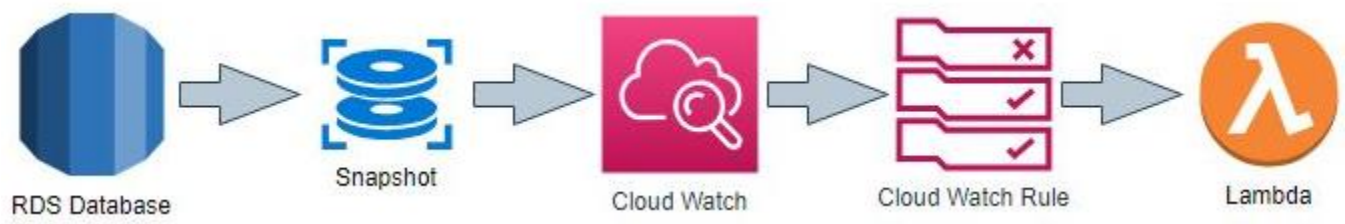
Automate RDS Snapshots

In this Lab, we are going to design a Highly Available architecture wherein Snapshots of RDS Instances gets copied to another Region using Lambda function. The entire process doesn't require any manual intervention as Lambda Function automates the tasks. Since, we've Snapshot of RDS Instances available in another Region, there would be less application downtime in-case of primary region failure.

Below is the architecture design:



When Snapshot of an RDS Instance is taken, it triggers the CloudWatch Rule which then triggers the Lambda Function. Lambda Function runs a script to copy this Snapshot to another Region to maintain a Highly Availability.

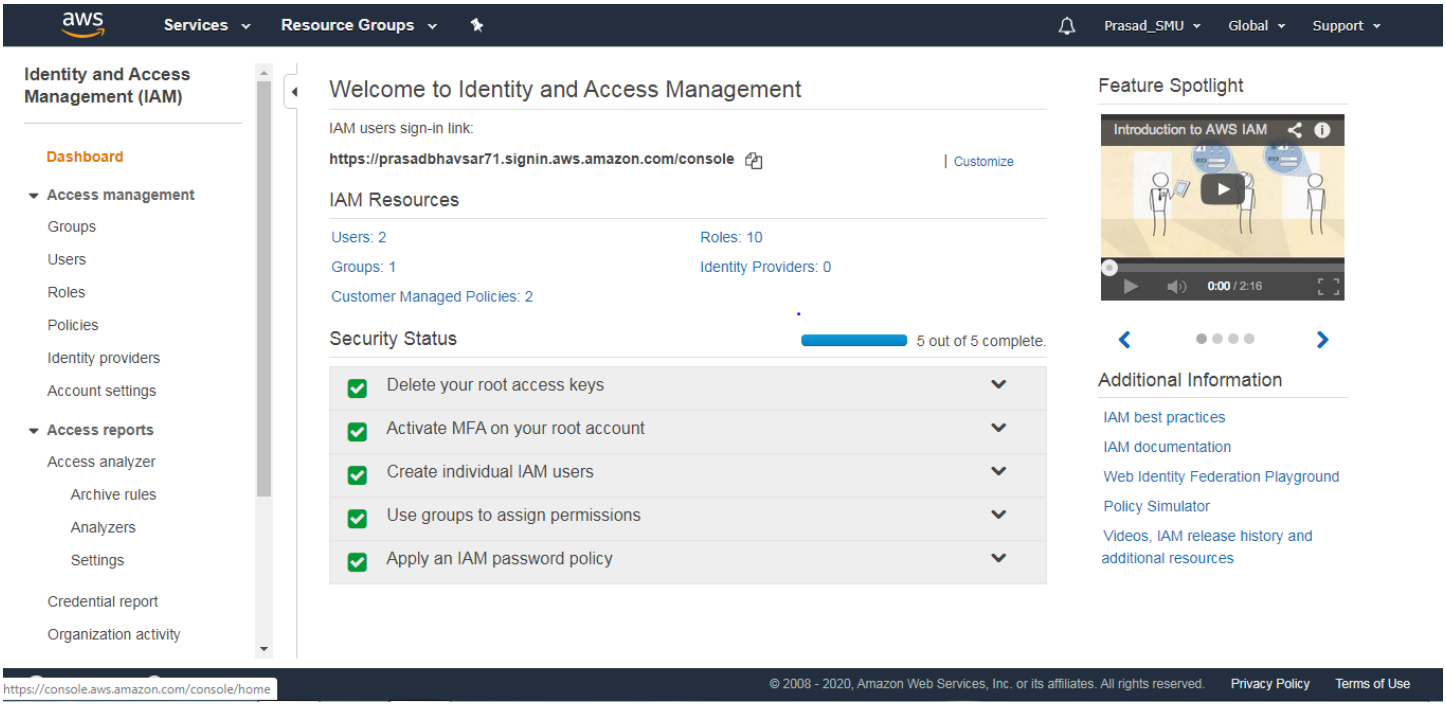
List of Tasks:

- Task 1: Create IAM Policy
- Task 2: Create IAM Role
- Task 3: Configure Lambda Function
- Task 4: Configure CloudWatch Rule
- Task 5: Verify the Automation

Task 1: Create IAM Policy

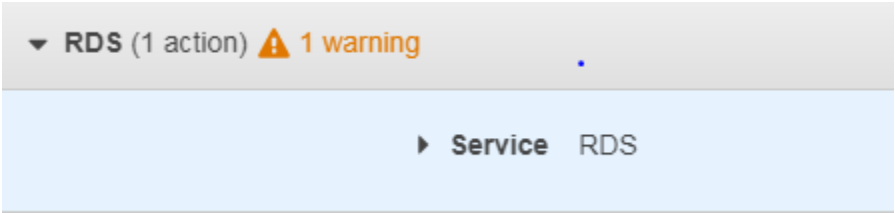
Login to the AWS Management Console.

Navigate to the IAM Service and on left-hand side click on Policies.

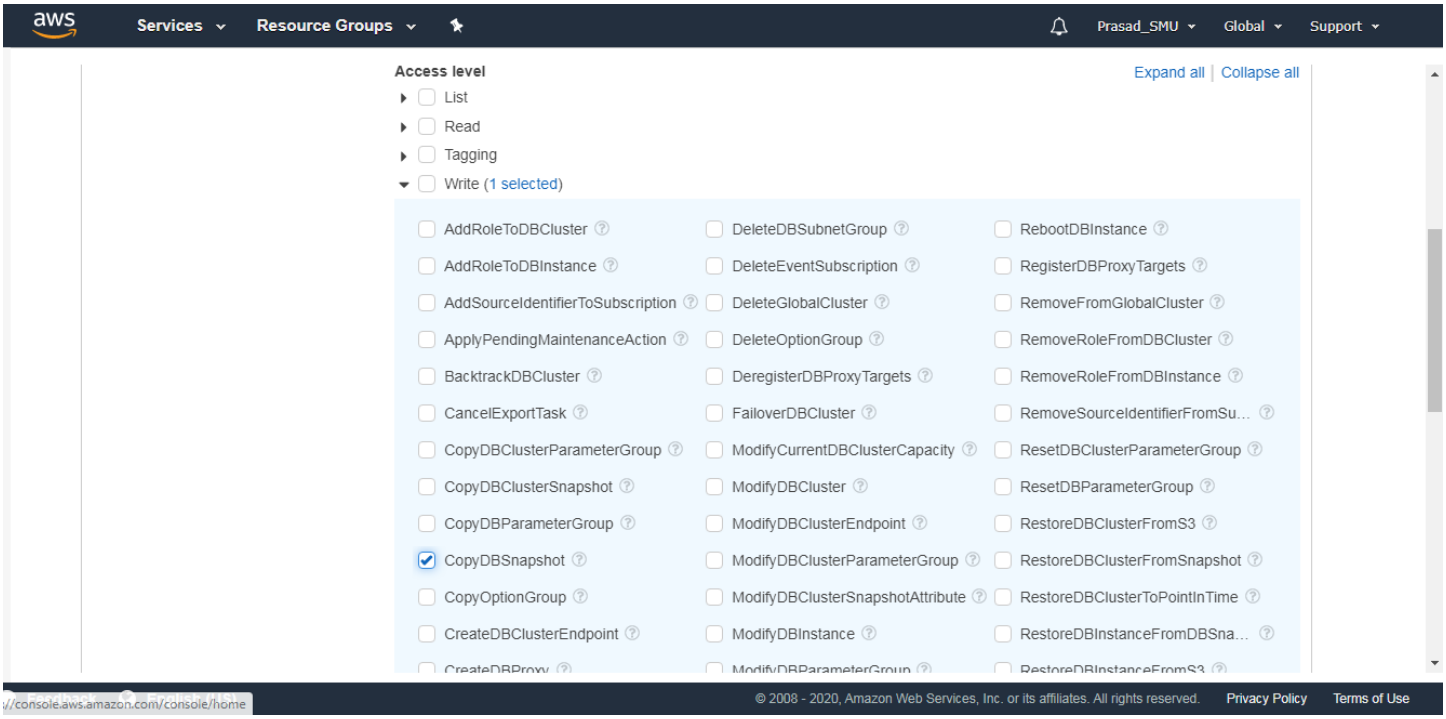


Click on Create Policy.

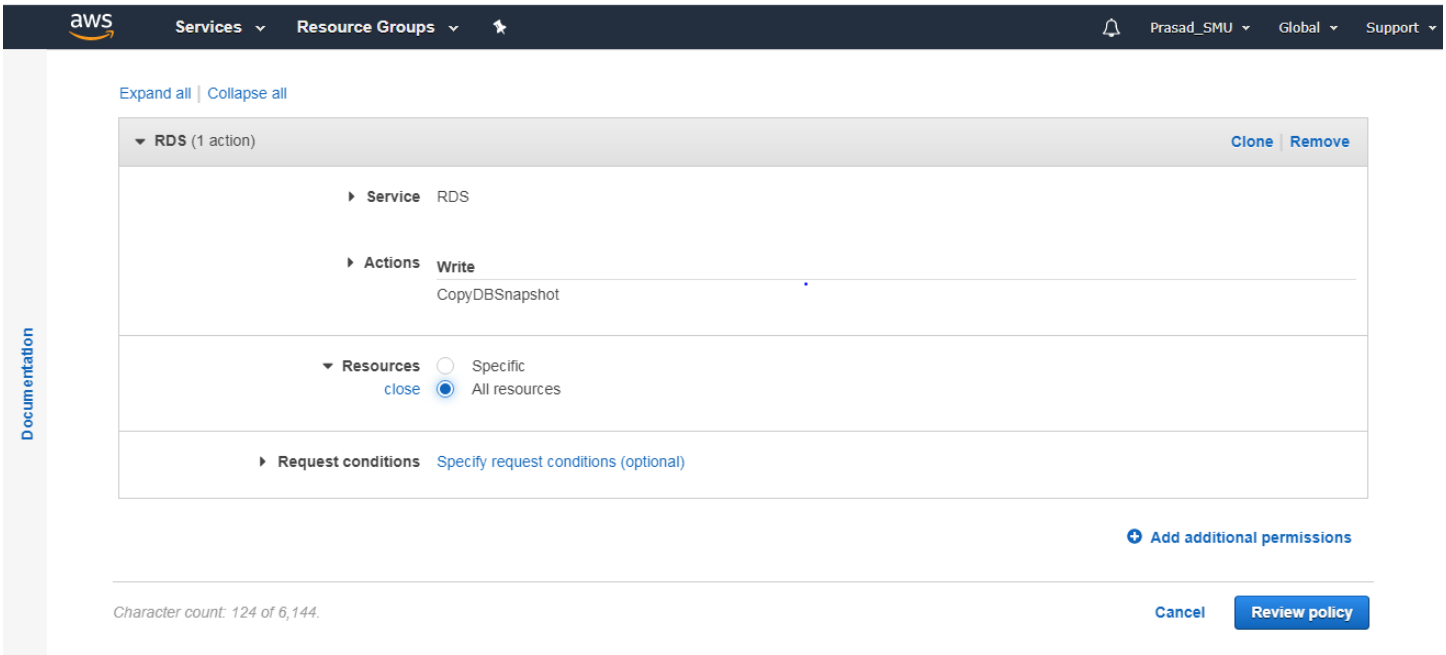
Under Service, select the **Relational Database Service (RDS).**



Expand Access Level and select **CopyDBSnapshot**.

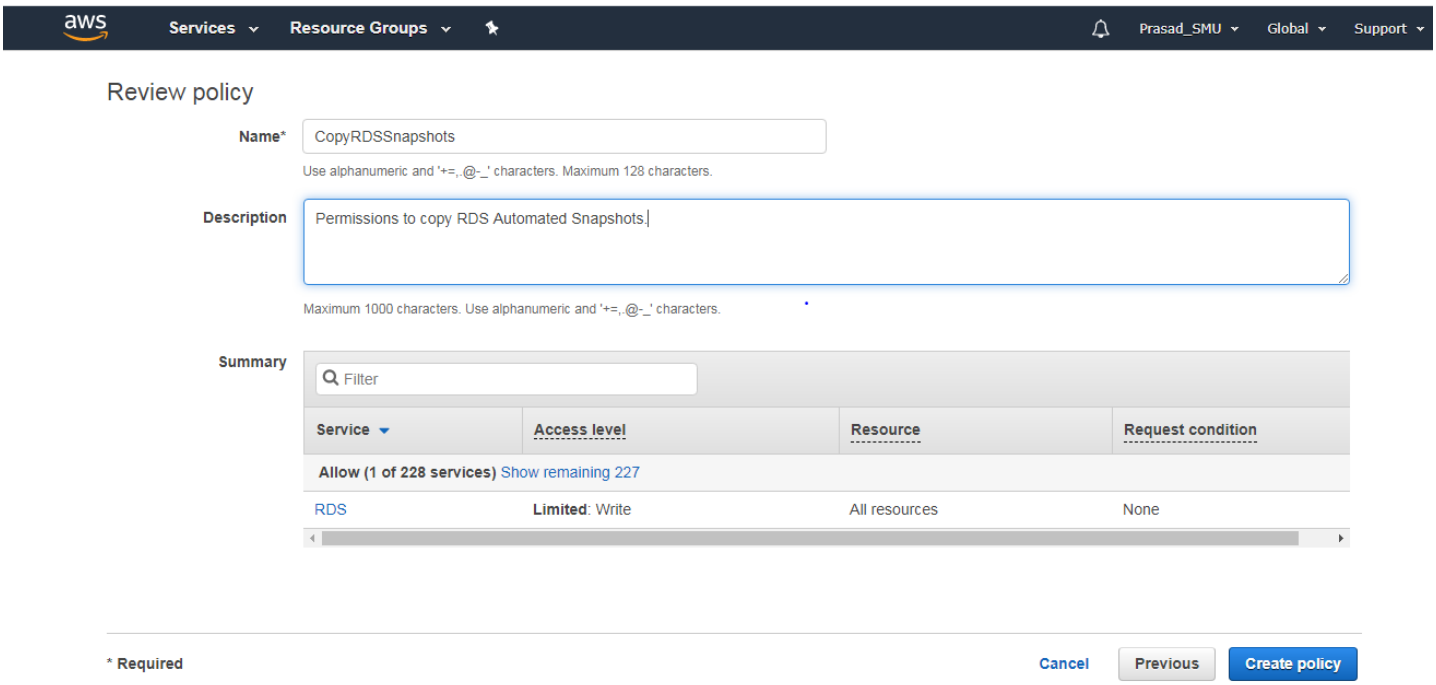


Also, select the **All Resources**.



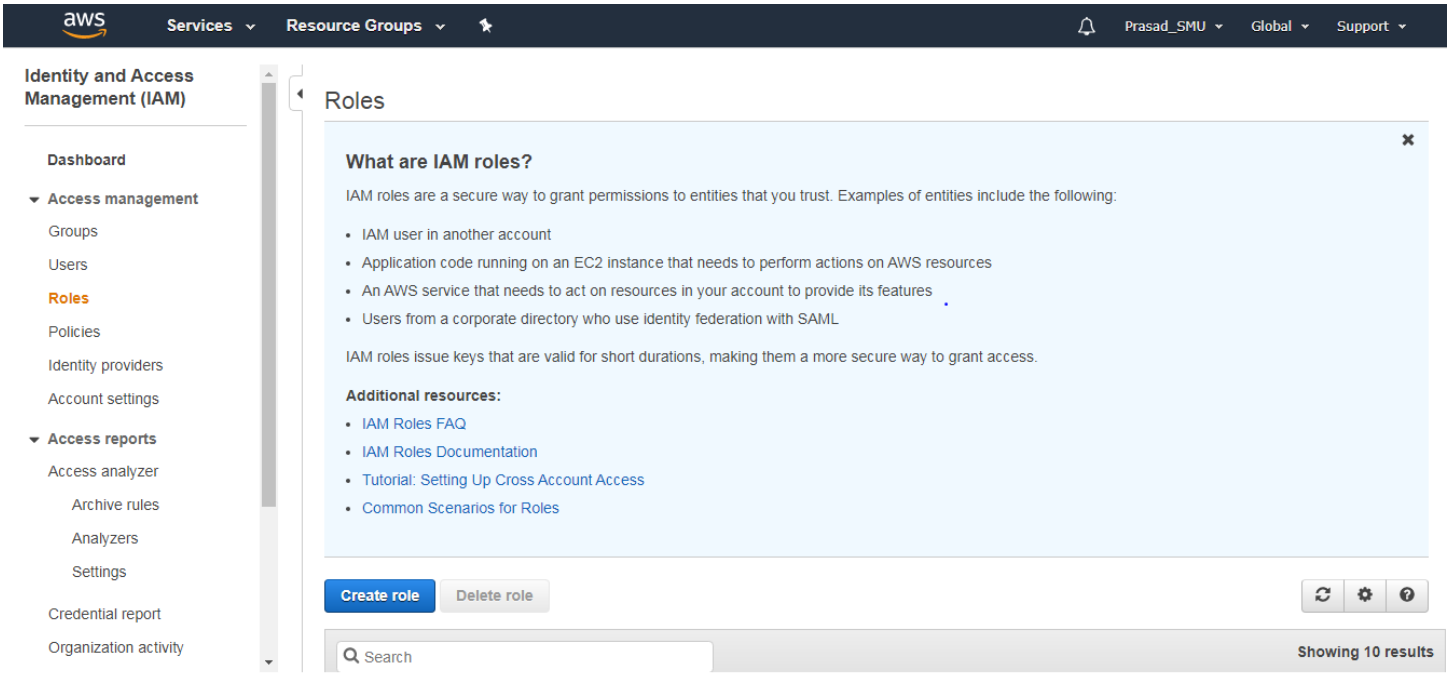
Click on Review Policy.

Give Policy Name and Description as per your choice and click on Create Policy.

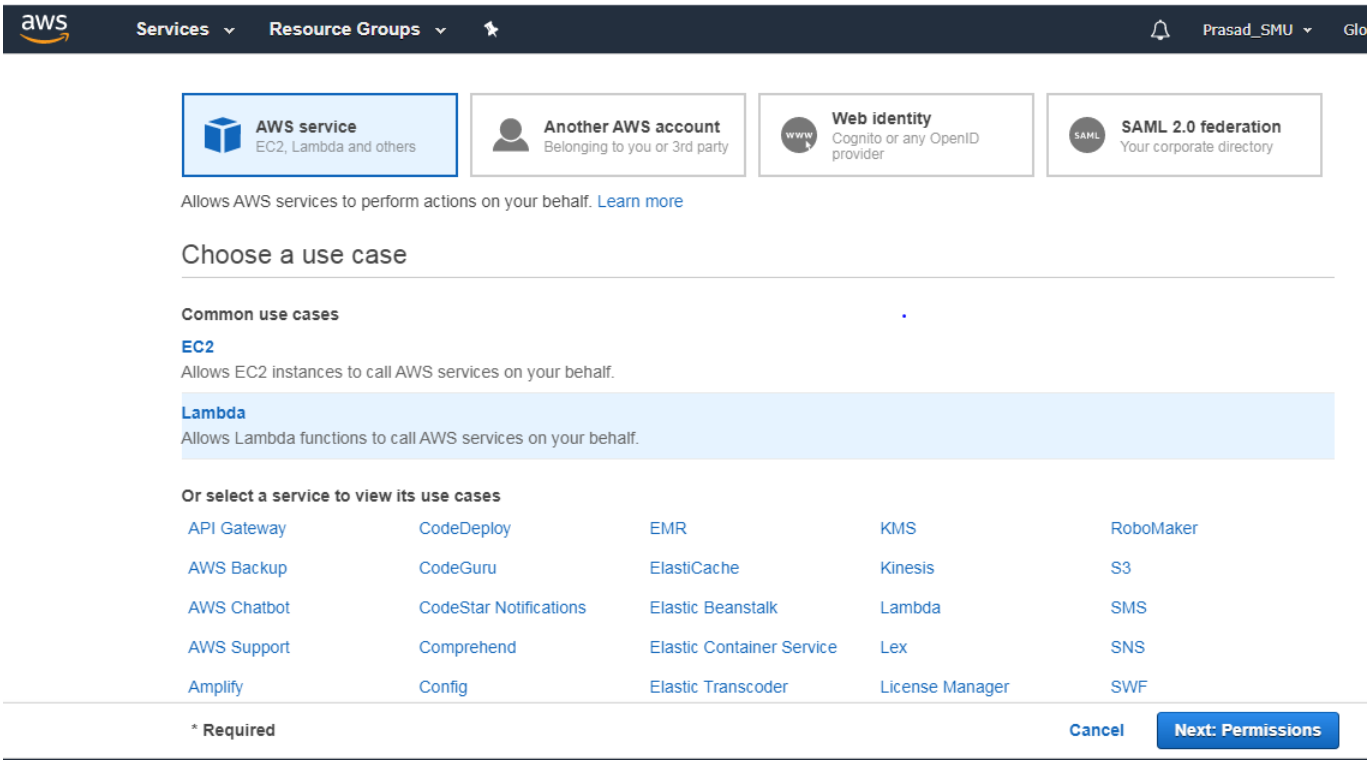


Task 2: Create IAM Role

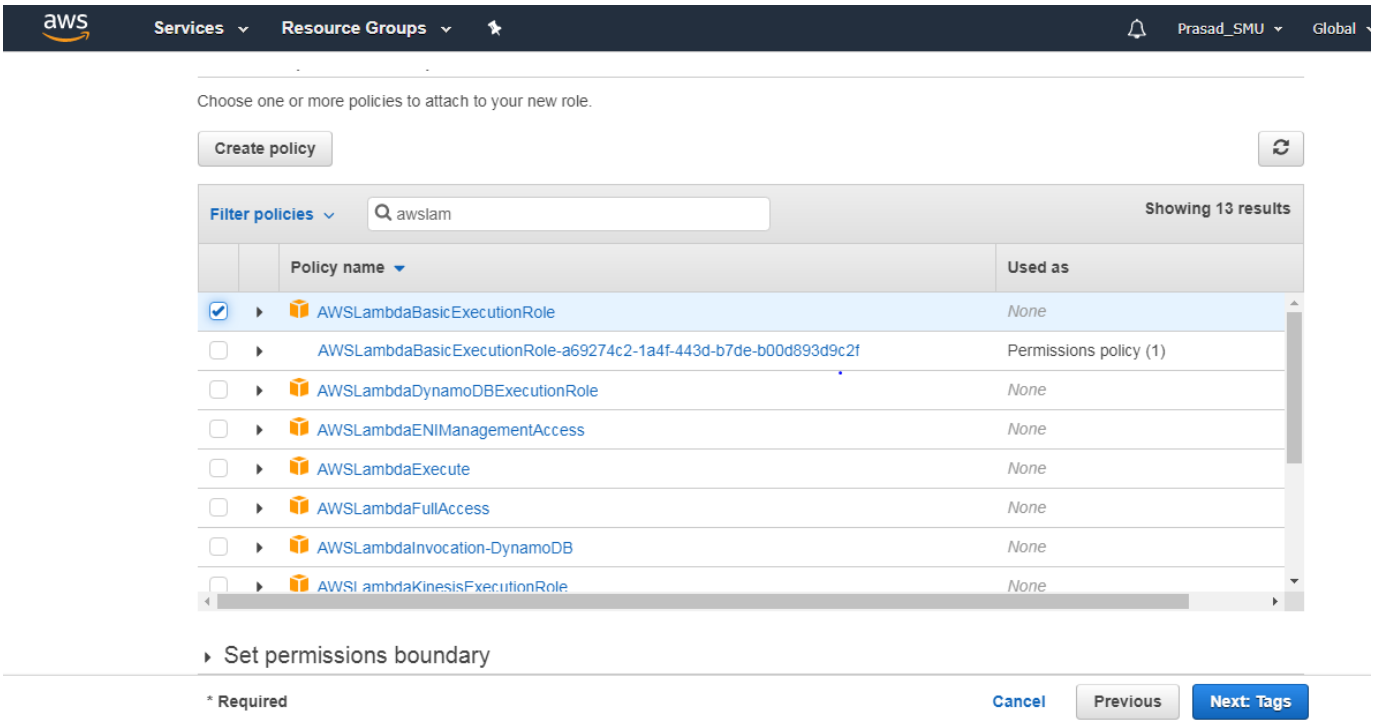
Navigate to IAM Service, click on Roles and click on Create Role.



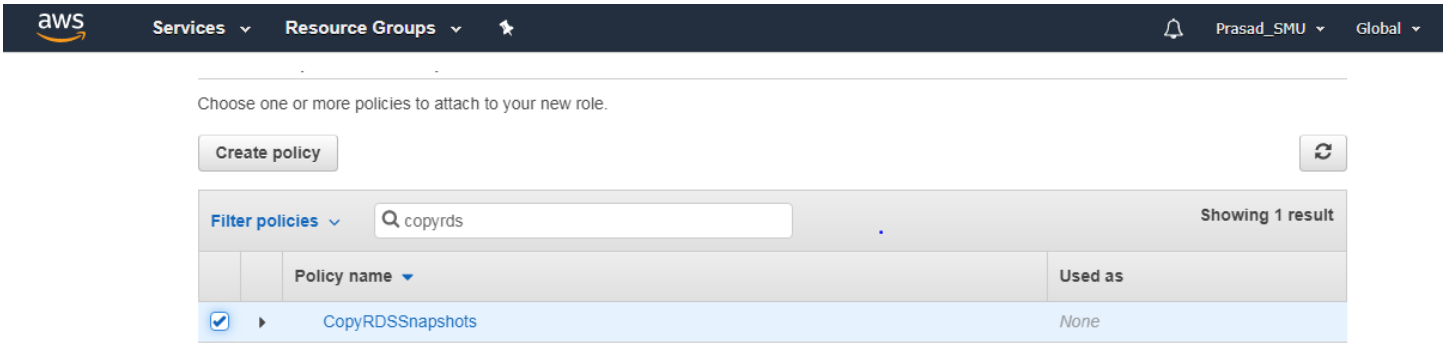
Choose the use case as **Lambda** and click Next.



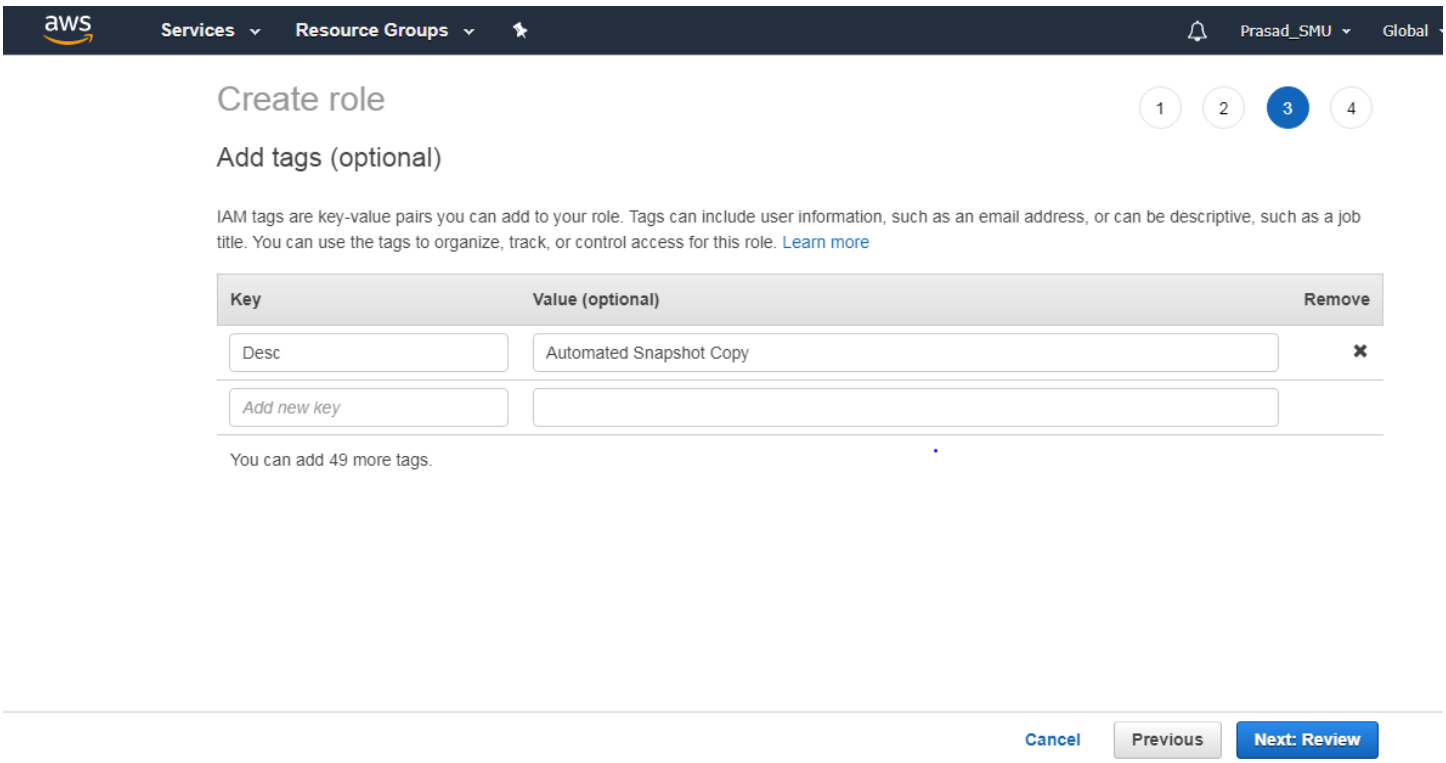
Now select the **AWSLambdaBasicExecutionRole** to give Lambda access to the CloudWatch.



Also, select the new Policy which you've created in Task1.

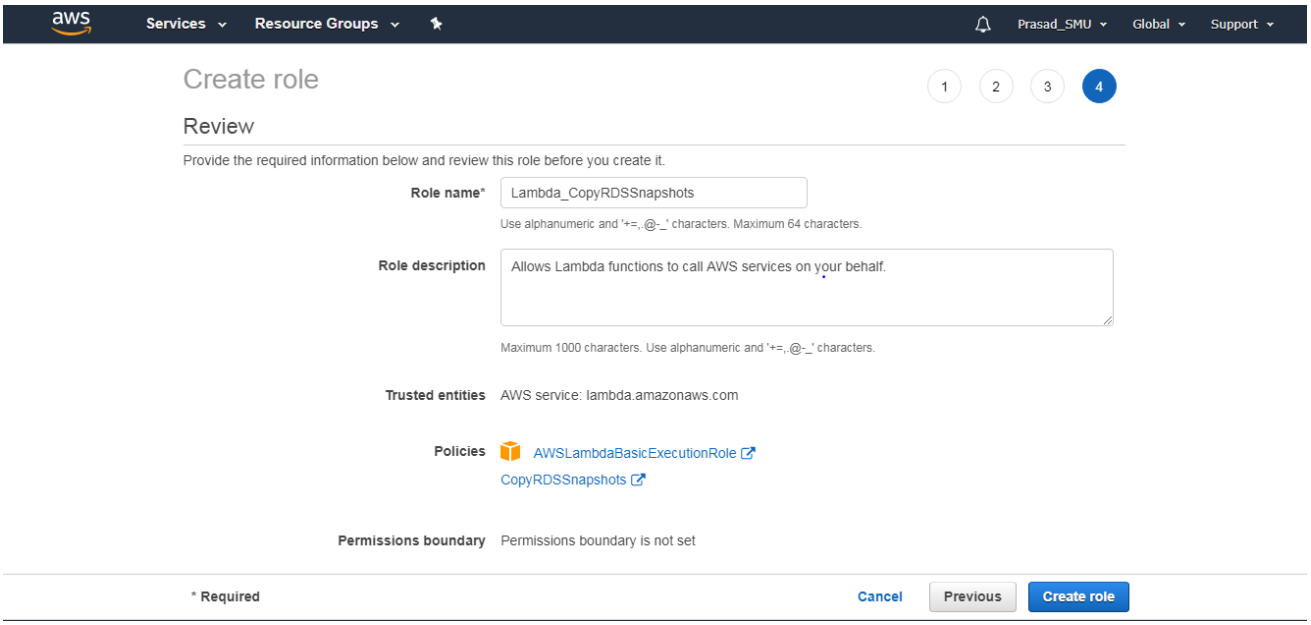


Add Tags as per your choice.



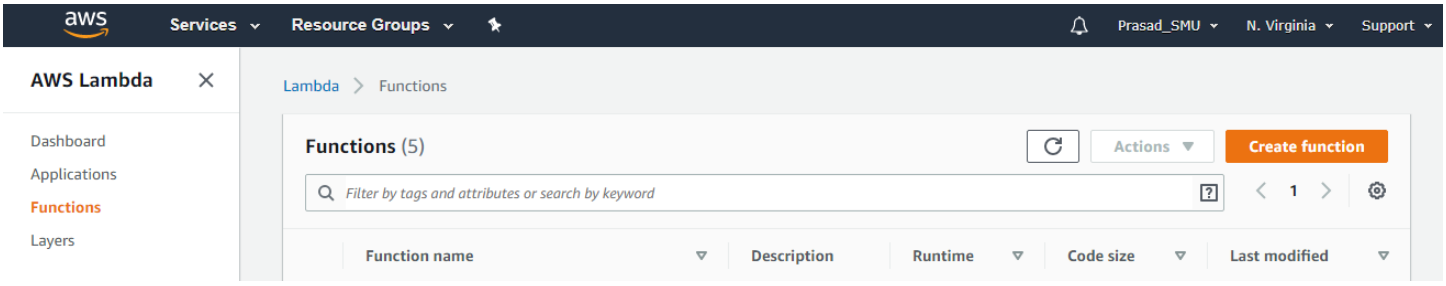
Click on Next: Review.

Give the Role Name as per your choice and click on Create Role.

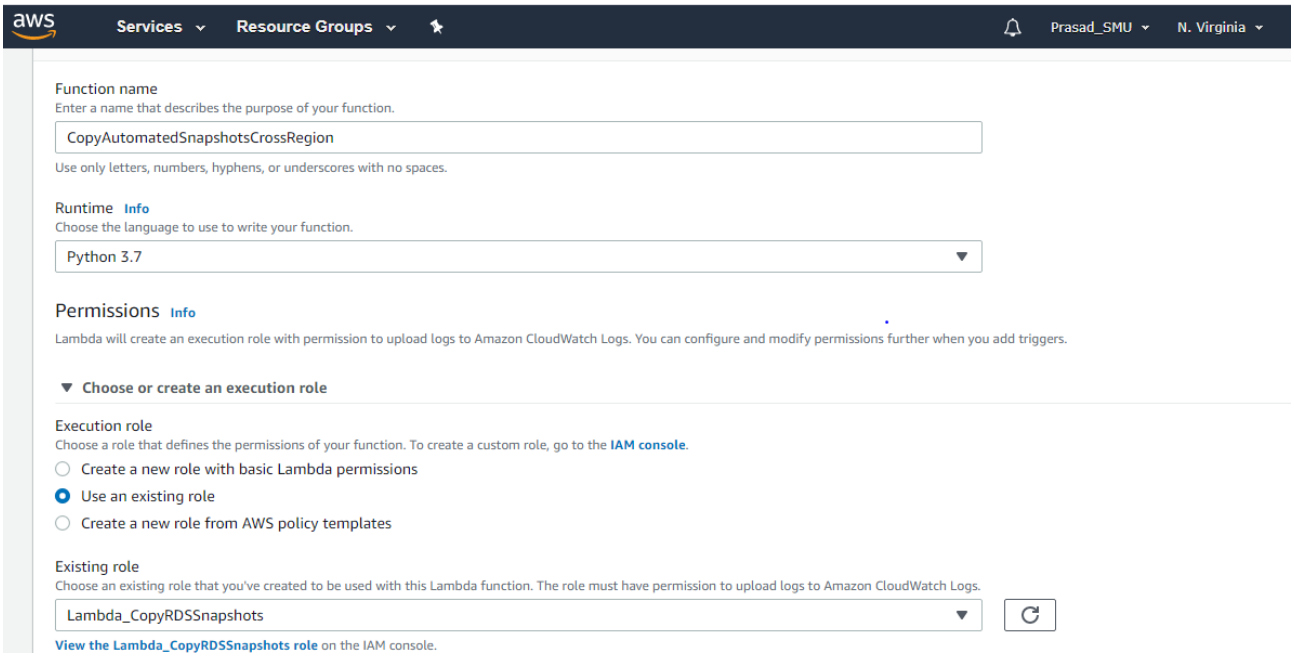


Task 3: Configure Lambda Function

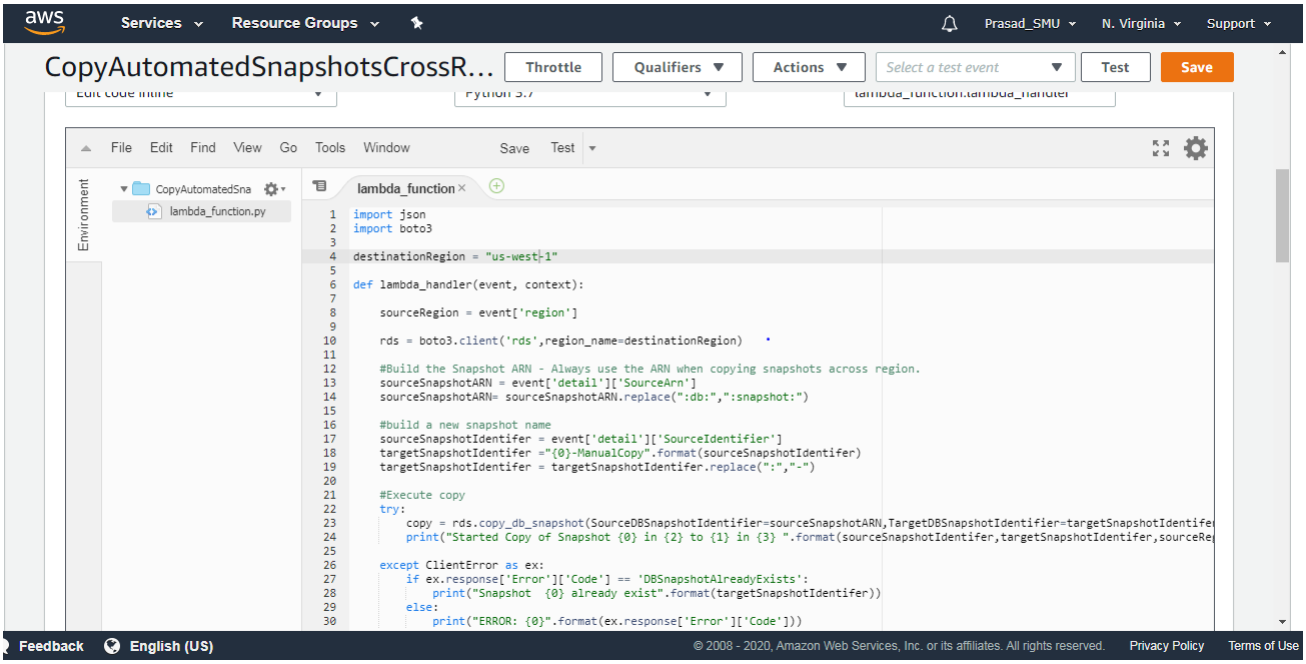
Navigate to Lambda Service and click on Create Function.



Give the Function Name as per your choice, select the Runtime as Python 3.7 and select the existing role as the role which you created in Task 2. Click on Create Function.



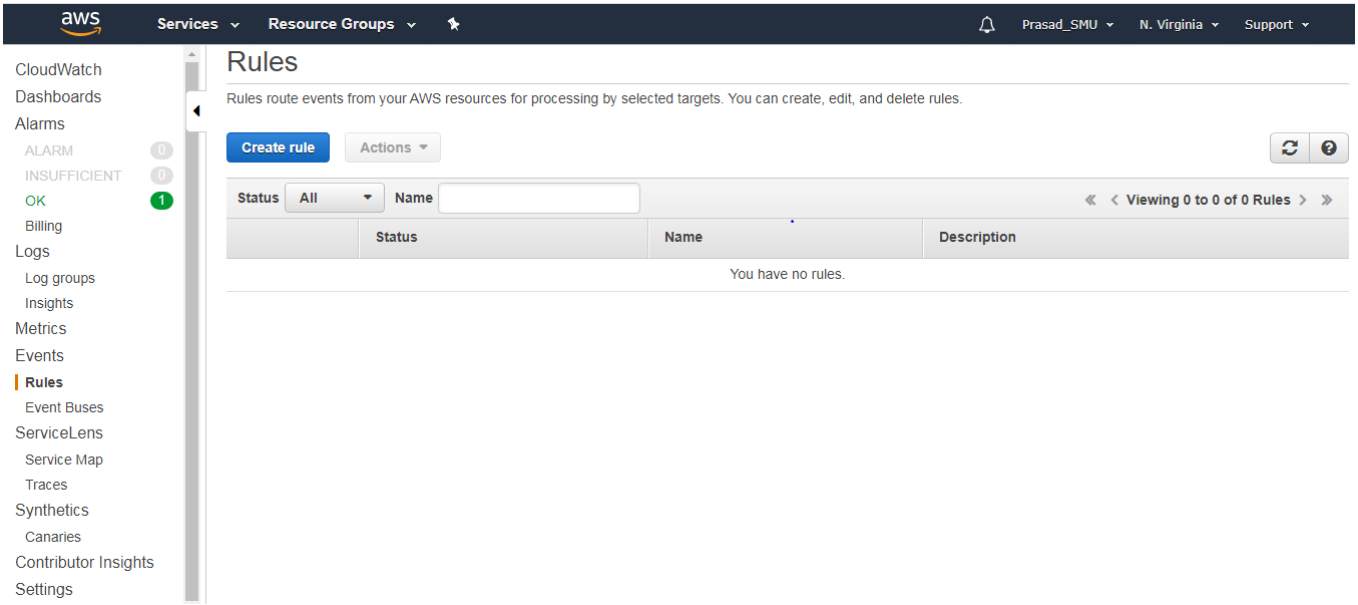
Under Function Code, paste the Python Code that I've provided. In Line 4, modify the Destination Region as per your accordance.



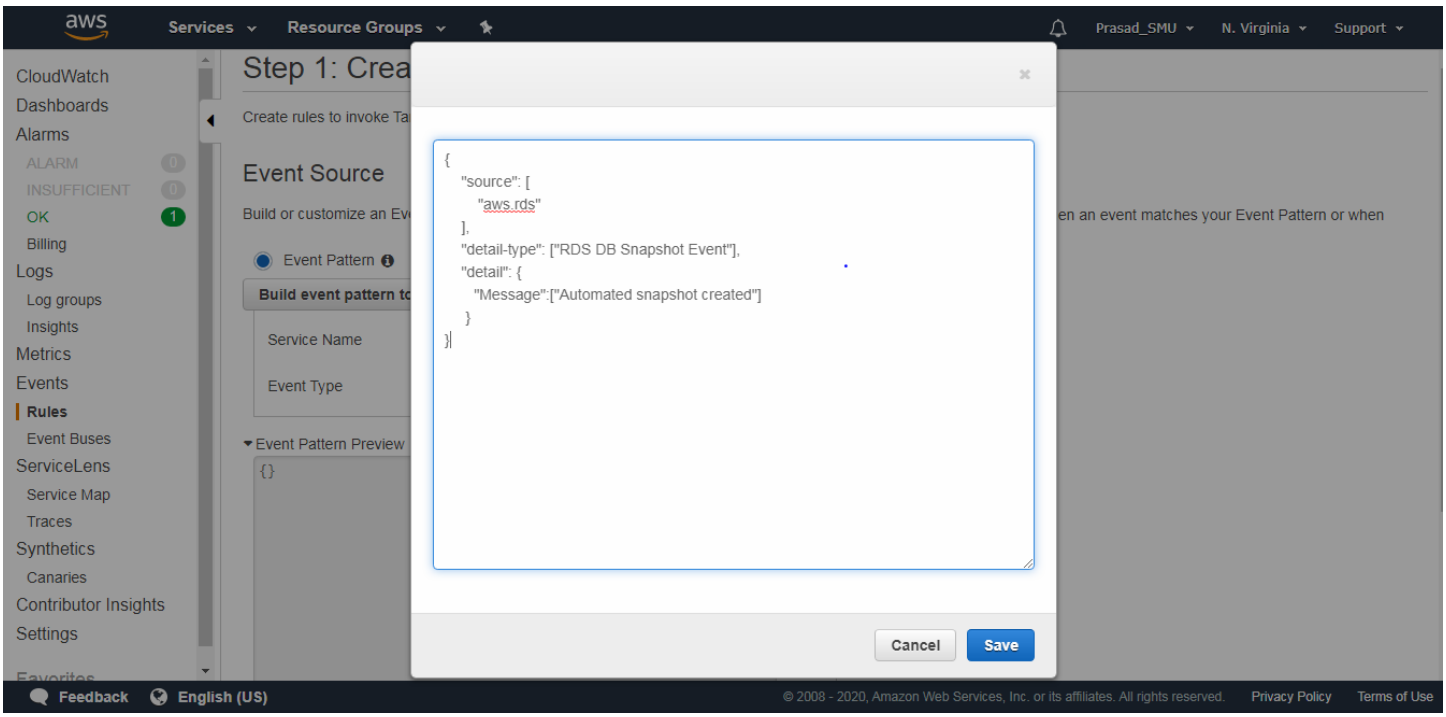
Click on SAVE.

Task 4: Configure CloudWatch Rule

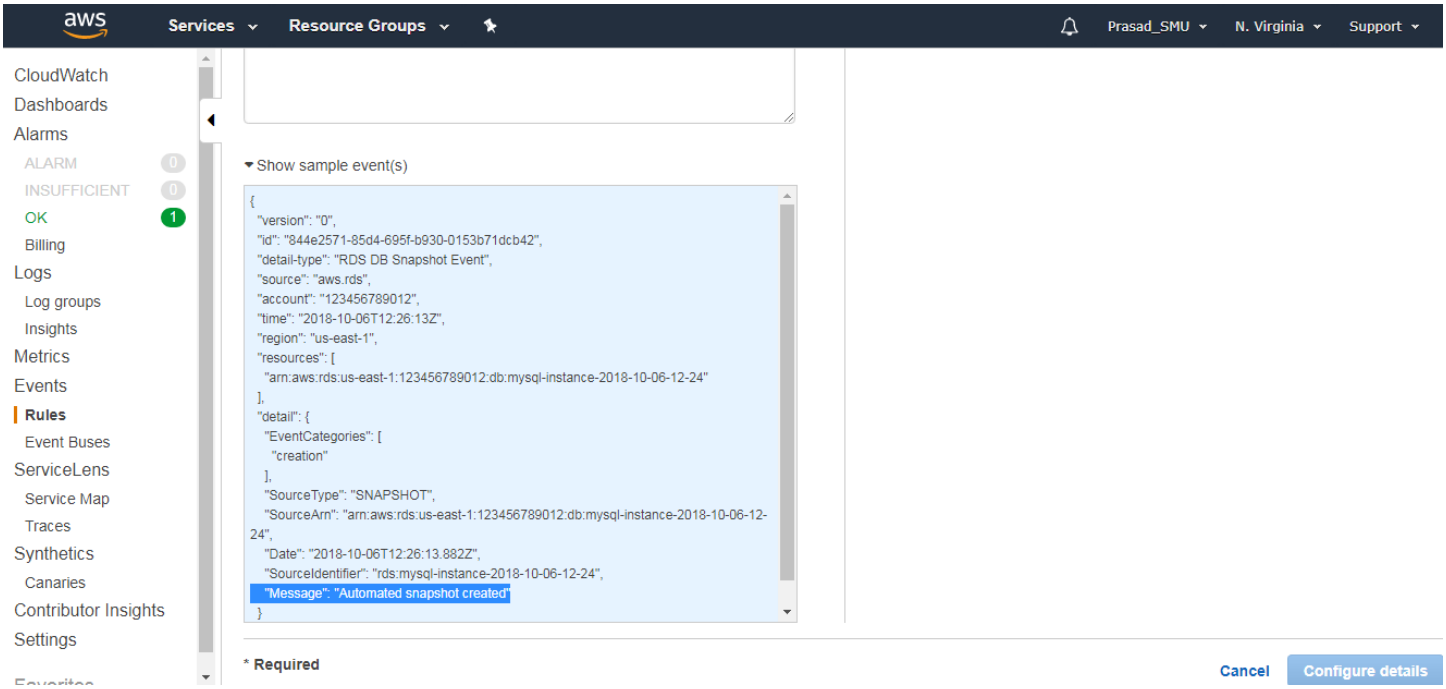
Navigate to the CloudWatch Service, Click on Rules and click on Create Rule.



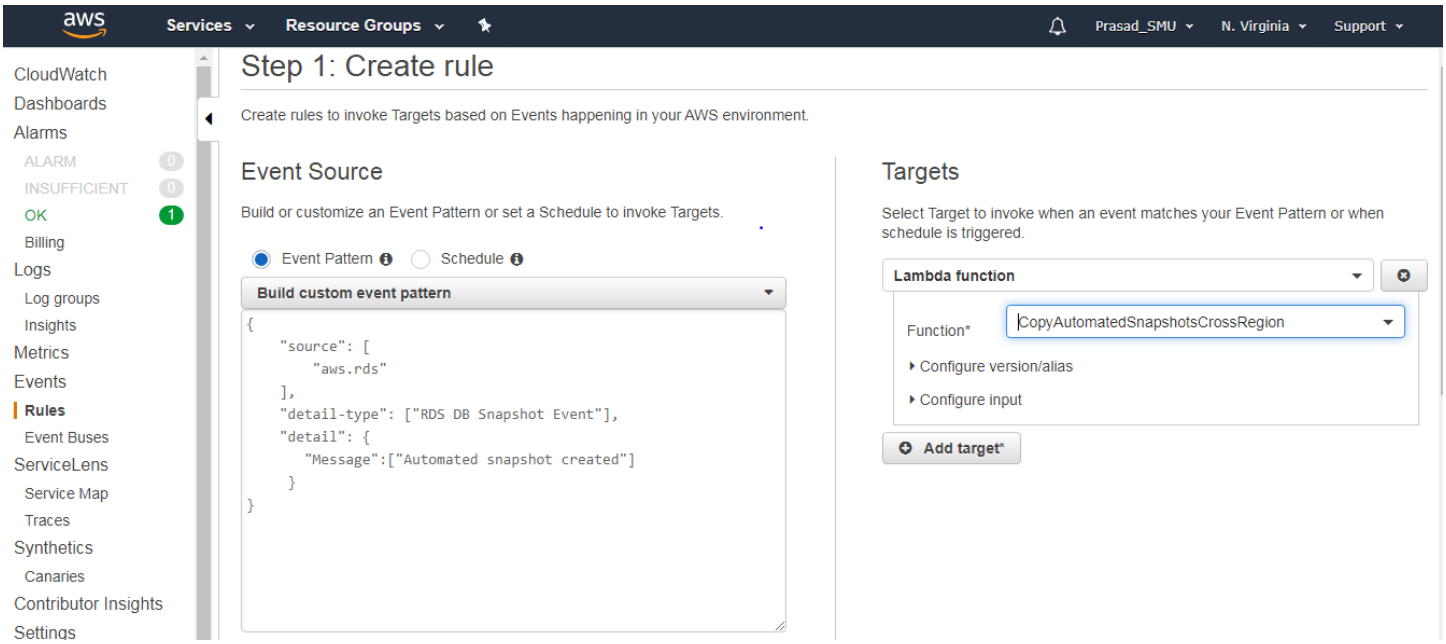
In the Event Pattern Preview, click on EDIT and paste the filter code which I've provided.



Expand the show sample events, make sure to match the highlighted pattern.

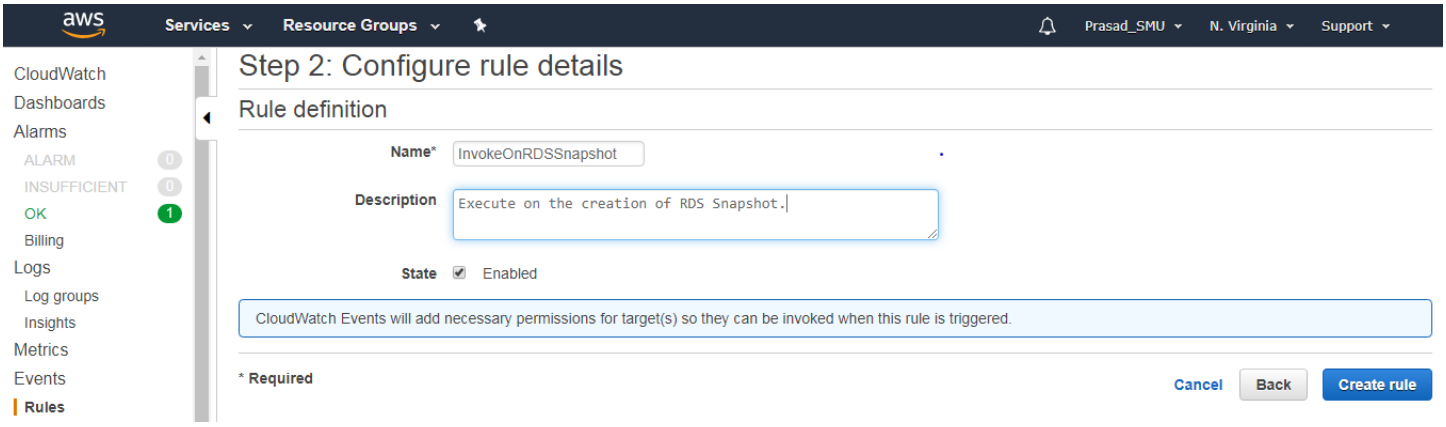


On the Right-Hand side, under Targets, click on Add Targets and select the Lambda Function which you've created in Task 3.

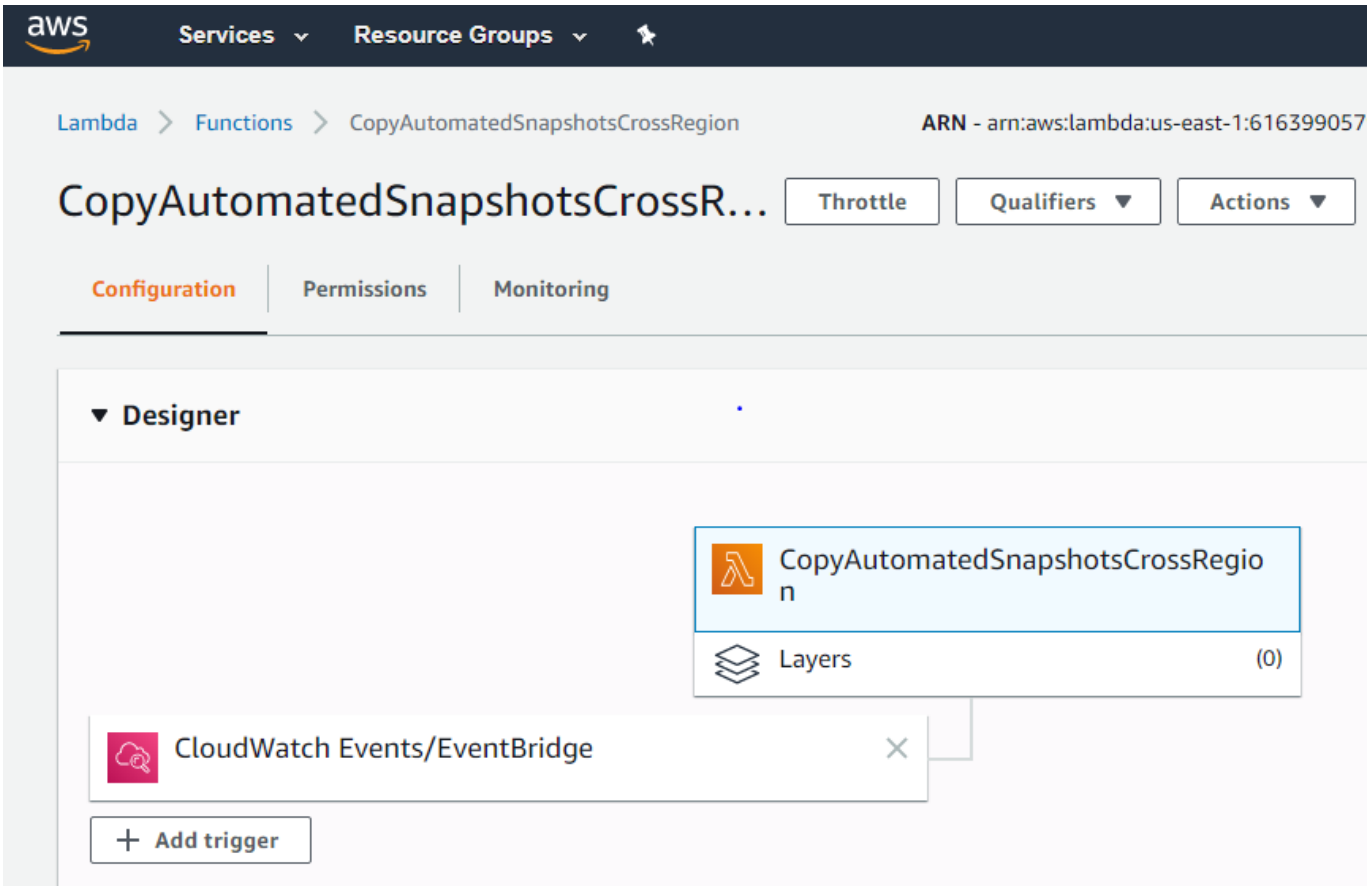


Click Next.

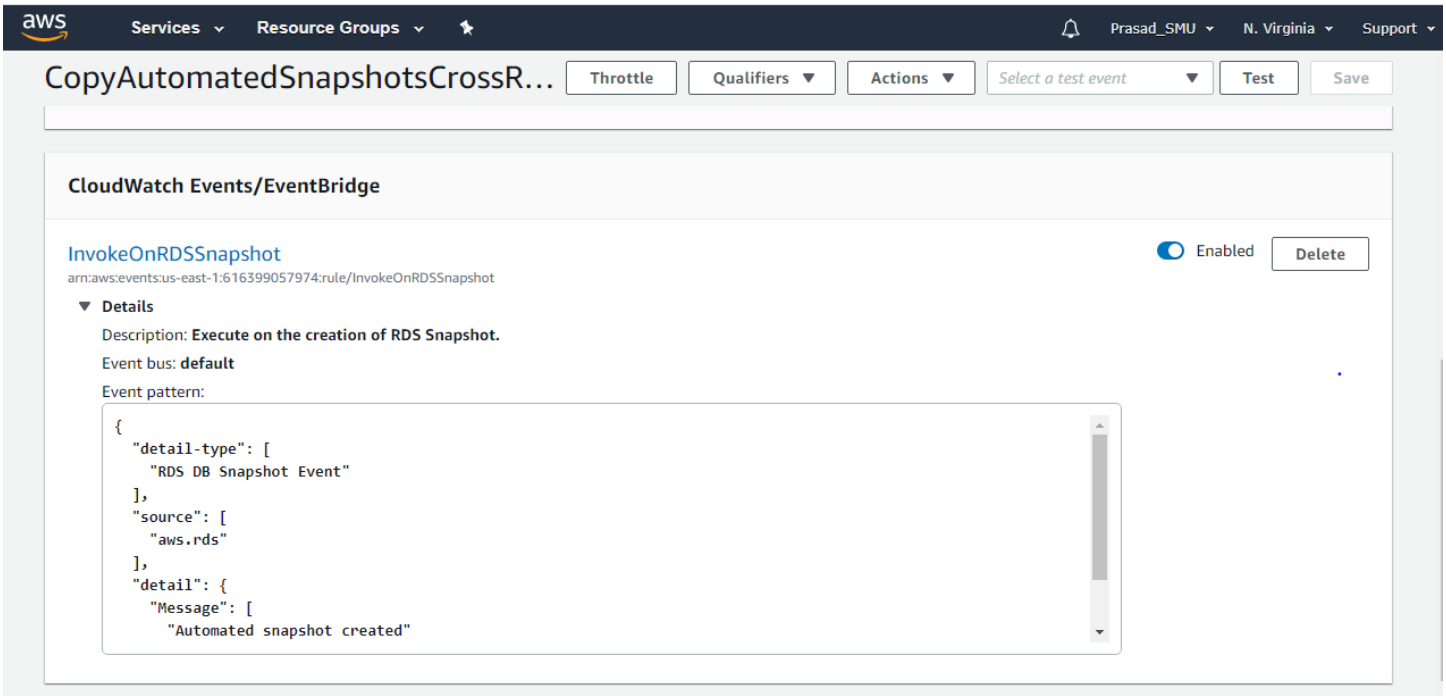
Give CloudWatch Rule Name and Description as per your accordance and create on Create Rule.



Comeback to Lambda Function now, you can see that CloudWatch Rule has been added as a trigger to Lambda Function.



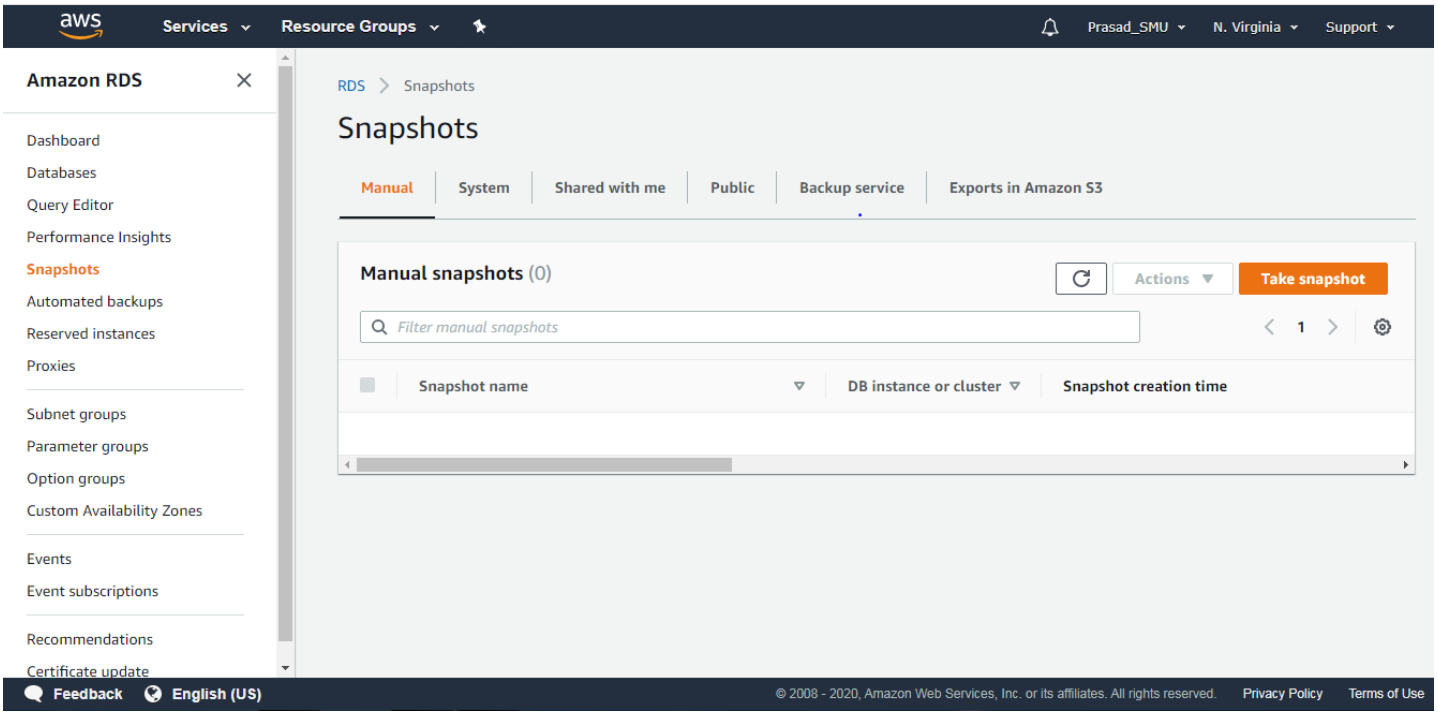
Click on CloudWatch Events/EventBridge, you'll notice the same filter code.



Task 5: Verify the Automation

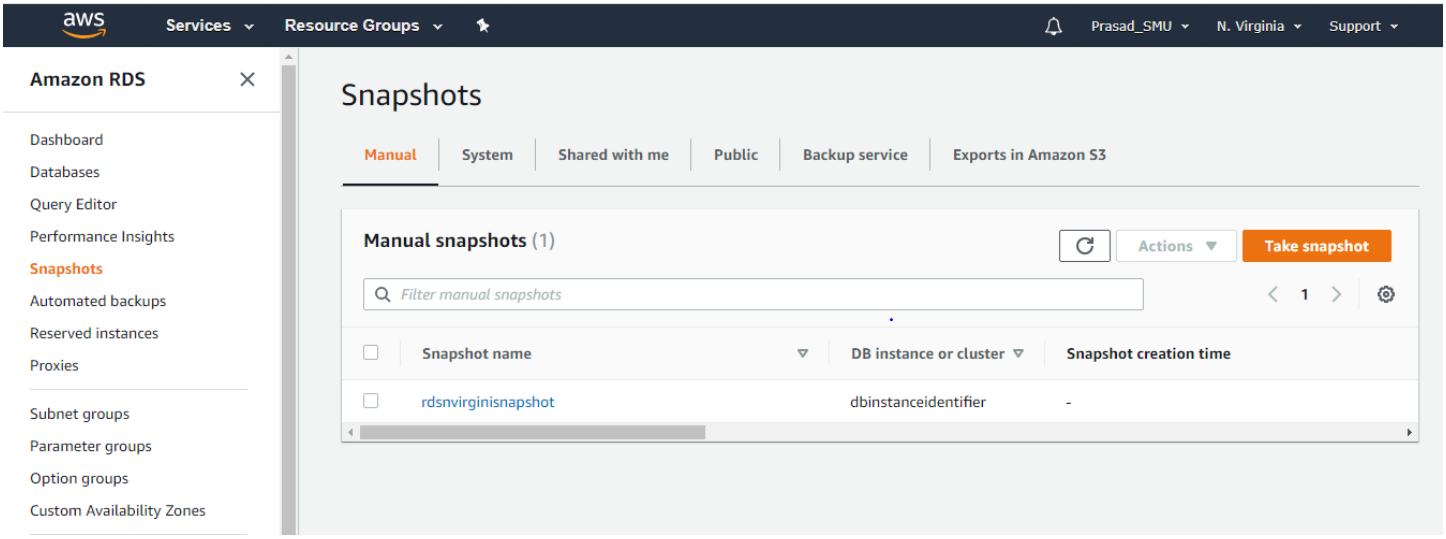
Navigate to US-WEST-1 region, and go to RDS Service.

Click on Snapshots, you'll notice that there is not a single RDS Instance Snapshot.



Comeback to the Primary Region i.e. N. Virginia (US-EAST-1) wherein you've RDS Instances running.

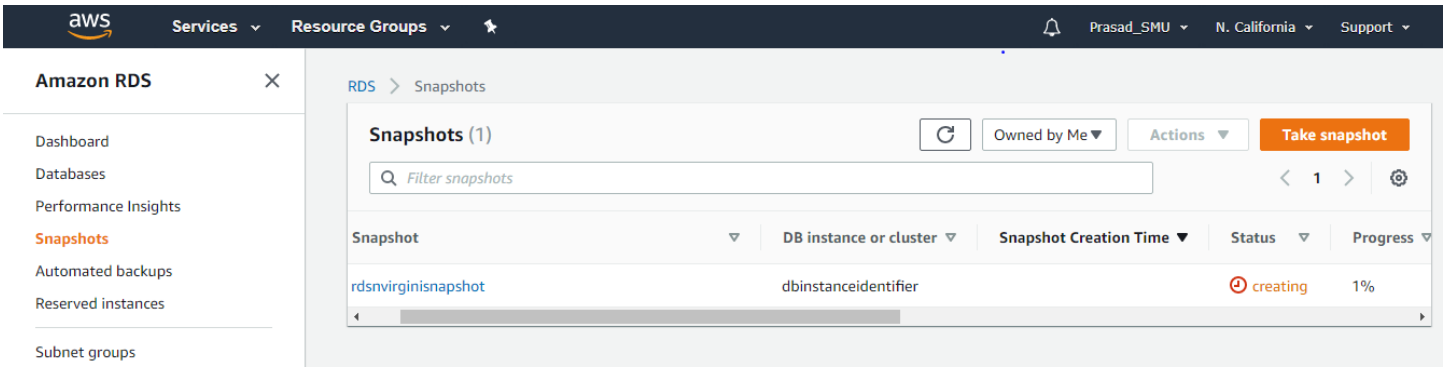
Navigate to the RDS Service, click on Snapshots and click on **Take Snapshot**.



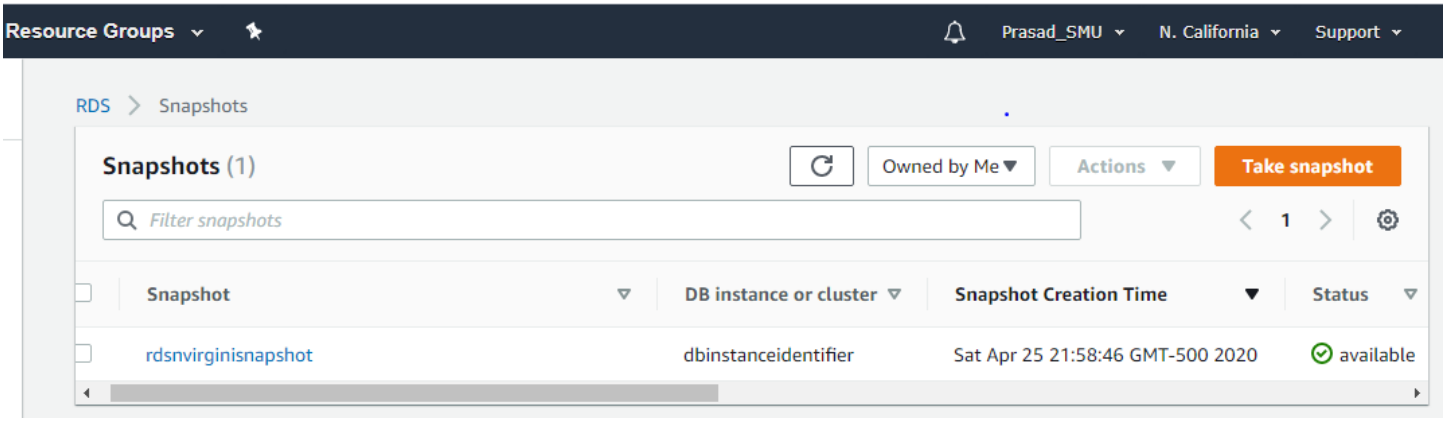
Now again change the region to N. California (US-WEST-1).

Navigate to RDS Service and Click on Snapshots.

You'll notice that the Snapshot creating process has been initiated.



Wait for some time, the snapshot has been successfully copied to another region N. California (US-WEST-1).



This completes the lab on Automate RDS Snapshots.

If you have any questions, contact me on pbhavsar@smu.edu.