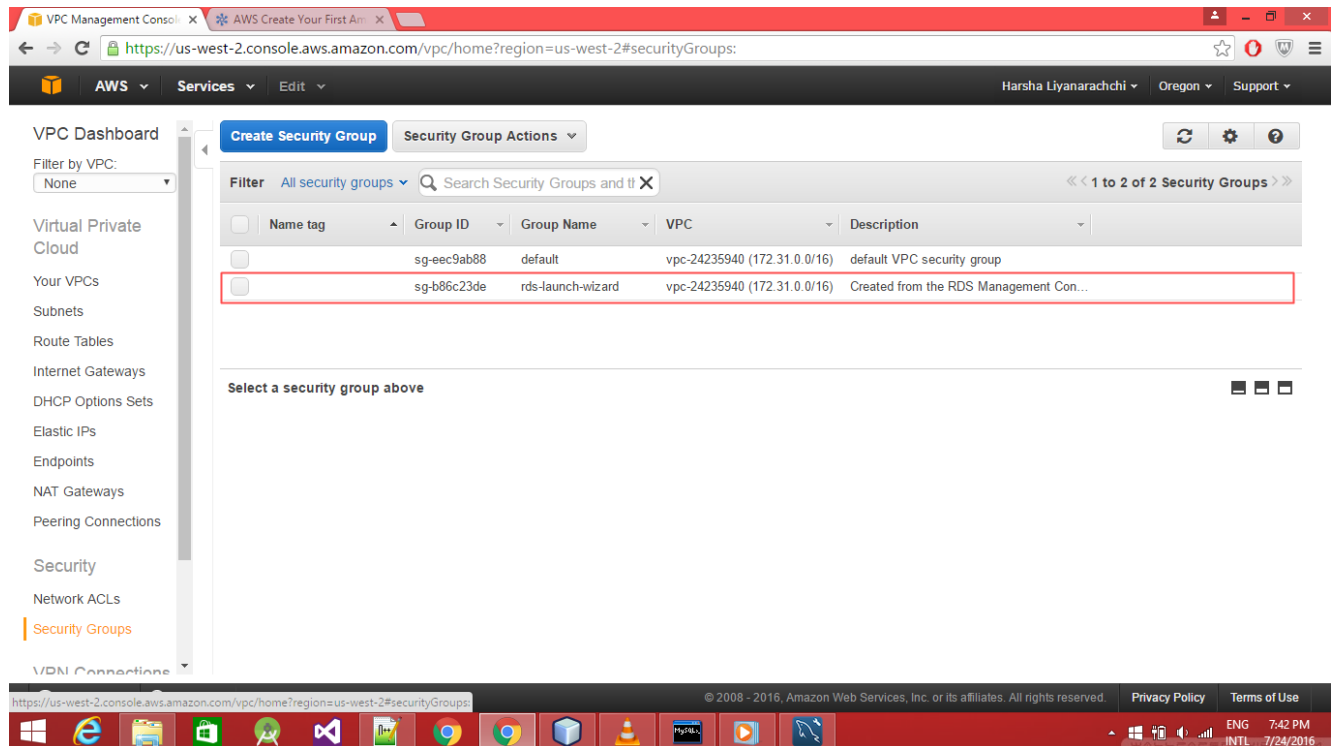
The screenshot displays the AWS RDS console interface. On the left, the 'RDS Dashboard' sidebar lists various resources, with 'Instances' selected. The main panel shows a table of DB instances. A single instance, 'harshanew', is listed with a status of 'creating'. The instance details include: Engine: MySQL, Class: db.t2.micro, VPC: vpc-24235940, and Multi-AZ: No. The table headers are: Engine, DB Instance, Status, CPU, Current Activity, Maintenance, Class, VPC, Multi-AZ, Replication Role, and EBS. The status 'creating' is highlighted in orange. The console also shows a 'Launch DB Instance' button and a search bar for DB instances. The bottom of the screen shows the Windows taskbar with various application icons and the system clock indicating 7:37 PM on 7/24/2016.

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC	Multi-AZ	Replication Role	EBS
MySQL	harshanew	creating			None	db.t2.micro	vpc-24235940	No		N

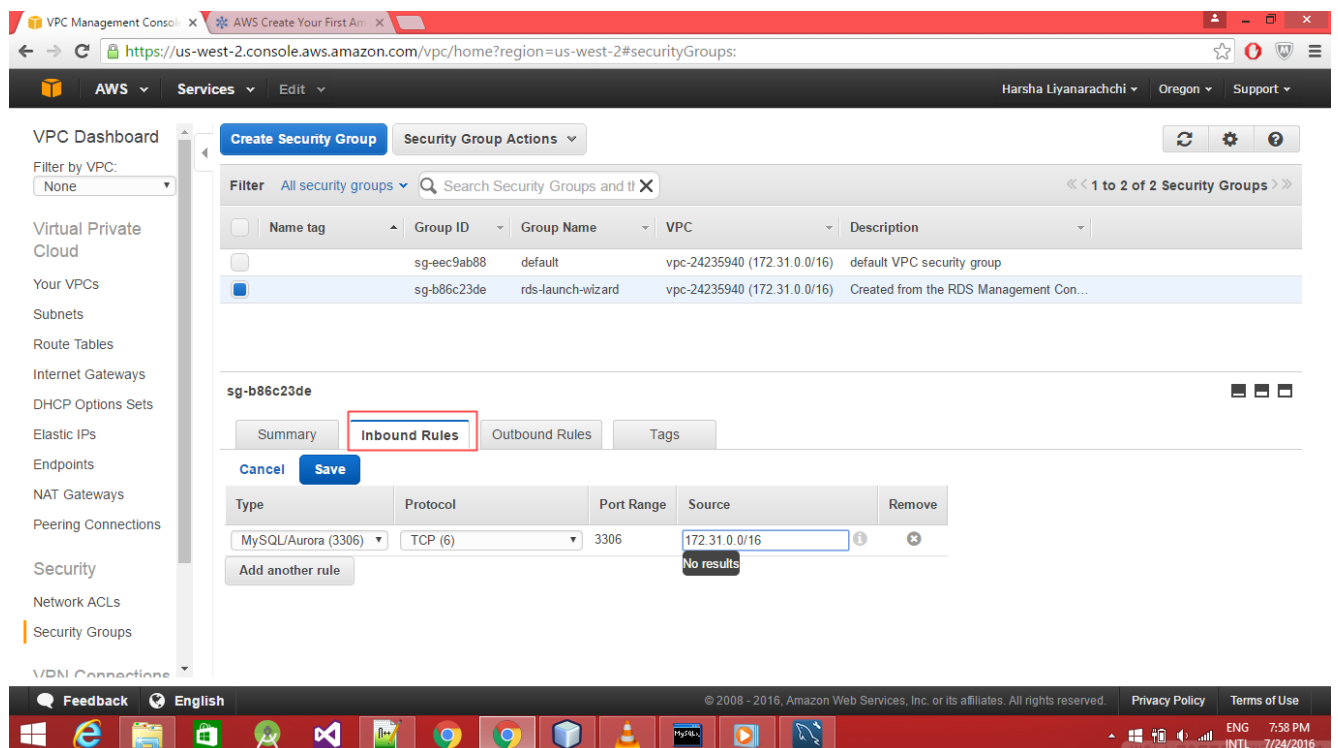
Step 11 – Setup Security group rules for connecting to the RDS instance. Select VPC service from management console.



Step 12 - In the navigation pane, click Security Groups. Locate and click the rds-launch-wizard security group.



Step 13 – Click the security group and On the Inbound Rules tab, click Edit.



Step 14 – Fill the rule with following details and save the rule.

- **Type:** MYSQL
- **Protocol:** TCP
- **Port:** 3306
- **Source:** 172.31.0.0/16

The screenshot displays the AWS VPC Management Console interface. The left sidebar shows the navigation menu with categories like Virtual Private Cloud, Subnets, Route Tables, and Security. The main content area is titled 'Security Group Actions' and shows a list of security groups. The group 'sg-b86c23de' is selected, and its 'Inbound Rules' tab is active. A new rule is being added with the following details:

Type	Protocol	Port Range	Source
MySQL/Aurora (3306)	TCP (6)	3306	172.31.0.0/16

The 'Edit' button is highlighted, and a green 'Save Successful' message is displayed above the rule table. The bottom of the screen shows the Windows taskbar with various application icons and the system clock indicating 7:58 PM on 7/24/2016.

Step 15 – Connect to RDS and create a database table. Expand DB instance and copy the endpoint without port number.

End Point - harshanew.chhllkt2b24r.us-west-2.rds.amazonaws.com

The screenshot shows the AWS RDS Dashboard. On the left is a navigation menu with options like Instances, Clusters, Reserved Purchases, Snapshots, Security Groups, Parameter Groups, Option Groups, Subnet Groups, Events, Event Subscriptions, and Notifications. The main area displays a table of DB instances. One instance, 'harshanew', is highlighted with a red box. Below the table, the endpoint is shown as 'harshanew.chhllkt2b24r.us-west-2.rds.amazonaws.com:3306 (authorized)'. Below the endpoint, there are sections for 'Alarms and Recent Events' and 'Monitoring'.

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC	Multi-AZ	Replication
MySQL	harshanew	available	0.82%	0 Connections	None	db.t2.micro	vpc-24235940	No	

Endpoint: harshanew.chhllkt2b24r.us-west-2.rds.amazonaws.com:3306 (authorized)

Alarms and Recent Events

TIME (UTC+5:30)	EVENT
Jul 24 7:40 PM	DB instance created
Jul 24 7:40 PM	DB instance restarted

Monitoring

	CURRENT VALUE	THRESHOLD	LAST HOUR
CPU	0.82%		
Memory	550 MB		
Storage	4,540 MB		
Read IOPS	0.55/sec		
Write IOPS	0.133/sec		
Swap Usage	0 MB		

The screenshot shows the details of the DB instance 'harshanew'. The details are organized into sections: Configuration Details, Security and Network, Instance and IOPS, Encryption Details, Availability and Durability, and Maintenance Details.

Endpoint: harshanew.chhllkt2b24r.us-west-2.rds.amazonaws.com:3306 (authorized)

Configuration Details

Property	Value
Engine	MySQL 5.6.27
License Model	General Public License
Created Time	July 24, 2016 at 7:40:52 PM UTC+5:30
DB Name	users
Username	harshaDB
Option Group	default.mysql5-6 (in-sync)
Parameter Group	default.mysql5.6 (in-sync)
Copy Tags To Snapshots	No

Security and Network

Property	Value
Availability Zone	us-west-2a
VPC	vpc-24235940
Subnet Group	lab3mysql (Complete)
Subnets	subnet-4c325928 subnet-47df5d31 subnet-e3d812bb
Security Groups	rds-launch-wizard (sg-b86c23de) (active)
Publicly Accessible	Yes
Endpoint	harshanew.chhllkt2b24r.us-west-2.rds.amazonaws.com
Port	3306
Certificate Authority	rds-ca-2015 (Mar 5, 2020)

Instance and IOPS

Property	Value
Instance Class	db.t2.micro
Storage Type	General Purpose (SSD)
IOPS	disabled
Storage	5 GB

Encryption Details **Availability and Durability** **Maintenance Details**

Step 16 – Set up MySQL to run in command line in local machine and type this command in console.

(`mysql -h <endpoint> -P <port number> -u <instance name> -p`)

Enter your master password

Ex – `mysql -h harshanew.chh1lkt2b24r.us-west-2.rds.amazonaws.com -u harshaTest -p`

The screenshot shows a Windows desktop with a web browser displaying the AWS RDS console and a Command Prompt window open in the foreground. The Command Prompt window shows the execution of the command `mysql -h harshanew.chh1lkt2b24r.us-west-2.rds.amazonaws.com -u harshaDB -p` and the prompt `Enter password: *****_`. The browser window shows the AWS RDS console for the instance `harshanew`. The console displays various configuration details for the instance, including its availability zone, VPC, subnet group, security groups, and instance class.

Command Prompt Window:

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Harsha>mysql -h harshanew.chh1lkt2b24r.us-west-2.rds.amazonaws.com -u h
arshaDB -p
Enter password: *****_
```

AWS RDS Console Details:

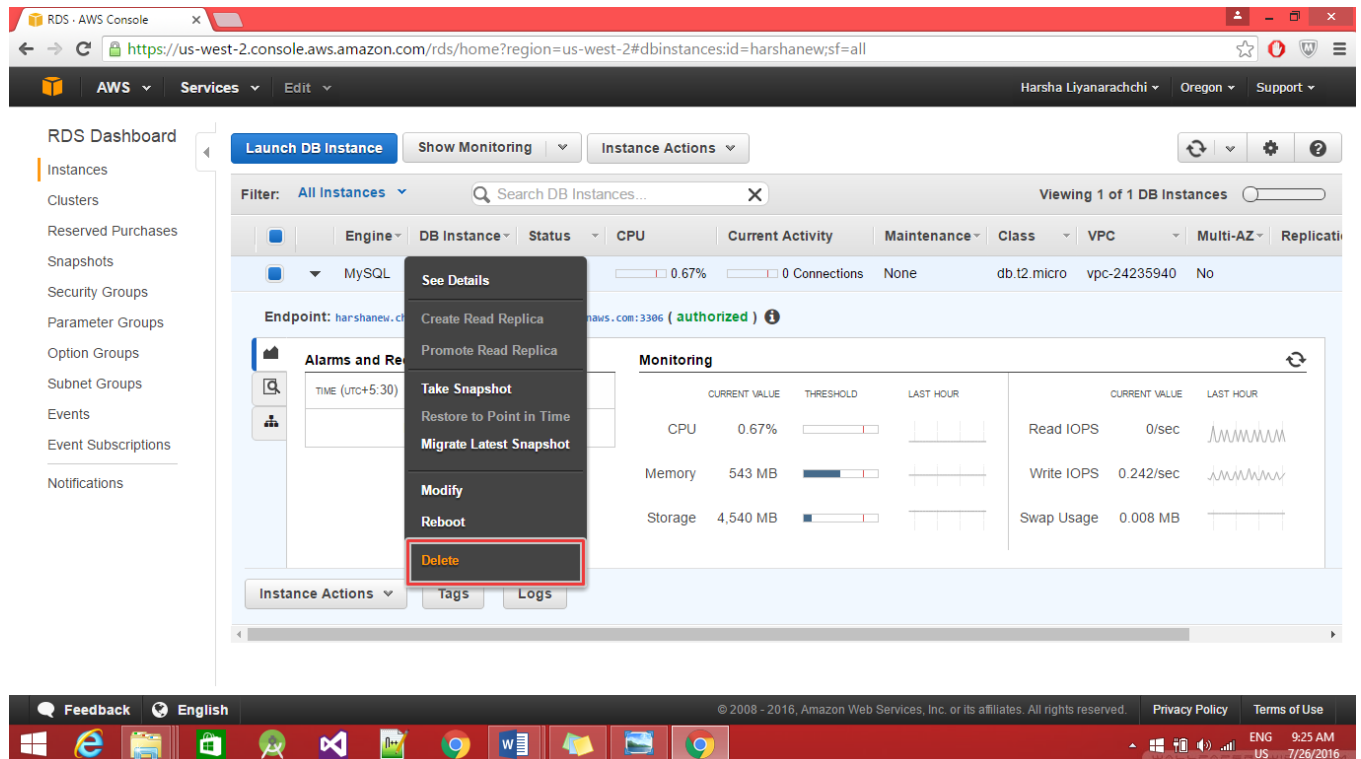
- Instance Name:** harshanew
- Availability Zone:** us-west-2a
- VPC:** vpc-24235940
- Subnet Group:** lab3mysql (Complete)
- Subnets:** subnet-4c325928, subnet-47df5d31, subnet-e3d812bb
- Security Groups:** Security Group sg-b86c23de (active)
- Publicly Accessible:** Yes
- Endpoint:** harshanew.chh1lkt2b24r.us-west-2.rds.amazonaws.com
- Port:** 3306
- Certificate Authority:** rds-ca-2015 (Mar 5, 2020)

Instance and IOPS:

- Instance Class:** db.t2.micro
- Storage Type:** General Purpose (SSD)
- IOPS:** disabled
- Storage:** 5 GB

Encryption Details Availability and Durability Maintenance Details

Step 17 – After finished with the DB instance, Can delete the instance by click on the DB instance and select Delete option from the menu as shown below.



Choose “No” for Create final Snapshot and click the delete button to delete the DB instance.

