



Enterprise Standards and Best Practices for It Infrastructure

Assignment 1

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Part A

Creating an Amazon EBS-Baked windows AMI

1. To create the instance first go to AWS management console and select EC2 dashboard. Then click the launch instance button.

The screenshot shows the AWS Management Console EC2 Dashboard. On the left, there's a navigation menu with sections like EC2 Dashboard, Instances, Images, and Network & Security. The main area displays metrics such as 0 Running Instances, 0 Elastic IPs, and 1 Security Groups. A prominent blue button labeled 'Launch Instance' is centered in the middle of the page. To the right, there's an 'Additional Information' sidebar with links to Getting Started Guide, Documentation, and AWS Marketplace. At the bottom, there's a toolbar with various icons and a status bar indicating the date and time.

2. Choose an AMI that you want to create the instance. Here we select Microsoft windows server 2012 R2 Base.

The screenshot shows the 'Step 1: Choose an Amazon Machine Image (AMI)' screen of the Launch Instance Wizard. It lists three AMI options: SUSE Linux Enterprise Server 12 SP1 (HVM), SSD Volume Type - ami-d2627db3; Ubuntu Server 14.04 LTS (HVM), SSD Volume Type - ami-9abea4fb; and Microsoft Windows Server 2012 R2 Base - ami-8d0acfed. The Microsoft Windows Server 2012 R2 Base option is selected. Below the list, a note about launching a database instance with Amazon RDS is visible. The interface includes a 'Cancel and Exit' button and a 'Select' button for each AMI entry. The bottom of the screen shows a toolbar and a status bar.

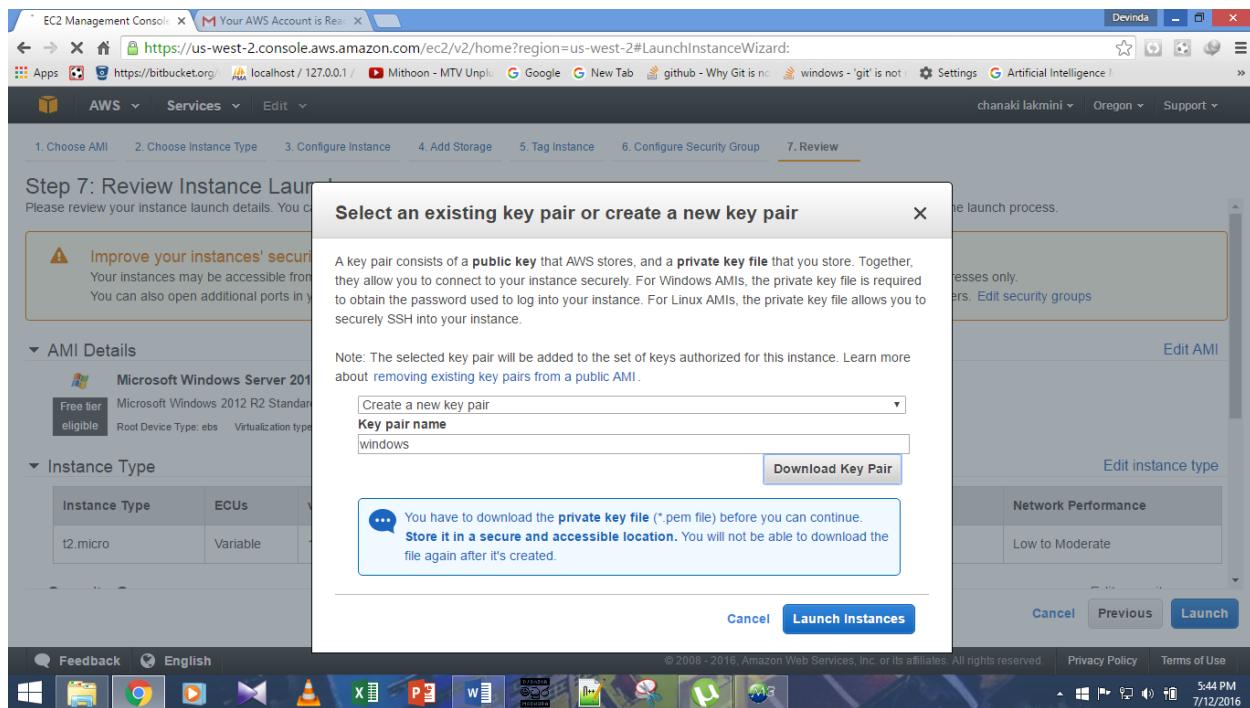
3. Choose an instance type. Then click Review and launch button to proceed.

The screenshot shows the AWS EC2 Management Console at the 'Step 2: Choose an Instance Type' stage. The URL is <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#LaunchInstanceWizard>. The browser tabs include 'EC2 Management Console' and 'Your AWS Account is Ready'. The navigation bar has 'AWS Services' selected. The main content area shows a table of instance types under 'Current generation'. The 't2.micro' row is highlighted with a green background, indicating it is selected. The table columns include Family, Type, vCPUs, Memory (GiB), Instance Storage (GB), EBS-Optimized Available, and Network Performance. Buttons at the bottom include 'Cancel', 'Previous', 'Review and Launch' (which is blue and bold), and 'Next: Configure Instance Details'.

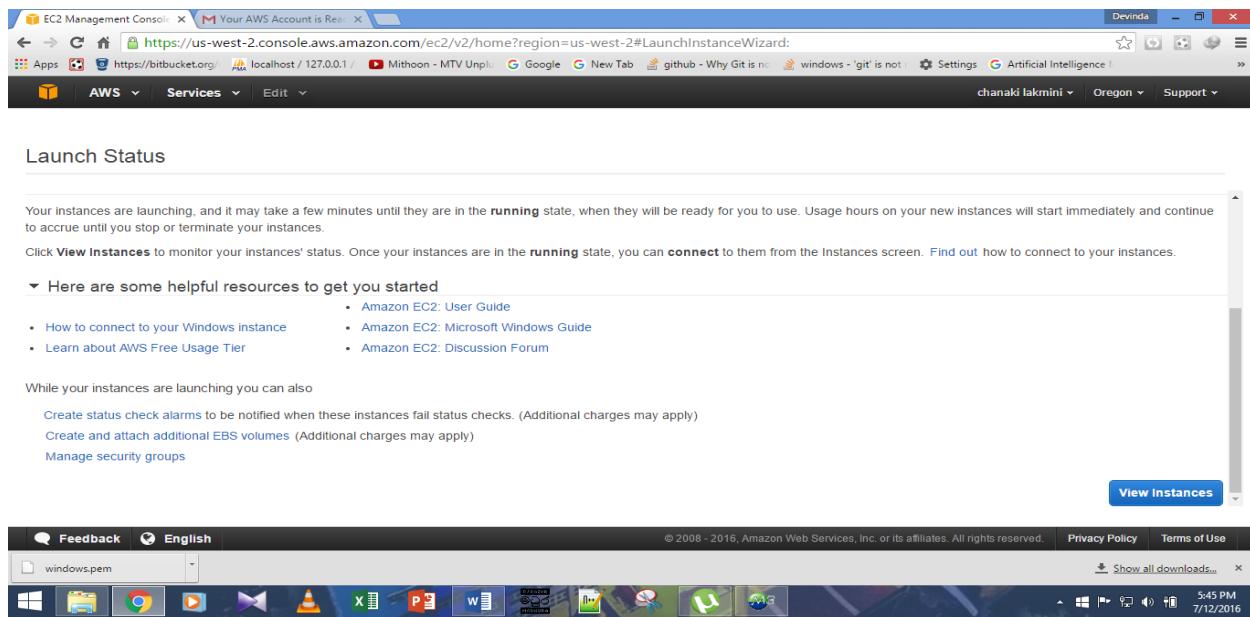
4. Then click Launch button.

The screenshot shows the AWS EC2 Management Console at the 'Step 7: Review Instance Launch' stage. The URL is <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#LaunchInstanceWizard>. The browser tabs and navigation bar are identical to the previous screenshot. The main content area shows the 'Review Instance Launch' summary. It includes a note about security groups, a section for 'AMI Details' (Microsoft Windows Server 2012 R2 Base - ami-8d0acfed), and an 'Instance Type' table. The 'Instance Type' table shows 't2.micro' with 1 vCPU, 1 GiB memory, EBS only storage, and low network performance. Buttons at the bottom include 'Cancel', 'Previous', and 'Launch' (which is blue and bold).

5. The user will be prompted a window, in order to get a key to establish the connection. A new user got to choose a new key and then type description in the relevant field and download the file. The file will be in .pem format.



6. This window shows the instance status. And in this window you have to scroll down and click View Instances button.



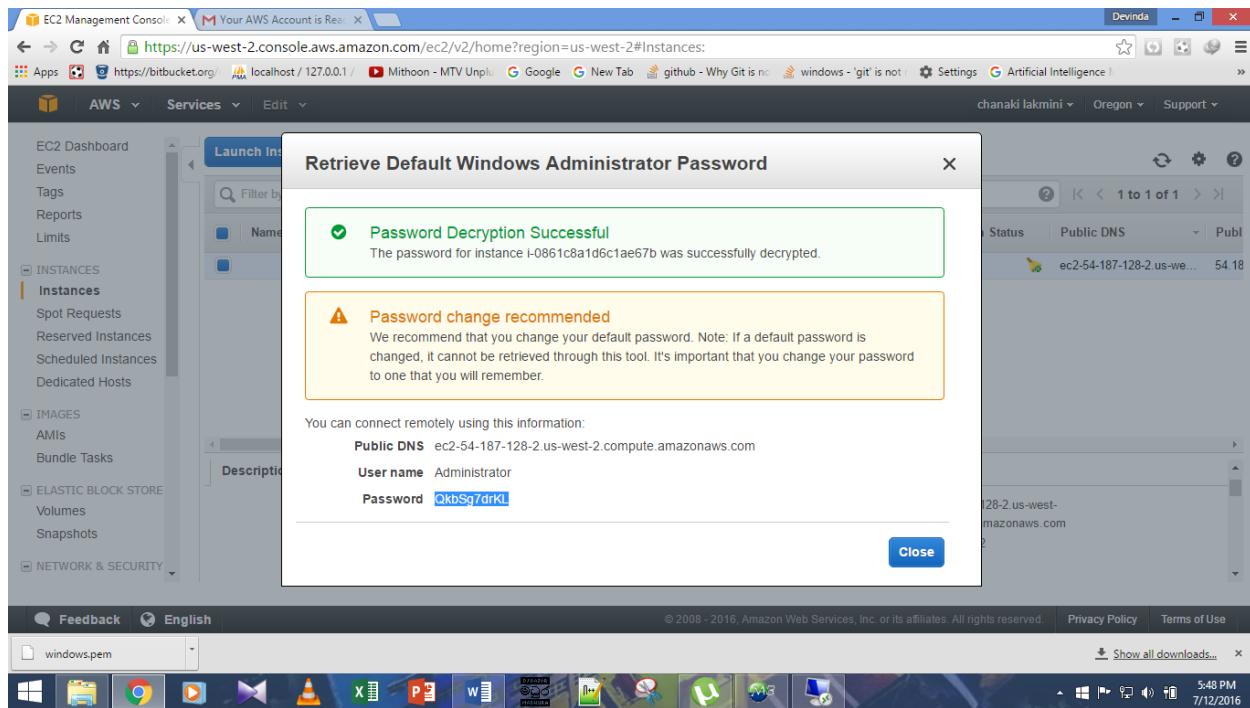
7. And then the window below will get prompted. It will display the details of created instance.

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a navigation sidebar with options like EC2 Dashboard, Events, Tags, Reports, Limits, Instances (selected), Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, Images, AMIs, Bundle Tasks, Elastic Block Store, Volumes, Snapshots, and Network & Security. The main content area has tabs for Launch Instance, Connect, and Actions. Below these are search and filter fields. A table lists instances, showing one entry: Instance ID i-0861c8a1d6c1ae67b, Instance Type t2.micro, Availability Zone us-west-2b, Instance State running, Status Checks Initializing, Alarm Status None, and Public DNS ec2-54-187-128-2.us-west-2.compute.amazonaws.com. At the bottom of the main content area, there are tabs for Description, Status Checks, Monitoring, and Tags, with the Description tab selected. The status bar at the bottom indicates the instance ID i-0861c8a1d6c1ae67b and the public DNS ec2-54-187-128-2.us-west-2.compute.amazonaws.com. The taskbar at the bottom of the browser window shows various icons for Windows applications like File Explorer, Google Chrome, and Microsoft Office.

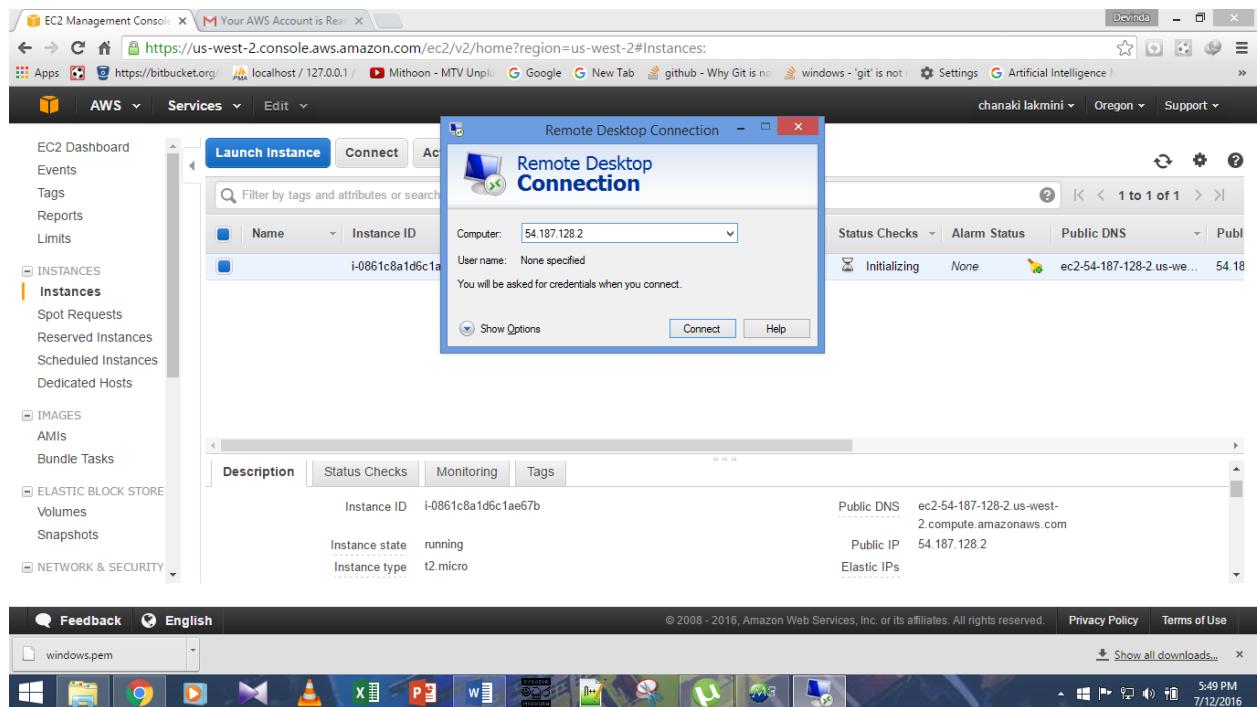
8. And here you have to select the instance. And in its description you have to note down the given Public IP. And then you have to retrieve the password for the instance. To do it, right click on the created instance and select the “Get Password for Windows”. Once selected it'll prompt a window as shown below.

The screenshot shows the same AWS EC2 Management Console interface as before, but with a modal dialog box overlaid. The dialog is titled "Retrieve Default Windows Administrator Password". It contains instructions: "To access this instance remotely (e.g. Remote Desktop Connection), you will need your Windows Administrator password. A default password was created when the instance was launched and is available encrypted in the system log." Below this, it says "To decrypt your password, you will need your key pair for this instance. Browse to your key pair, or copy and paste the contents of your private key file into the text area below, then click Decrypt Password." It then lists the key pair associated with the instance: "The following Key Pair was associated with this instance when it was created: Key Name windows". It asks for the "Key Pair Path" and provides a "Choose File" button, noting "No file chosen". It also says "Or you can copy and paste the contents of the Key Pair below:" followed by a text area with placeholder text "Paste contents of private key file here". At the bottom of the dialog are "Cancel" and "Decrypt Password" buttons. The background of the console shows the same instance details as the previous screenshot. The taskbar at the bottom remains the same.

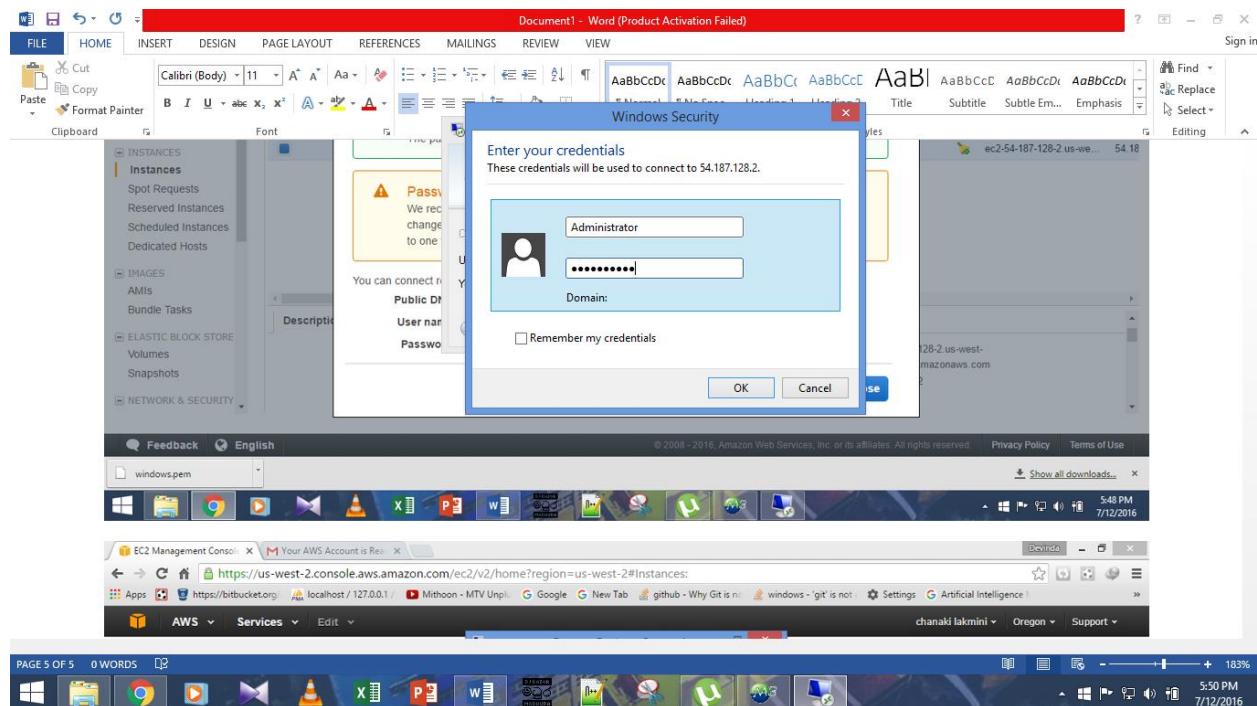
9. And here select the .pem file that you downloaded above. And then press Decrypt Password and copy the password that is displayed.



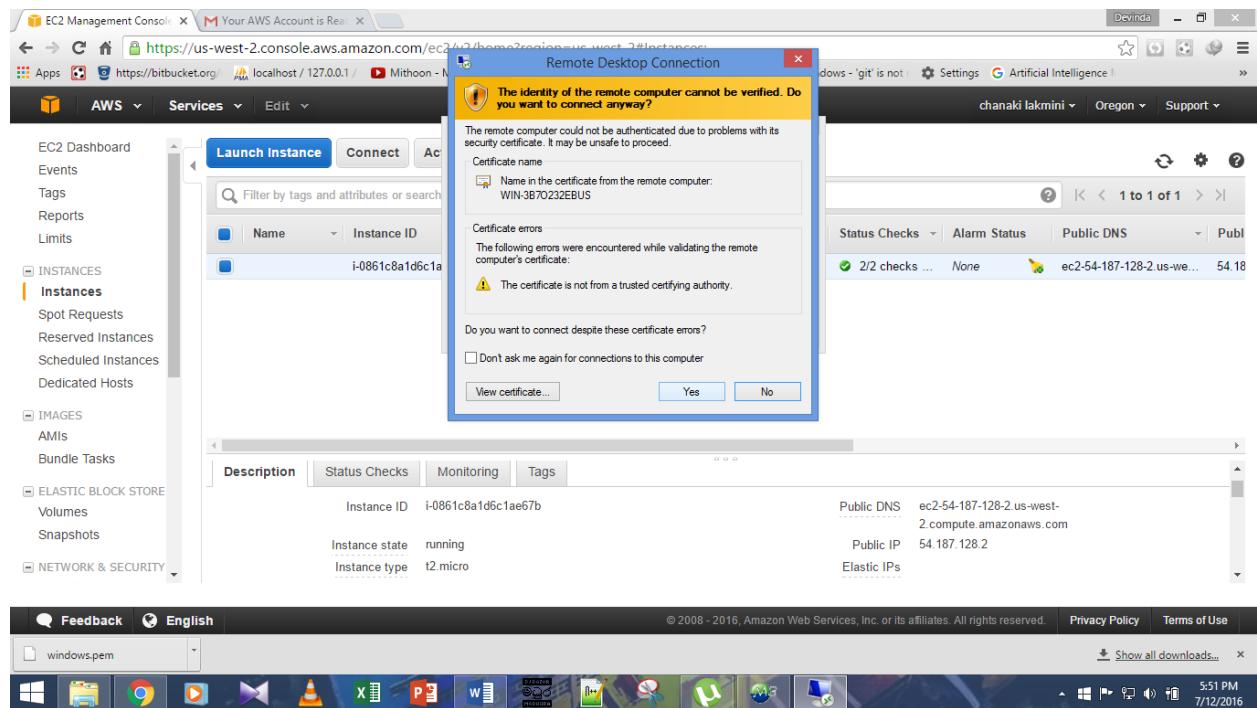
10. Now we have to establish the connection. Open the remote desktop connection and give the public IP that was noted above. And press connect.



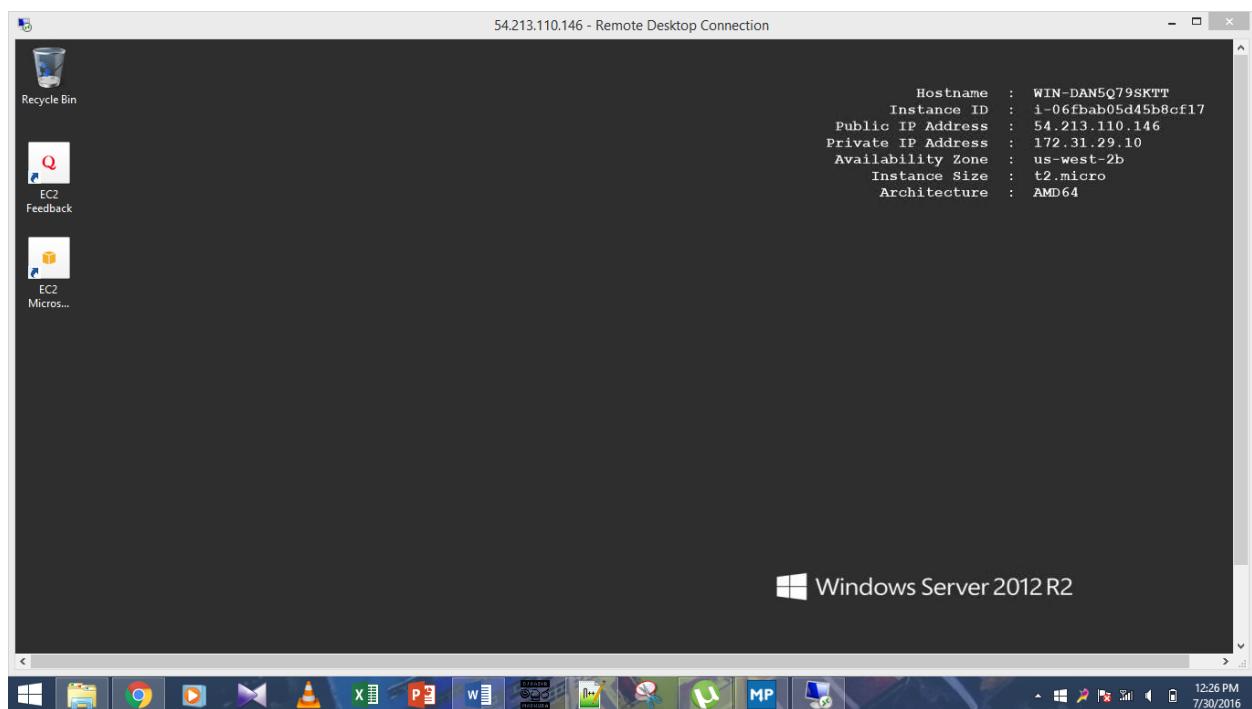
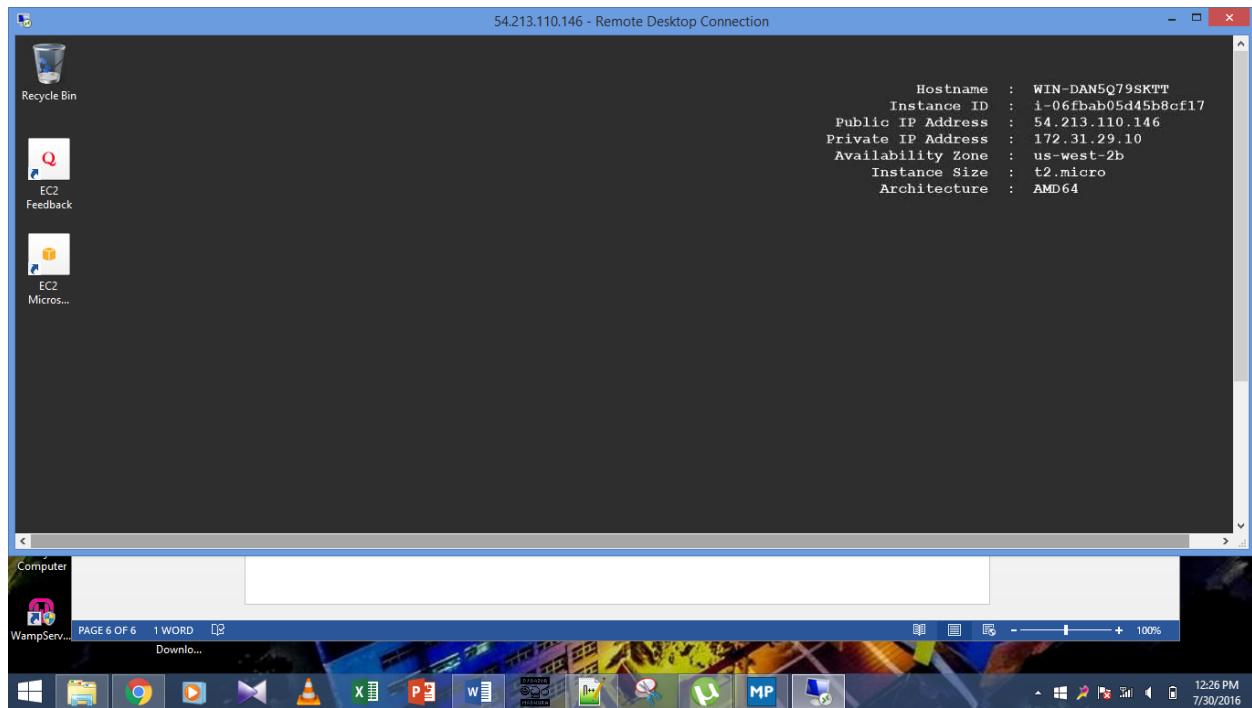
11. Now give the user name and the password.



12. And then the window below will appear and here you have to select yes.



13. And successfully the remote desktop connection will launch the below shown window.



Part B

Creating an Amazon EBS-Baked Linux AMI

1. To create the instance first go to AWS management console and select EC2 dashboard. Then click the launch instance button.

The screenshot shows the AWS Management Console EC2 Dashboard. The left sidebar has sections for EC2 Dashboard, Instances, Images, and ELASTIC BLOCK STORE. The main area shows resource counts: 0 Running Instances, 0 Dedicated Hosts, 0 Volumes, 1 Key Pairs, 0 Placement Groups, 0 Elastic IPs, 0 Snapshots, 0 Load Balancers, and 4 Security Groups. A 'Create Instance' section with a 'Launch Instance' button is present. On the right, there's an 'Account Attributes' panel with 'Supported Platforms' and 'Default VPC' sections. Below it is an 'Additional Information' panel with links to various AWS resources. At the bottom, there's an 'AWS Marketplace' section with a link to the EC2 Launch Wizard.

2. Choose an AMI that you want to create the instance. Here we select Amazon Linux AMI 2016.03.3.

The screenshot shows the 'Choose an Amazon Machine Image (AMI)' step of the Launch Instance Wizard. The left sidebar shows the wizard steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Tag Instance, 6. Configure Security Group, 7. Review. The main area lists three AMIs:

- Amazon Linux AMI 2016.03.3 (HVM), SSD Volume Type - ami-7172b611 (Free tier eligible, 64-bit)
- Red Hat Enterprise Linux 7.2 (HVM), SSD Volume Type - ami-775e4f16 (Free tier eligible, 64-bit)
- SUSE Linux Enterprise Server 12 SP1 (HVM), SSD Volume Type - ami-d2627db3 (Free tier eligible, 64-bit)

Each entry has a 'Select' button. The bottom of the screen shows the standard Windows taskbar.

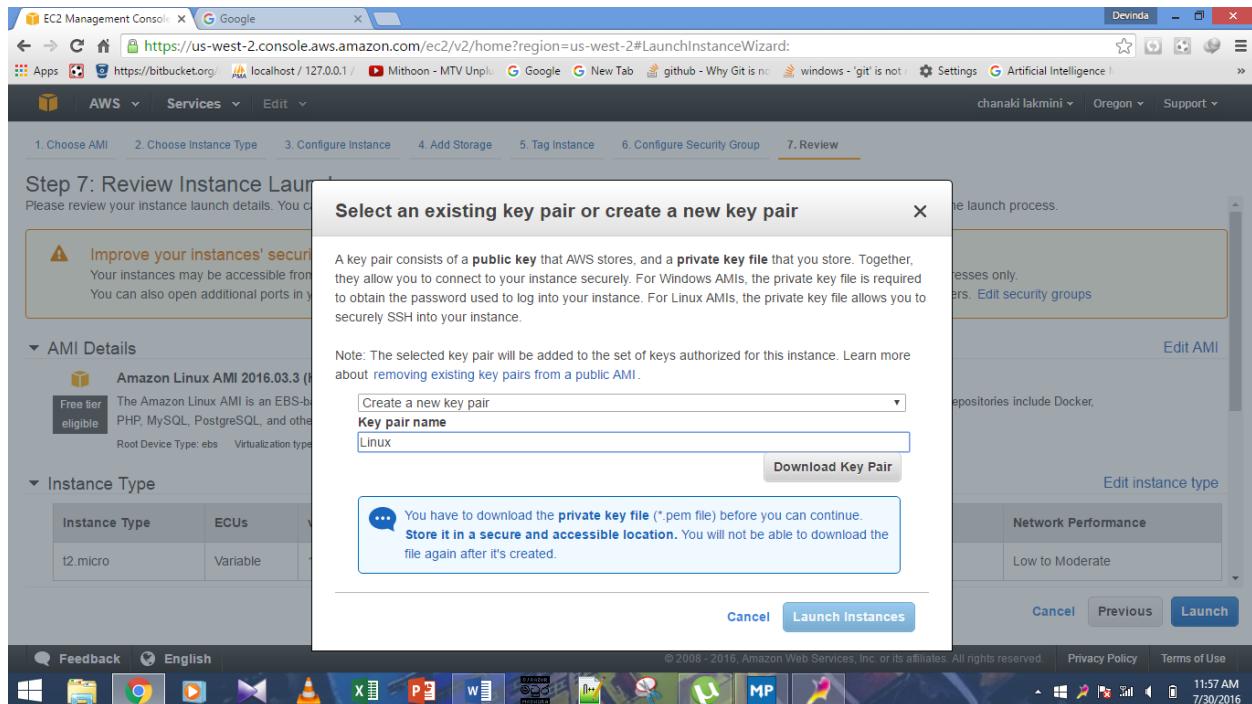
3. Choose an instance type. Then click Review and launch button to proceed.

The screenshot shows the AWS EC2 Management Console at the 'Step 2: Choose an Instance Type' stage. The URL is <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#LaunchInstanceWizard>. The browser tabs include EC2 Management Console, Google, and Devinda. The AWS Services dropdown is set to EC2. The navigation bar shows steps 1 through 7. A message states: "Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs." Below this is a table of instance types, with the t2.micro row highlighted. The table columns are Family, Type, vCPUs, Memory (GiB), Instance Storage (GB), EBS-Optimized Available, and Network Performance. The t2.micro row shows 1 vCPU, 1 GiB memory, EBS only storage, and Low to Moderate network performance. The status for t2.micro is "Free tier eligible". Buttons at the bottom include Cancel, Previous, Review and Launch (which is blue), and Next: Configure Instance Details.

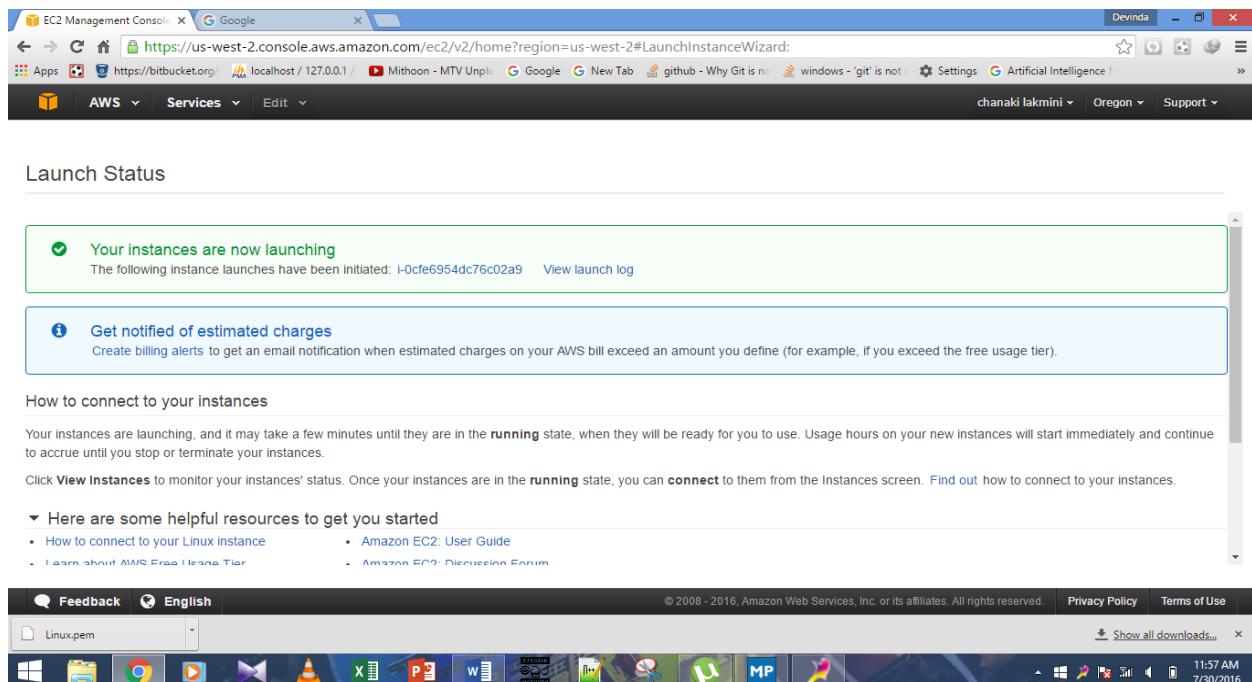
4. Then click the launch button.

The screenshot shows the AWS EC2 Management Console at the 'Step 7: Review Instance Launch' stage. The URL is <https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#LaunchInstanceWizard>. The browser tabs and AWS Services dropdown are the same as the previous screenshot. The navigation bar shows steps 1 through 7. A message says: "Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process." A callout box contains a warning: "⚠ Improve your instances' security. Your security group, launch-wizard-2, is open to the world. Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only. You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. Edit security groups". Below this are sections for 'AMI Details' (Amazon Linux AMI 2016.03.3 (HVM), SSD Volume Type - ami-7172b611) and 'Instance Type' (t2.micro). The 'Launch' button is highlighted in blue. The status for the AMI is "Free tier eligible". The instance type table has columns: Instance Type, ECUs, vCPUs, Memory (GiB), Instance Storage (GB), EBS-Optimized Available, and Network Performance. The t2.micro row shows 1 ECU, 1 vCPU, 1 GiB memory, EBS only storage, and Low to Moderate network performance. The status for t2.micro is "Free tier eligible". Buttons at the bottom include Cancel, Previous, and Launch.

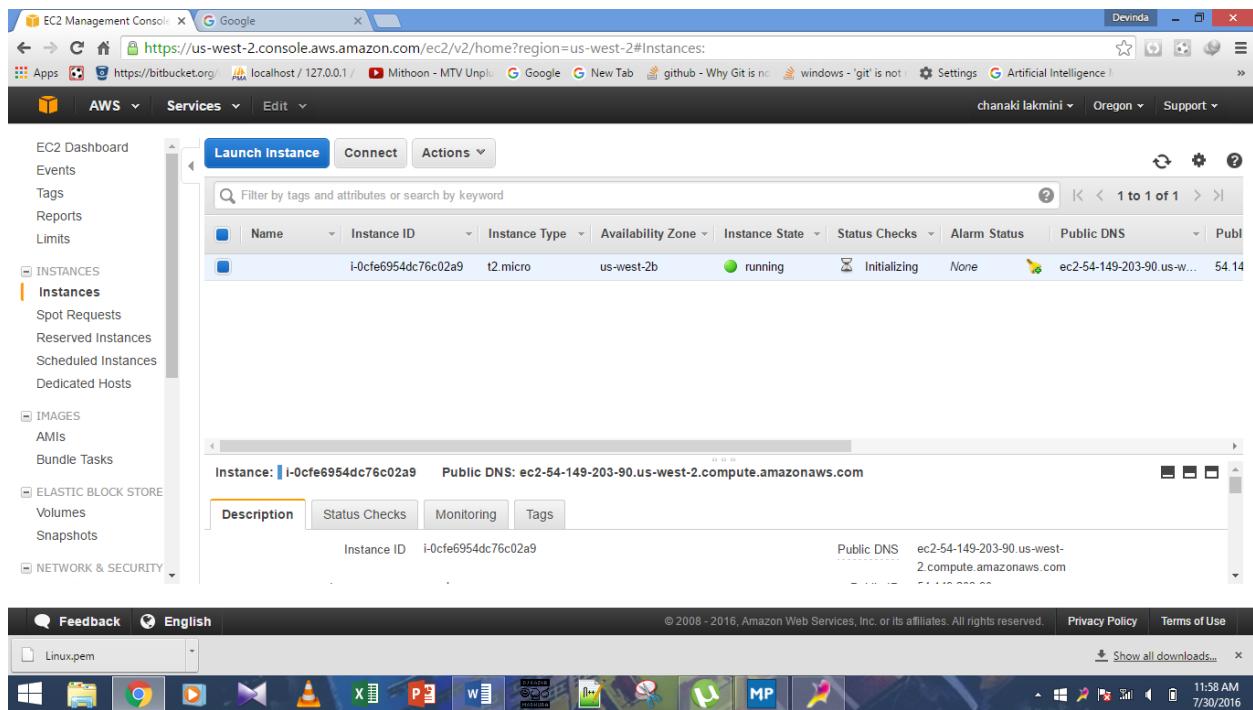
5. And here you have to select the instance. And in its description you have to note down the given Public IP. And then you have to retrieve the password for the instance. To do it, right click on the created instance and select the “Get Password for Windows”. Once selected it’ll prompt a window as shown below.



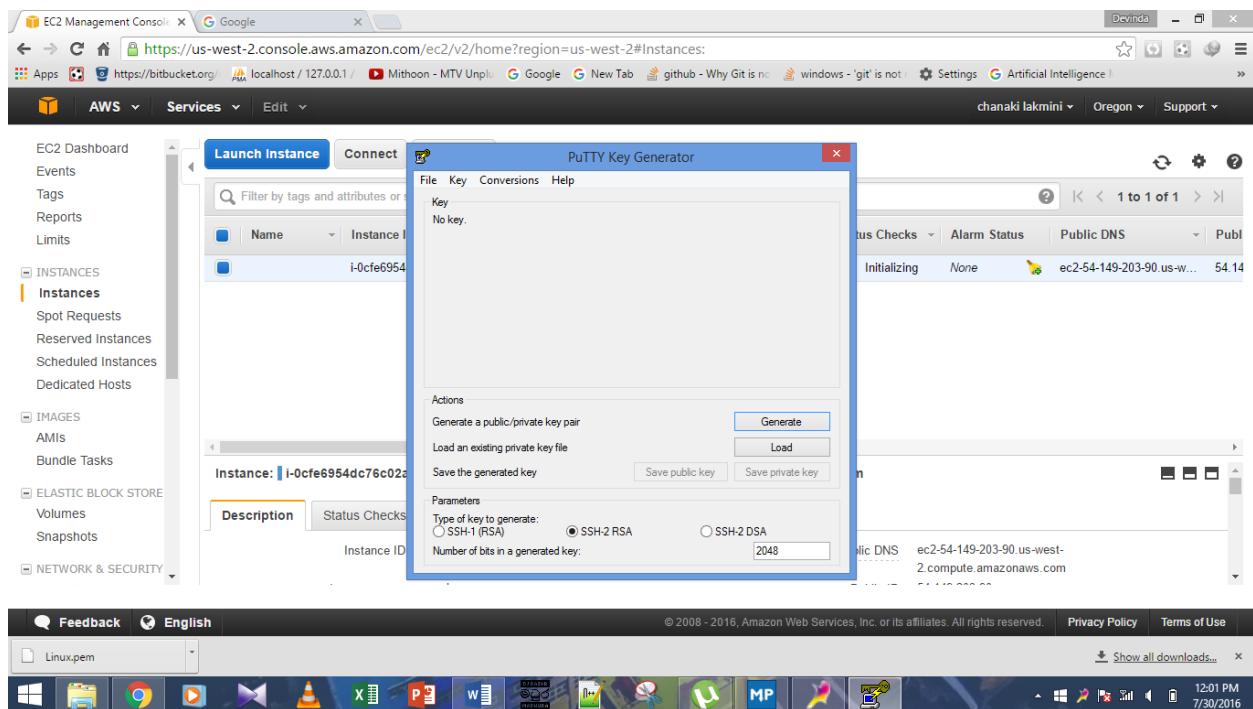
6. This window shows the instance status. And in this window you have to scroll down and click View Instances button.



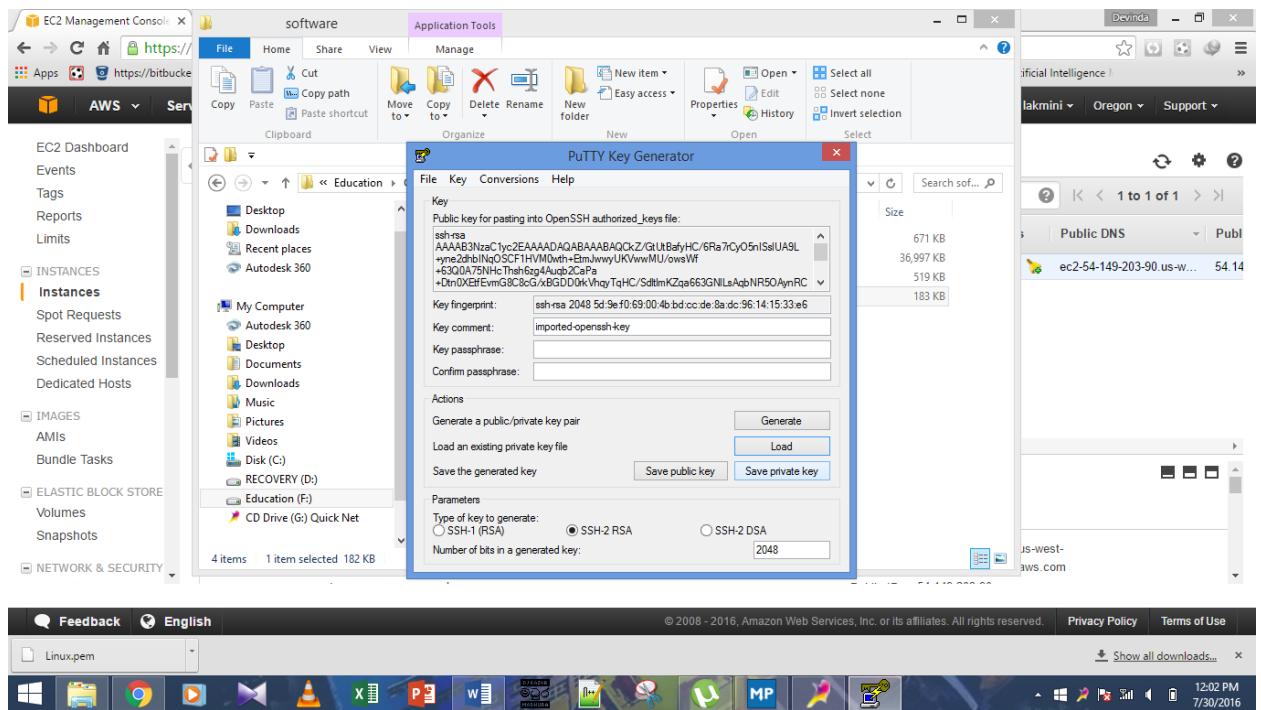
7. And then the window below will get prompted. It will display the details of created instance.



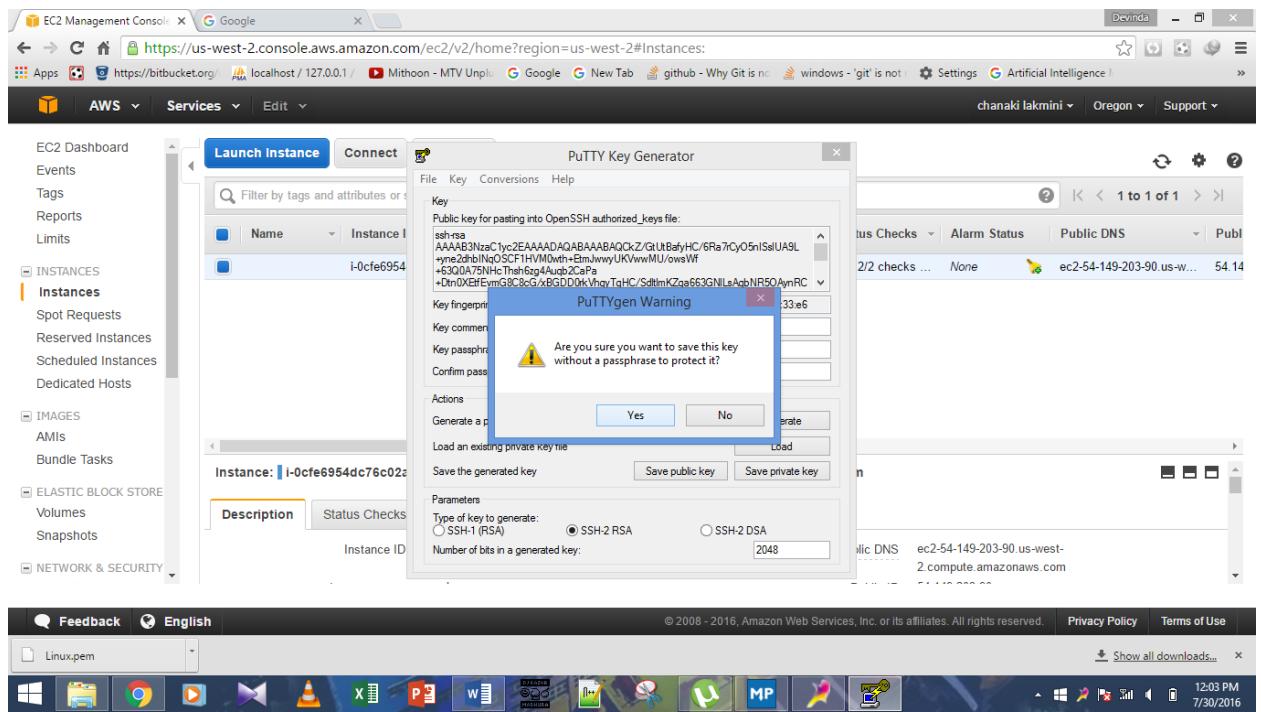
8. Now run the PUTTYGen software. Click the Load button to generate the key. And you have to upload the downloaded .ppm file.



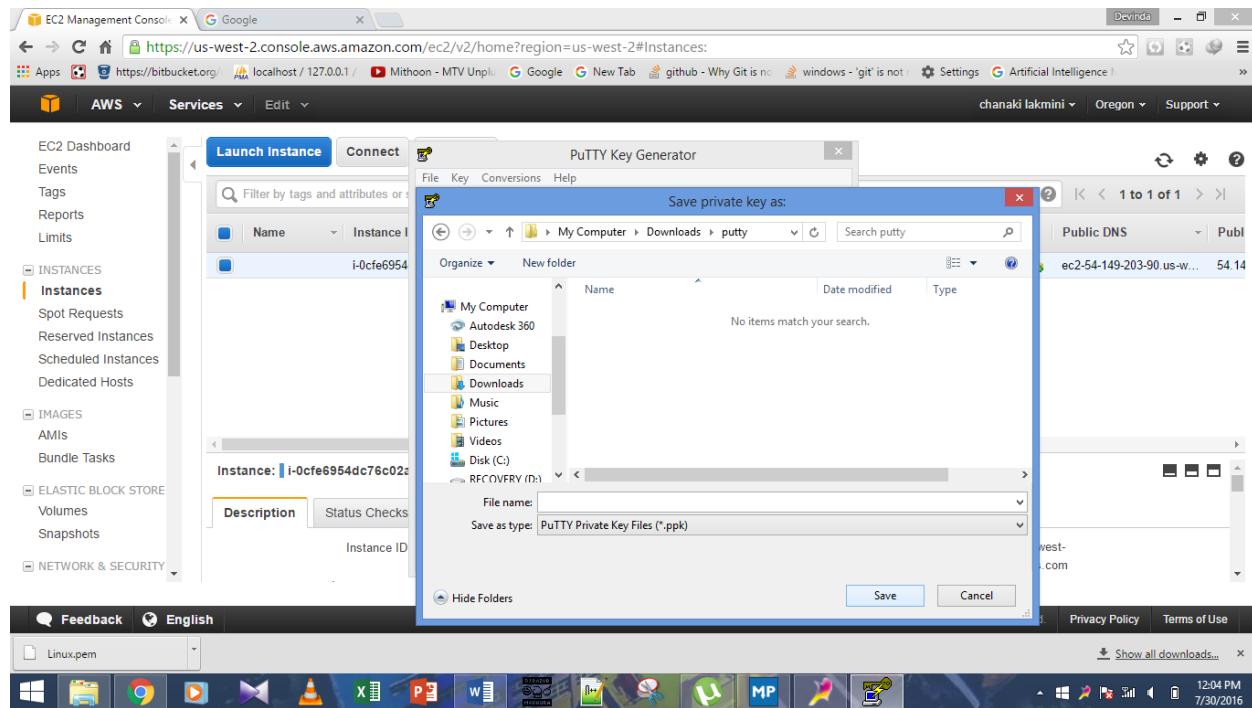
9. Now click the Save private key button.



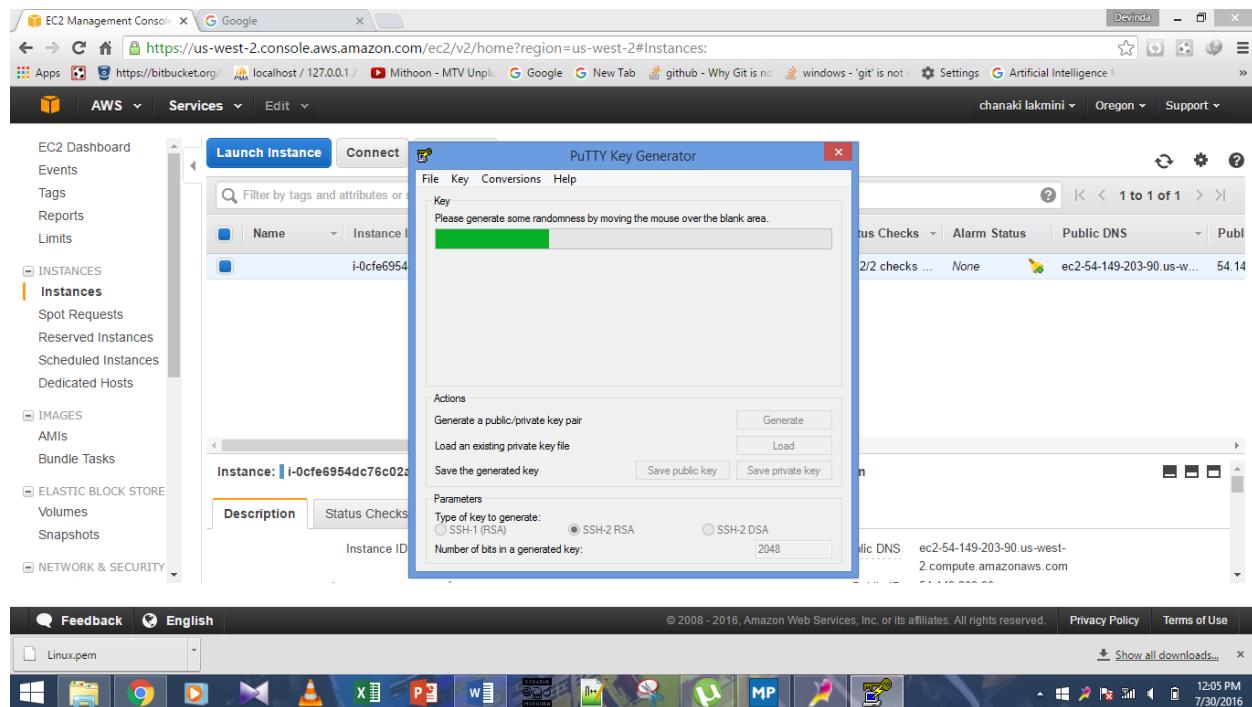
10. You have to select the yes option.



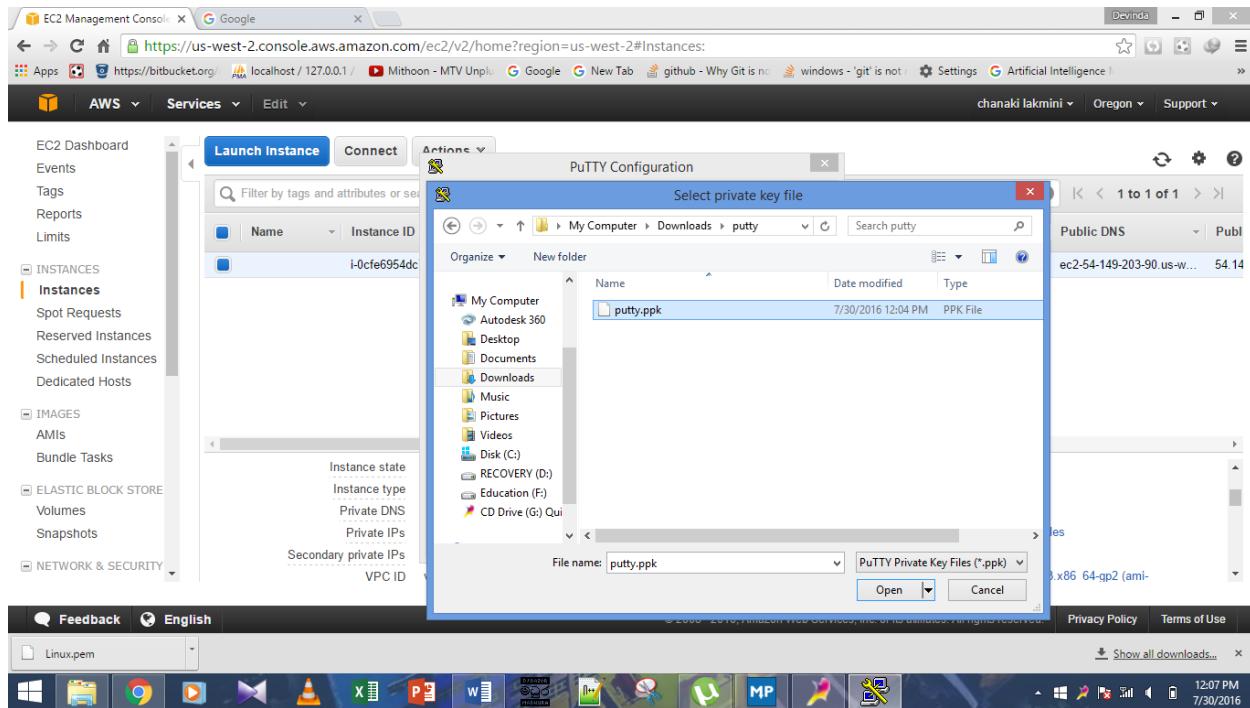
11. It will prompt a window that asking where to save the private key file. You can choose a place to save the .ppk file.



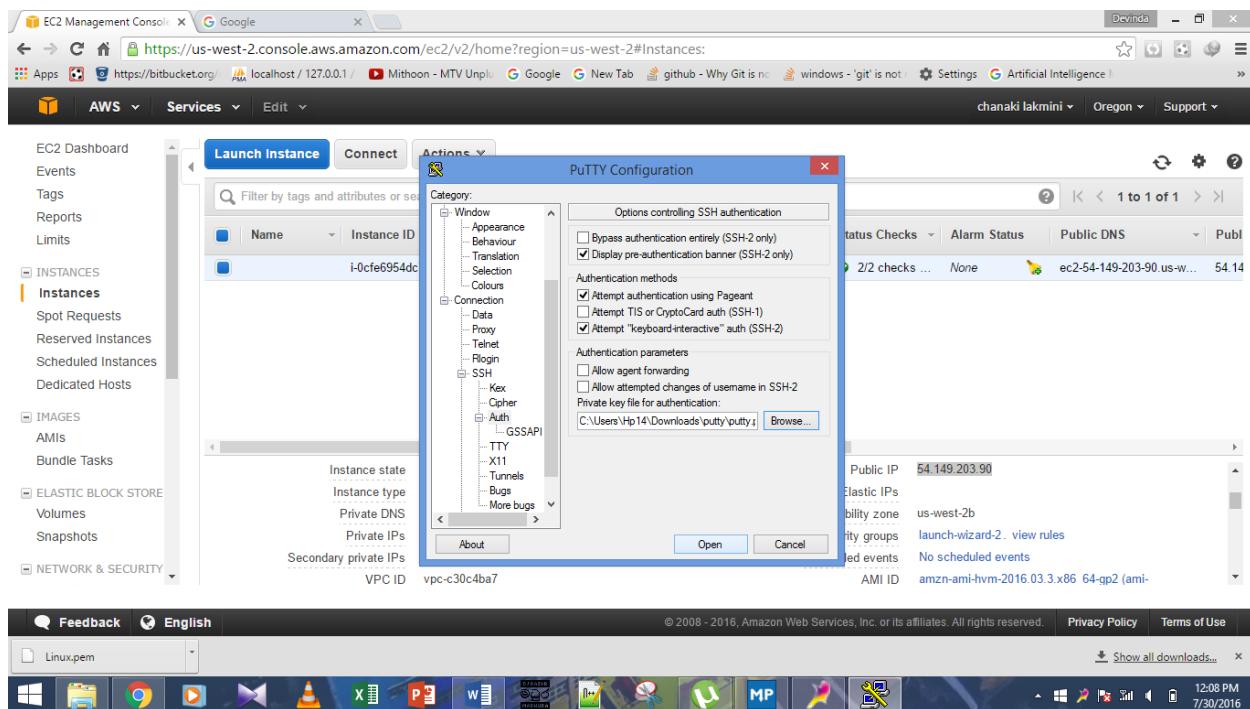
12. And click the generate button. You have to move the mouse over the blank area to generate the key.



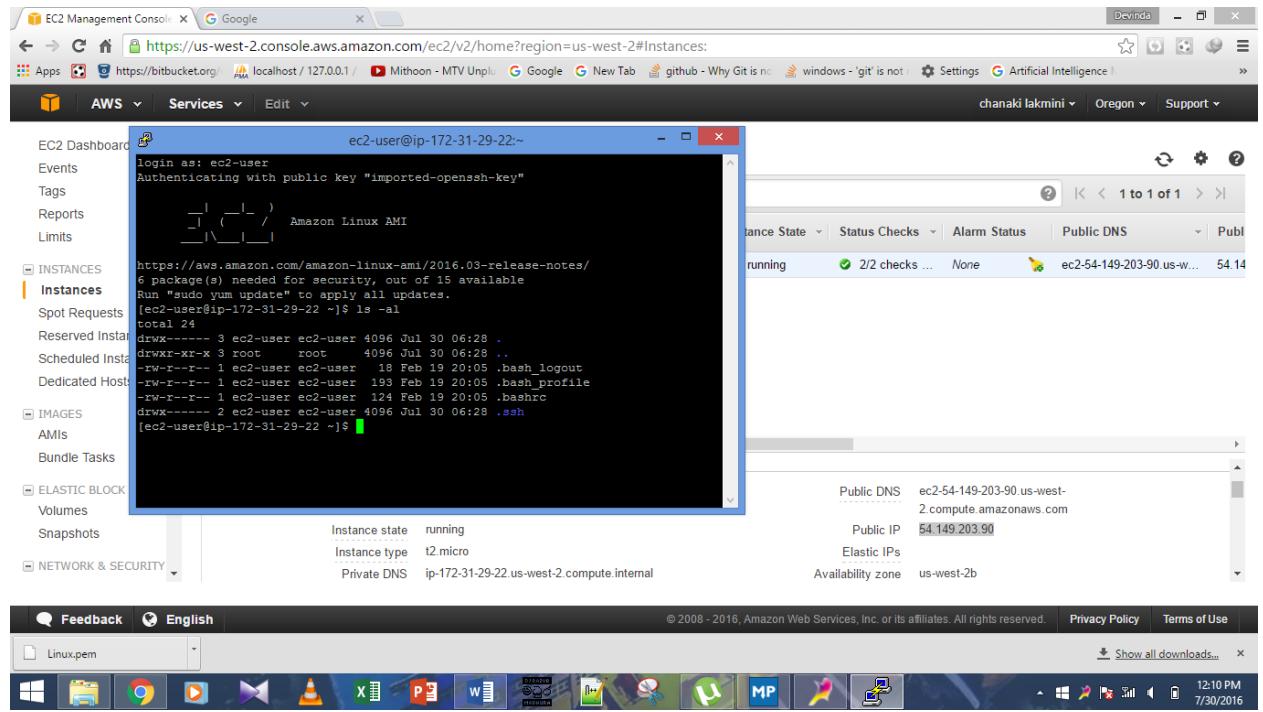
13. It will create the .ppk file.



14. Now run the PUTTY software. And give the public IP address. Select the AUTH in SSH. And upload the .ppk file. And click the open button.



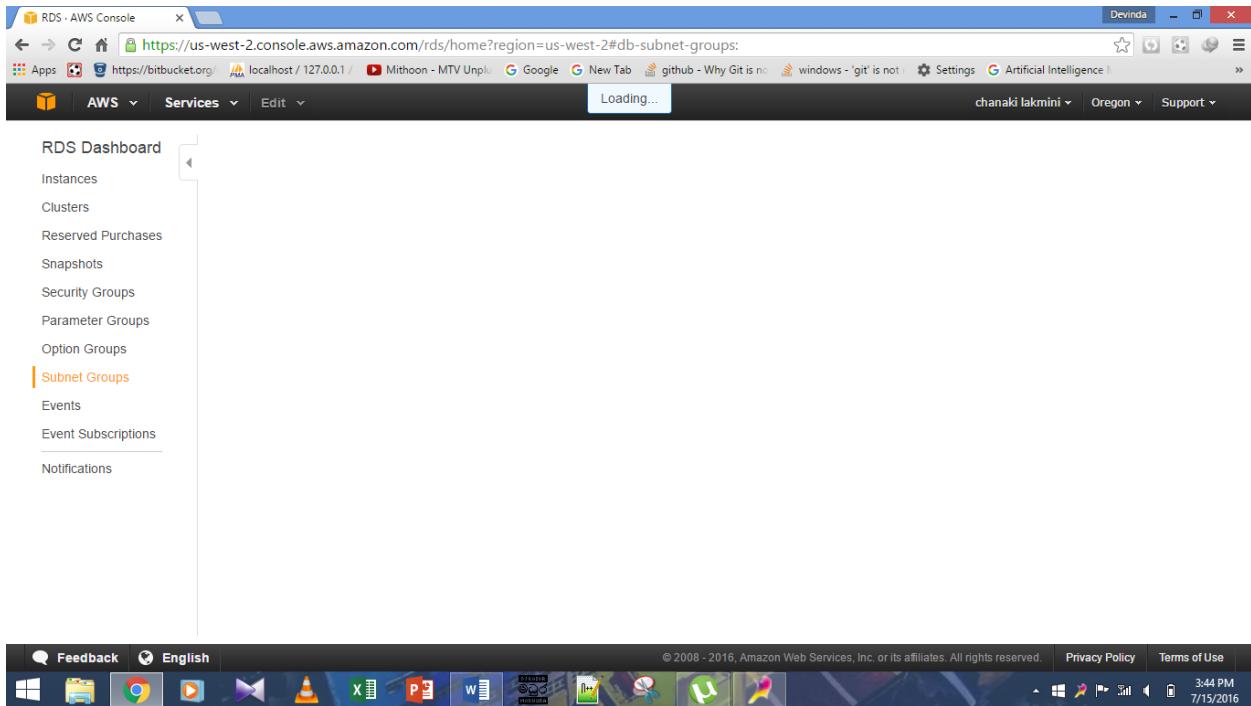
15. Now your Linux instance is created.



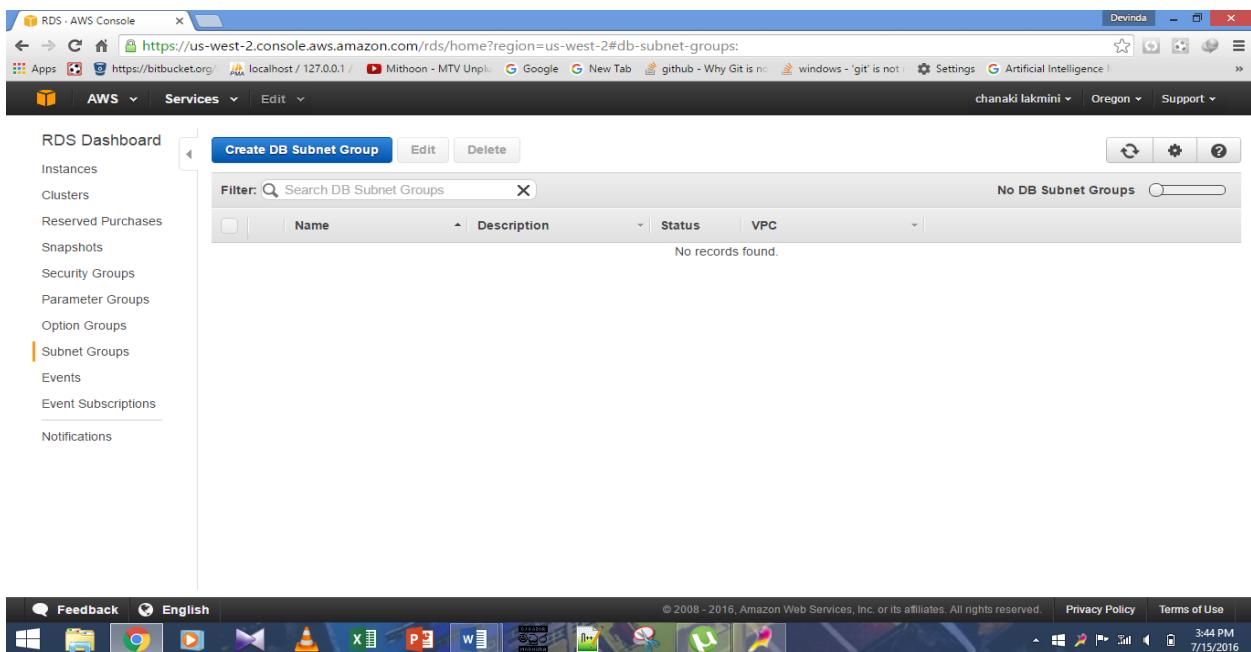
Part C

Creating a MySQL DB Instance and Connecting to a Database on a MySQL DB Instance

1. Sign in to the AWS Management Console and open the Amazon RDS console.



2. Create the db subnet group.



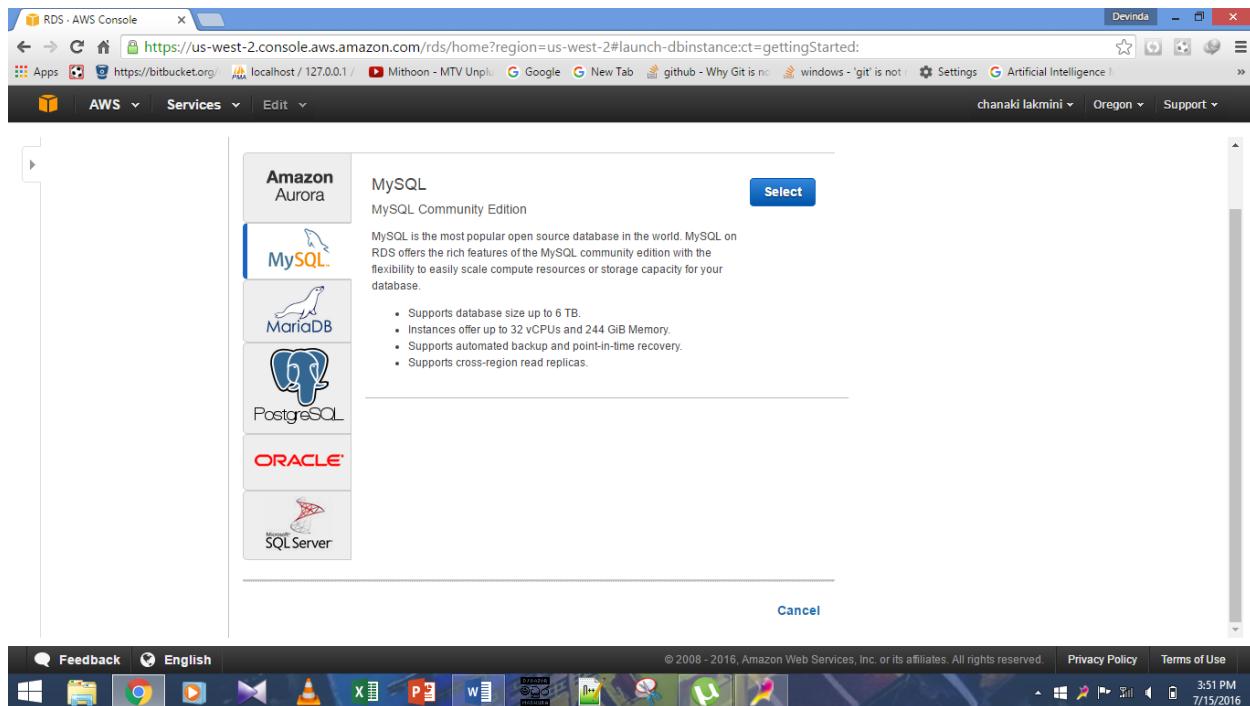
3. To create DB subnet group you have to provide below details. And click create button.

The screenshot shows the 'Create DB Subnet Group' page in the AWS RDS console. On the left, there's a sidebar with links like RDS Dashboard, Instances, Clusters, etc. The main form has fields for Name (clouAcademy), Description (rds lab), and VPC ID (vpc-c30c4ba7). Below these, there's a section for adding subnets with Availability Zone dropdowns and a table for subnet details. The table shows two subnets: us-west-2b (subnet-a92f5bcd, CIDR 172.31.16.0/20) and us-west-2a (subnet-b423afc2, CIDR 172.31.32.0/20). At the bottom are 'Cancel' and 'Create' buttons.

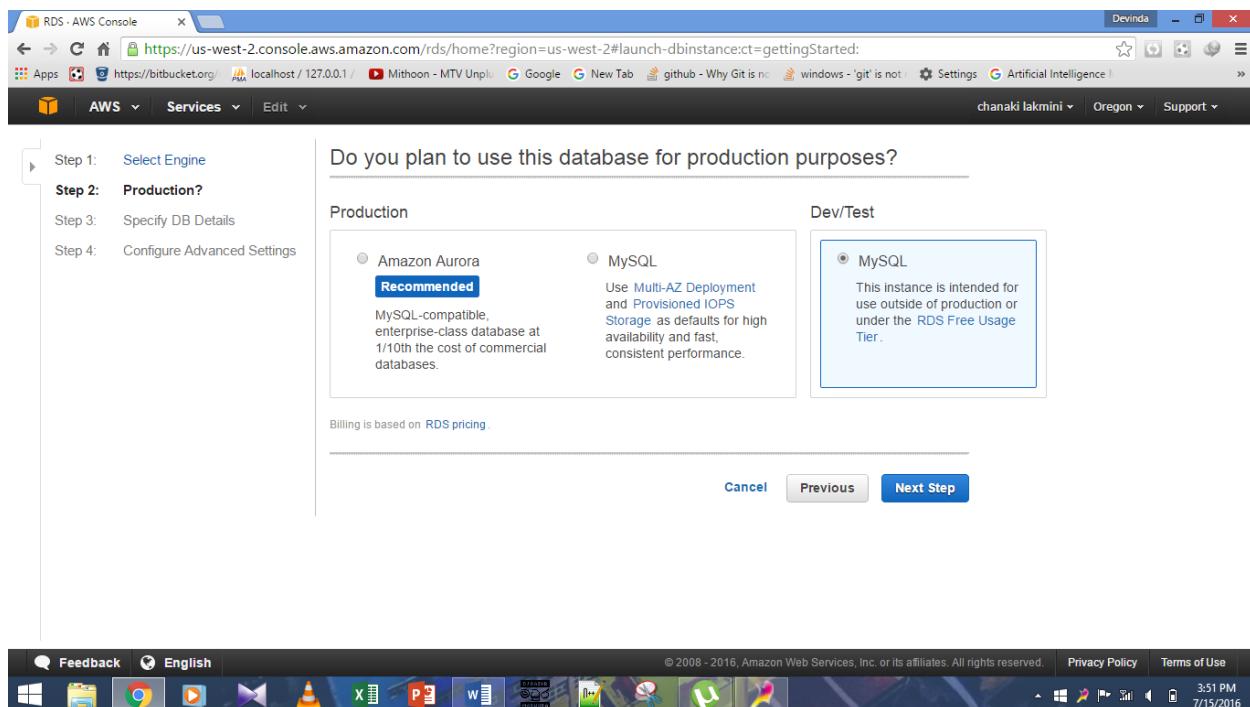
4. Click Get start now button.

The screenshot shows the 'Getting Started' page in the AWS RDS console. It features a large central area with a blue cylinder icon and the text 'Amazon Relational Database Service'. Below this, a paragraph explains what Amazon RDS is, followed by a 'Get Started Now' button and a 'Getting Started Guide' link. At the bottom, there are three icons representing database management: two cylinders, a monitor with a lock, and a person's head. The page includes the standard AWS navigation bar at the top and bottom.

5. In the top right corner of the Amazon RDS console, choose the region in which you want to create the DB instance.



6. Click Next step button.



7. On the Specify DB Details page, specify your DB instance information. The following table shows settings for an example DB instance. When the settings are as you want them, choose next.

Specify DB Details

Free Tier

The Amazon RDS Free Tier provides a single db.t2.micro instance as well as up to 20 GB of storage, allowing new AWS customers to gain hands-on experience with Amazon RDS. Learn more about the RDS Free Tier and the instance restrictions [here](#).

Only show options that are eligible for RDS Free Tier

Instance Specifications

DB Engine	mysql
License Model	general-public-license
DB Engine Version	5.6.27
DB Instance Class	- Select One -
Multi-AZ Deployment	- Select One -
Storage Type	- Select One -
Allocated Storage*	5 GB

Note: Review the [Known Issues/Limitations](#) to learn about potential compatibility issues with specific database versions.

DB Instance Class

Multi-AZ Deployment

Storage Type

Allocated Storage*

Warning: 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.

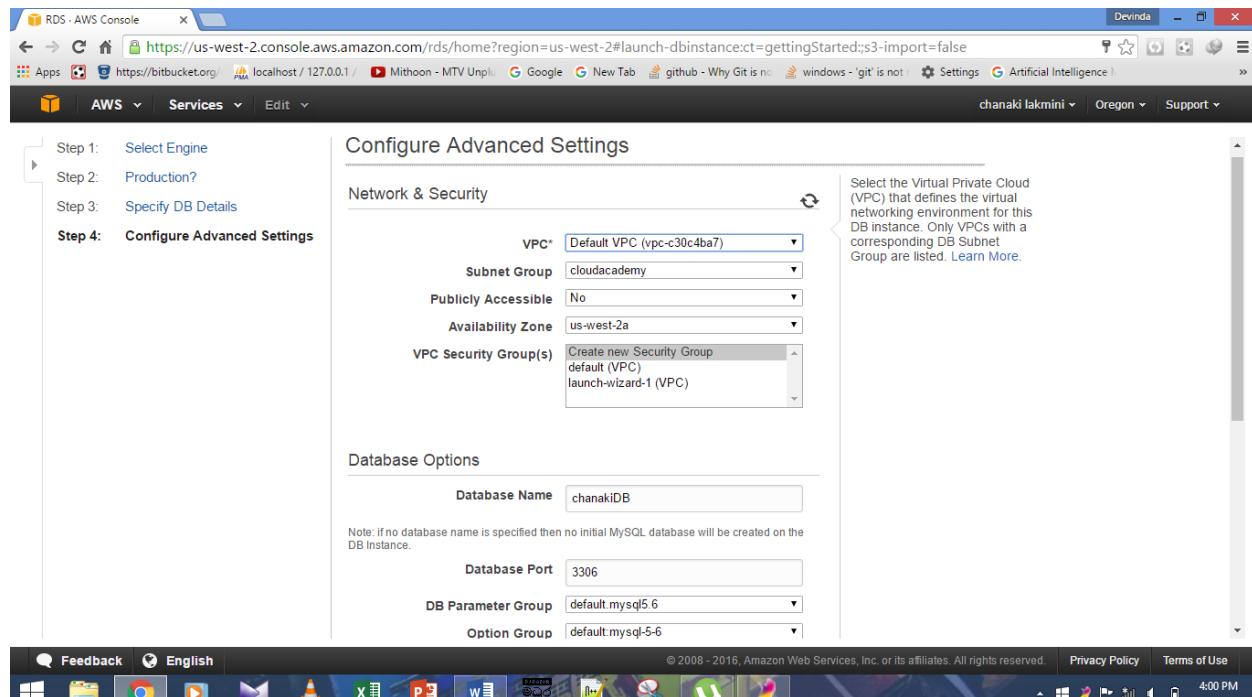
Settings

DB Instance Identifier*	rdsLab
Master Username*	Chanaki
Master Password*
Confirm Password*

Specify an alphanumeric string that defines the login ID for the master user. You use the master user login to start defining all users, objects, and permissions in the databases of your DB instance. Master Username must start with a letter, as in "awsuser".

* Required [Cancel](#) [Previous](#) [Next Step](#)

8. On the Configure Advanced Settings page, provide additional information that RDS needs to launch the MySQL DB instance. The table shows settings for an example DB instance. Specify your DB instance information, then choose Launch DB Instance.



The screenshot shows the 'Configure Advanced Settings' page in the AWS RDS console. The left sidebar indicates the current step: Step 4: Configure Advanced Settings. The main content area is divided into two sections: Network & Security and Database Options.

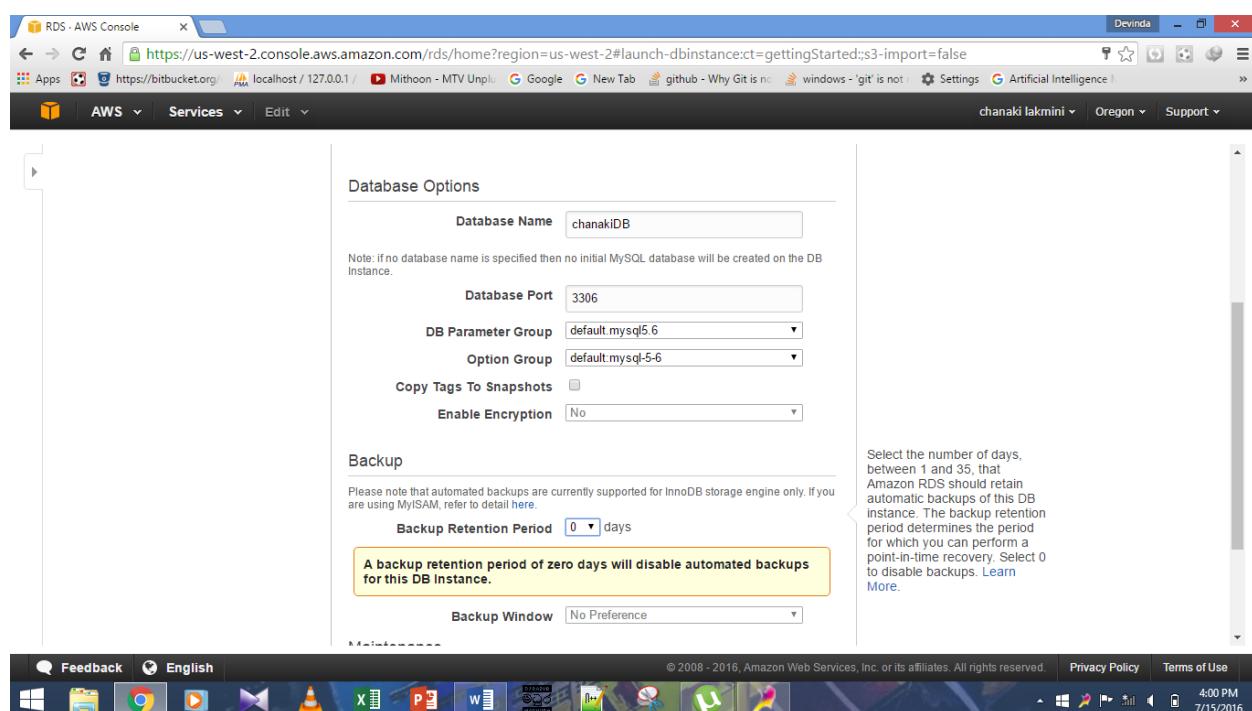
Network & Security:

- VPC: Default VPC (vpc-c30c4ba7)
- Subnet Group: cloudacademy
- Publicly Accessible: No
- Availability Zone: us-west-2a
- VPC Security Group(s): Create new Security Group, default (VPC), launch-wizard-1 (VPC)

Database Options:

- Database Name: chanakiDB
- 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.mysql-5.6

Second Screenshot:



This screenshot shows the continuation of the 'Configure Advanced Settings' page. It includes the Database Options section and the Backup section.

Database Options:

- Database Name: chanakiDB
- 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.mysql-5.6
- Copy Tags To Snapshots:
- Enable Encryption: No

Backup:

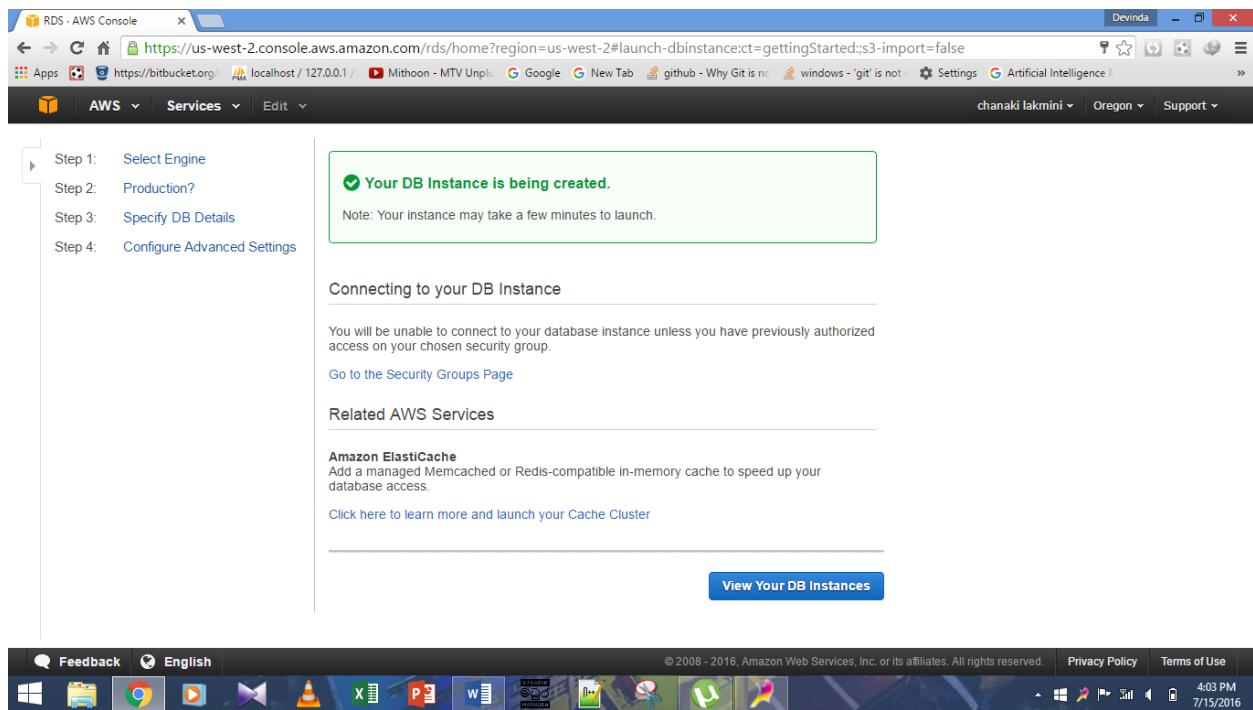
Please note that automated backups are currently supported for InnoDB storage engine only. If you are using MyISAM, refer to detail [here](#).

- Backup Retention Period: 0 days
- A backup retention period of zero days will disable automated backups for this DB Instance.
- Backup Window: No Preference

Common UI Elements:

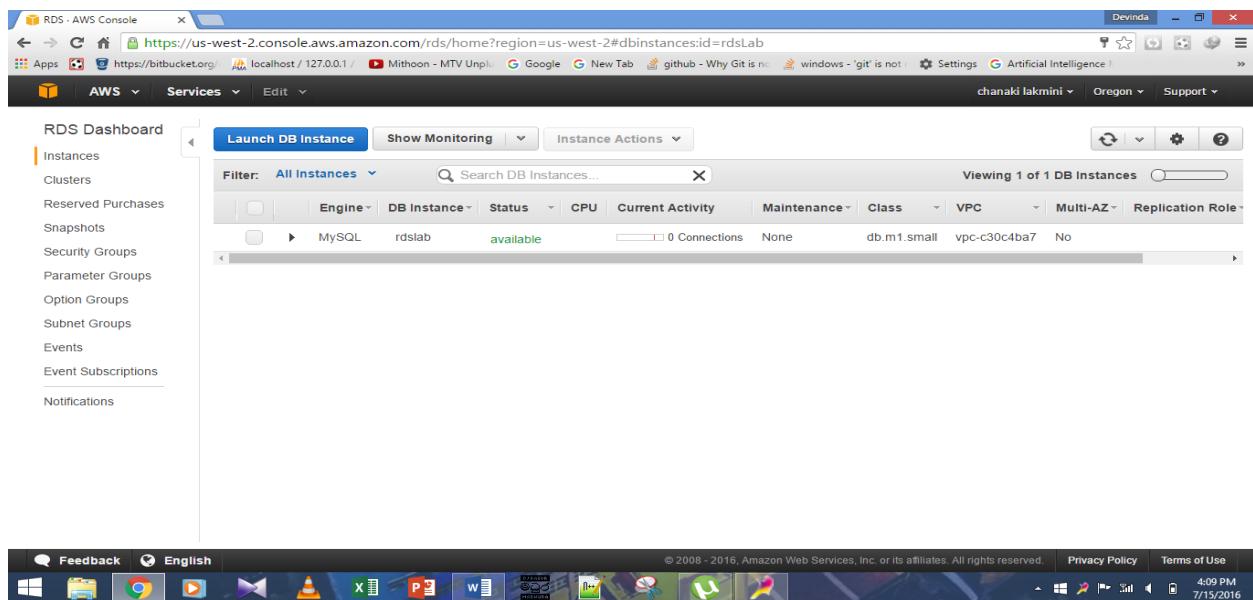
- Feedback, English buttons at the top left.
- Minimize, Maximize, Close buttons at the top right.
- Navigation bar: AWS Services, Edit.
- User profile: chanaki lakmini, Oregon, Support.
- Bottom navigation bar with various icons.
- Page footer: © 2008 - 2016, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy, Terms of Use.
- Date and time: 4:00 PM, 7/15/2016.

9. Here you will prompt a message tells you that your DB instance is being created.



The screenshot shows the AWS RDS console with a message box stating "Your DB Instance is being created." Below the message, it says "Note: Your instance may take a few minutes to launch." To the left, a sidebar lists steps: Step 1: Select Engine, Step 2: Production?, Step 3: Specify DB Details, and Step 4: Configure Advanced Settings. At the bottom right is a blue button labeled "View Your DB Instances".

10. On the RDS console, the new DB instance appears in the list of DB instances. The DB instance will have a status of **creating** until the DB instance is created and ready for use. When the state changes to **available**, you can connect to a database on the DB instance. Depending on the DB instance class and store allocated, it could take several minutes for the new DB instance to become available.



The screenshot shows the AWS RDS console with a list of DB instances. One instance is listed with the following details:

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC	Multi-AZ	Replication Role
MySQL	rdsLab	available	0 Connections	None	db.m1.small	vpc-c30c4ba7	No		

The status column for the instance "rdsLab" shows "available".

RDS - AWS Console

https://us-west-2.console.aws.amazon.com/rds/home?region=us-west-2#security:

AWS Services Edit Devinda chanaki.lakmini Oregon Support

RDS Dashboard

- Instances
- Clusters
- Reserved Purchases
- Snapshots
- Security Groups**
- Parameter Groups
- Option Groups
- Subnet Groups
- Events
- Event Subscriptions
- Notifications 1

Your account does not support the EC2-Classic Platform in this region. DB Security Groups are only needed when the EC2-Classic Platform is supported. Instead, use VPC Security Groups to control access to your DB Instances. Go to the EC2 Console to view and manage your VPC Security Groups. For more information, see [AWS Documentation on Supported Platforms and Using RDS in VPC](#).

Feedback English 4:11 PM 7/15/2016

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RDS - AWS Console

EC2 Management Console

https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#SecurityGroups:sort=groupId

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AMIs

Bundle Tasks

ELASTIC BLOCK STORE

Volumes

Snapshots

NETWORK & SECURITY

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

LOAD BALANCING

Load Balancers

AUTO SCALING

Launch Configurations

Auto Scaling Groups

COMMANDS

Command History

Documents

Managed Instances

Create Security Group

Security group name: SGroup

Description: rdsSecurity

VPC: vpc-c30c4ba7 (172.31.0.0/16) *

Security group rules:

Inbound Outbound

Type Protocol Port Range Source

This security group has no rules

Add Rule Cancel Create

Feedback English 4:15 PM 7/15/2016

Console

1 to 3 of 3 17:43:36.960+05:30

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RDS - AWS Console EC2 Management Console Devinda

https://us-west-2.console.aws.amazon.com/ec2/v2/home?region=us-west-2#SecurityGroups:sort=groupId

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AWS Services Edit

Create Security Group Actions

Filter by tags and attributes or search by keyword

Name	Group ID	Group Name	VPC ID	Description
sg-62afc404	launch-wizard-1	vpc-c30c4ba7	launched-wizard-1 created 2016-07-12T17:43:36.960+05:30	
sg-9785f5f1	SGroup	vpc-c30c4ba7	rdsSecurity	
sg-a0513ac6	default	vpc-c30c4ba7	default VPC security group	
sg-b49fed2	rds-launch-wizard	vpc-c30c4ba7	Created from the RDS Management Console	

Select a security group above

Feedback English 4:16 PM 7/15/2016

RDS - AWS Console Google Devinda

https://us-west-2.console.aws.amazon.com/rds/home?region=us-west-2#dbinstances:id=rdslab;sf=all

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AWS Services Edit

Launch DB Instance Show Monitoring Instance Actions

Filter: All Instances Search DB Instances... Viewing 1 of 1 DB Instances

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC	Multi-AZ	Replicat
MySQL	rdslab	available	2.95%	0 Connections	None	db.m1.small	vpc-c30c4ba7	No	

Endpoint: rdslab.cdhql16qao.us-west-2.rds.amazonaws.com:3306 (authorized)

Alarms and Recent Events

TIME (UTC+5:30)	EVENT
Jul 15 4:08 PM	DB Instance created
Jul 15 4:08 PM	DB Instance restarted

Monitoring

CURRENT VALUE	THRESHOLD	LAST HOUR
CPU		
Memory	1,170 MB	
Storage	4,540 MB	
Read IOPS	0/sec	WWWWWW
Write IOPS	0.075/sec	~~~~WWWW
Swap Usage	0 MB	

Instance Actions Tags Logs

Feedback English 5:09 PM 7/15/2016

