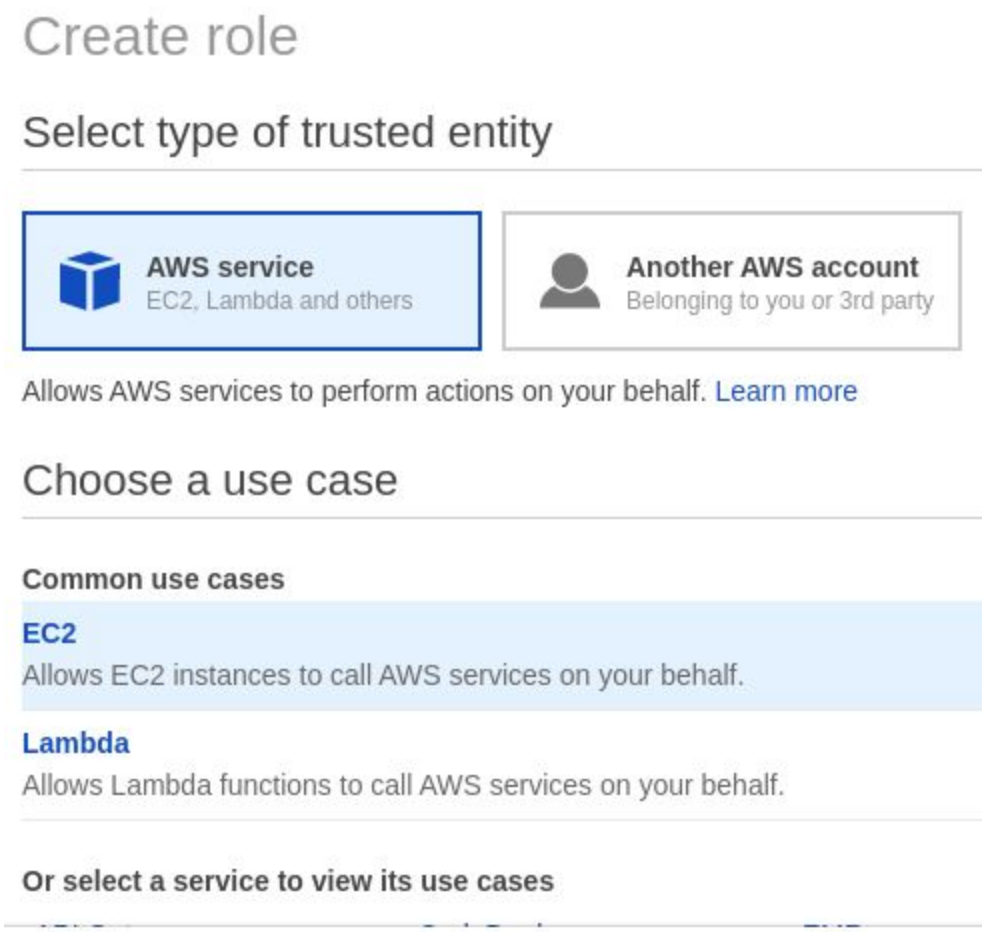
I AM

ASSIGNMENT

Name – Maithely Sharma
College – University of Petroleum and Energy Studies
EmployeeID – 4057

1. Create a Role with full access to S3



Review

Provide the required information below and review this role before you create it.

Role name* Maithelyrole

Use alphanumeric and '+=,.@-_' characters. Maximum 64 characters.

Role description Allows EC2 instances to call AWS services on your behalf.

Maximum 1000 characters. Use alphanumeric and '+=,.@-_' characters.

Trusted entities AWS service: ec2.amazonaws.com

Policies Policies not attached

Permissions boundary Permissions boundary is not set

*** Required** Cancel Previous Create role

Add permissions to Maithelyrole

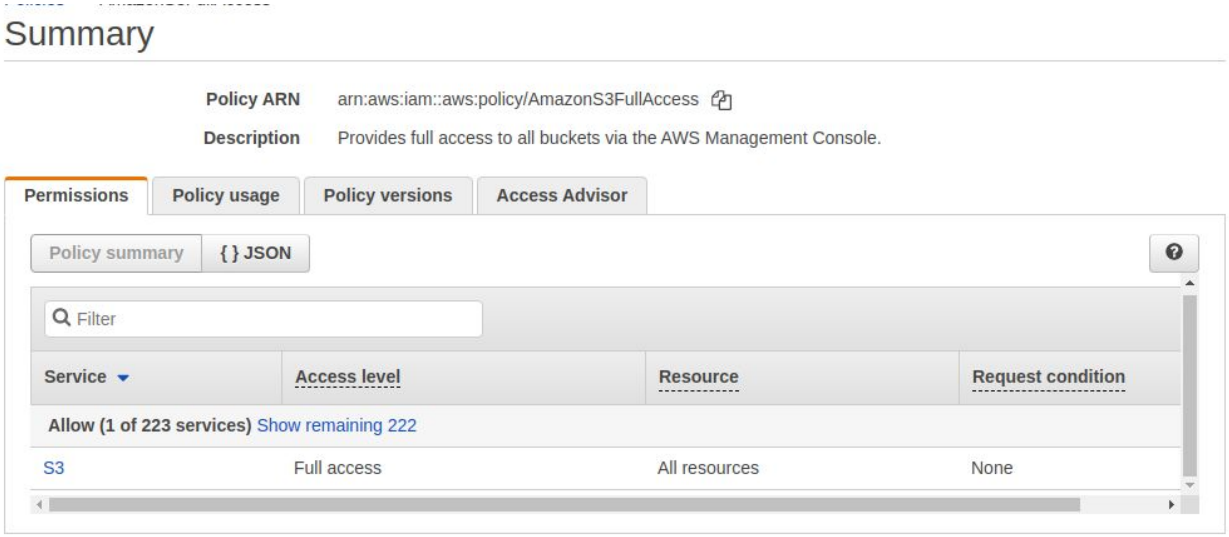
Attach Permissions

Create policy

Filter policies s3 Showing 10 results

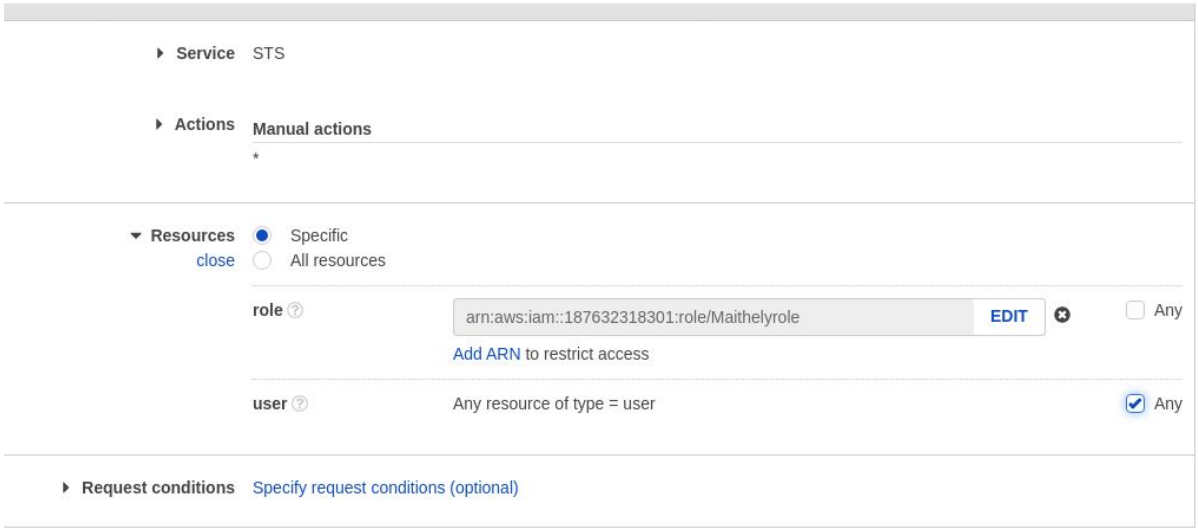
Policy name	Type	Used as
AmazonDMSRedshiftS3Role	AWS managed	None
AmazonS3FullAccess	AWS managed	Permissions policy (29)
AmazonS3ReadOnlyAccess	AWS managed	Permissions policy (1)
AWSLambdaS3ExecutionRole-1a3ddce4-a989-4828-88a4-7f5e701af3ef	Customer managed	Permissions policy (1)
AWSLambdaS3ExecutionRole-34f3178e-e3ee-4238-8c64-0e27432978a2	Customer managed	Permissions policy (1)

Cancel Attach policy

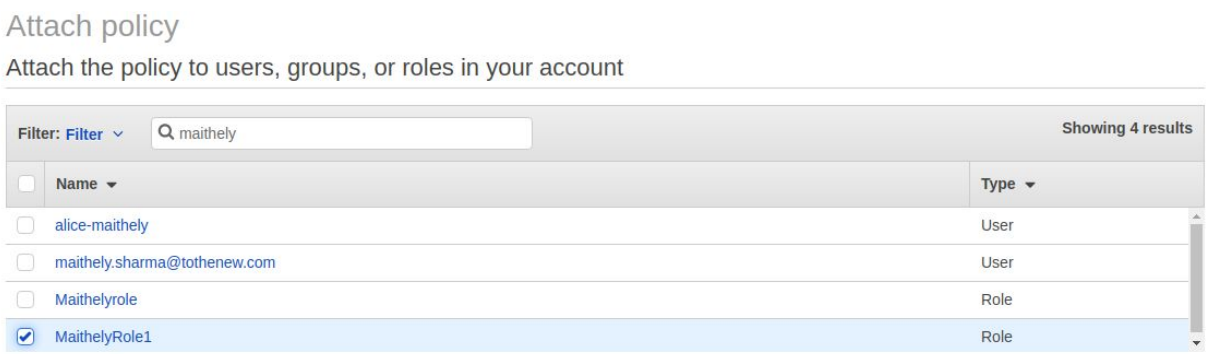


2. Create another ROLE which has the policy to assume the previous Role

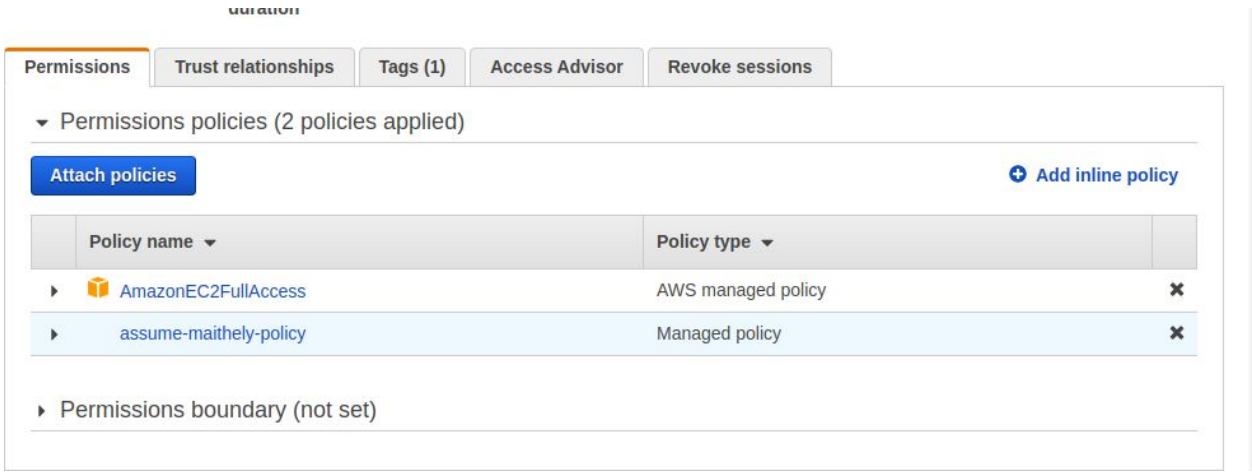
Create another role as Maithelyrole1 and attach policy of sts service to it



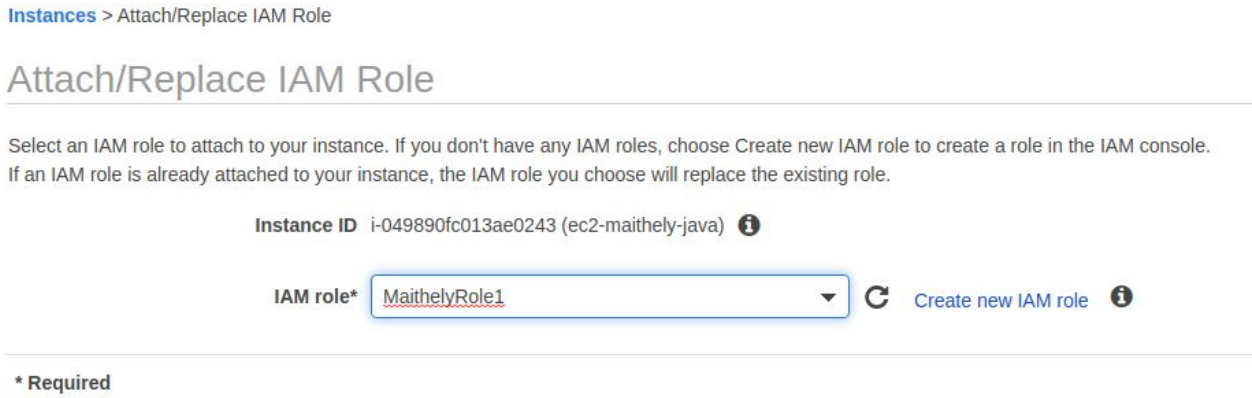
Now attach this policy to the new role created



Now you can see that assume role attached



Now create an ec2 instance and attach to the newrole created i.e Maithelyrole1



Now add the arn of new role i.e maithelyrole1 to old role i.e maithelyrole in trust relationship

Edit Trust Relationship

You can customize trust relationships by editing the following access control policy document.

Policy Document

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": {
        "AWS":"arn:aws:iam::187632318301:role/MaithelyRole1" ,
        "Service": "ec2.amazonaws.com"
      },
      "Action": "sts:AssumeRole"
    }
  ]
}
```

Now you have to ssh to the instance created and update it. Also install aws cli

```
maithely@maithely:~$ ssh -i "maithelykeypair.pem" ubuntu@ec2-52-207-215-48.compute-1.amazonaws.com
Warning: Identity file maithelykeypair.pem not accessible: No such file or directory.
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1057-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Fri Feb 28 10:51:26 UTC 2020

  System load:  0.08              Processes:           86
  Usage of /:   16.5% of 7.69GB   Users logged in:     0
  Memory usage: 17%               IP address for eth0: 172.31.104.188
  Swap usage:   0%


54 packages can be updated.
32 updates are security updates.


Last login: Fri Feb 28 06:46:24 2020 from 182.71.160.186
ubuntu@ip-172-31-104-188:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:4 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [871 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1054 kB]
Fetched 2177 kB in 1s (2789 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
51 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-172-31-104-188:~$ sudo apt install awscli
Reading package lists... Done
Building dependency tree
```

3. Attach this to an instance and get an sts token.

Now copy the arn of s3fullaccess i.e of role maithelyrole

```
ubuntu@ip-172-31-104-188:~$ aws sts assume-role --role-arn arn:aws:iam::18763231
8301:role/Maithelyrole --role-session-name maithelyrolefisrt
{
    "Credentials": {
        "AccessKeyId": "ASIASXL6B65OXC2SPQK6",
        "SecretAccessKey": "P2jVsE5F55CoQRr+A6gfx8gcc5lVykrLVeC1XNuz",
        "SessionToken": "FwoGZXIvYXdzEBwaDAYWUBAJ8D8sJISLFCK1AY+NiEmwjx+/cw7N73N
2CqFl++6z9k7UT42yiv83xAjmi9ARfBlibv066PFgL4IX9IJWO2Y82QDbm4DxrmvL5qedjSXh0pn2jjD
hSWWqWy+8tkxGlGPxnzhkGoKJNtAXpSujT5aVrag5DKpAmat5o8Mceg2cCgl1QcTZUeGcu7ZUaToIJRx
nkk9YrfOGVAHePvw44V6G9VjqWIJmGelmRm5+lsAS21bsPinCcKZ0P0kFL8m+MdgoiOPj8gUyLUirtBy
bpXdB9SLycNahYCj/8mE2JtFAHfzPkcHfdTH7YFqN0vjhkaVTJbRqRQ==",
        "Expiration": "2020-02-28T11:55:04Z"
    },
    "AssumedRoleUser": {
        "AssumedRoleId": "AROASXL6B65ORPZY5NT2B:maithelyrolefisrt",
        "Arn": "arn:aws:sts::187632318301:assumed-role/Maithelyrole/maithelyrole
fisrt"
    }
}
```

Now export it:

```
ubuntu@ip-172-31-104-188:~$ export AWS_ACCESS_KEY_ID=ASIASXL6B65OXC2SPQK6
ubuntu@ip-172-31-104-188:~$ export AWS_SECRET_ACCESS_KEY=P2jVsE5F55CoQRr+A6gfx8g
cc5lVykrLVeC1XNuz
ubuntu@ip-172-31-104-188:~$
ubuntu@ip-172-31-104-188:~$  export AWS_SESSION_TOKEN=FwoGZXIvYXdzEBwaDAYWUBAJ8D
8sJISLFCK1AY+NiEmwjx+/cw7N73N2CqFl++6z9k7UT42yiv83xAjmi9ARfBlibv066PFgL4IX9IJWO2
Y82QDbm4DxrmvL5qedjSXh0pn2jjDhSWWqWy+8tkxGlGPxnzhkGoKJNtAXpSujT5aVrag5DKpAmat5o8
Mceg2cCgl1QcTZUeGcu7ZUaToIJRxnkk9YrfOGVAHePvw44V6G9VjqWIJmGelmRm5+lsAS21bsPinCcK
Z0P0kFL8m+MdgoiOPj8gUyLUirtBybpXdB9SLycNahYCj/8mE2JtFAHfzPkcHfdTH7YFqN0vjhkaVTJb
RqRQ==
```

Now you can access s3

```
ubuntu@ip-172-31-104-188:~$ aws s3 ls
2019-06-26 12:11:08 0testuser11
2018-04-20 16:59:22 187632318301-awsmacietrail-dataevent
2019-04-02 10:11:33 7testdemo
2019-03-11 04:51:59 abhimanyucftemplate
2020-02-28 10:55:02 abhishek-bootcamp
2019-03-04 06:55:23 abneesh1
2019-03-11 11:00:41 adityamun007
2020-02-26 16:26:29 akshaybuck1
2020-02-27 08:55:25 aman-khandelwal-1
2019-03-07 09:40:48 anmol-bootcamp19
2019-03-08 00:25:58 avcabc
2017-09-07 03:41:42 aws-codestar-us-east-1-187632318301
2017-09-07 04:23:01 aws-codestar-us-east-1-187632318301-codestartest2-app
2017-09-07 04:23:07 aws-codestar-us-east-1-187632318301-codestartest2-pipe
2017-09-07 03:41:48 aws-codestar-us-east-1-187632318301-codestarttest-pipe
2019-06-26 05:39:55 aws-lambda-trigger-ronozor
2020-02-28 03:56:49 ayush-public-bucket
2020-02-25 07:02:11 baban-123
2018-02-14 12:28:43 cf-templates-71mx96oilvv5-us-east-1
```

4. Create a group for "Data Administrator" where the user 'Alice' be a member of this group. This group will prepare the data for the analysis. So Provide the following access to the group.

Service: Amazon S3;

Action:

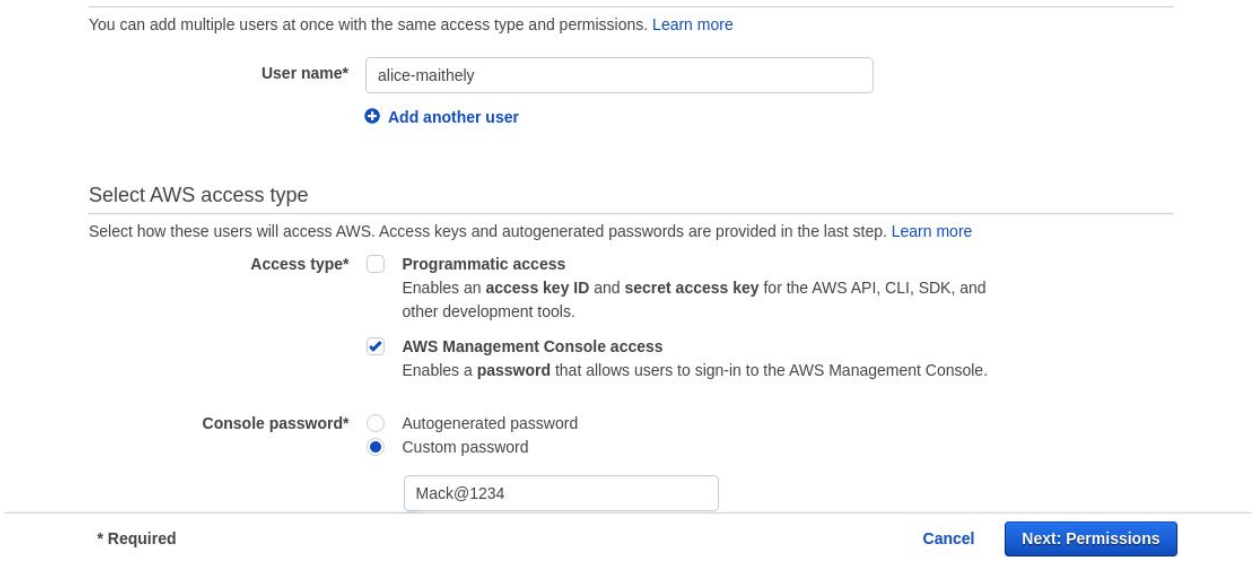
Get*,

List*,

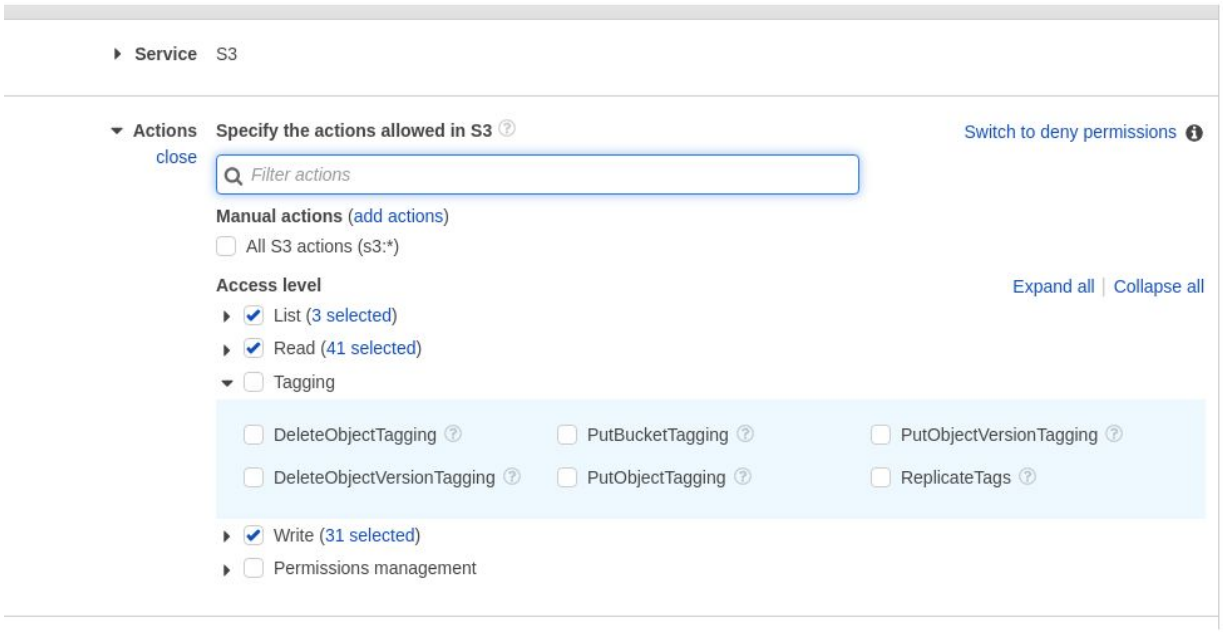
Put*,

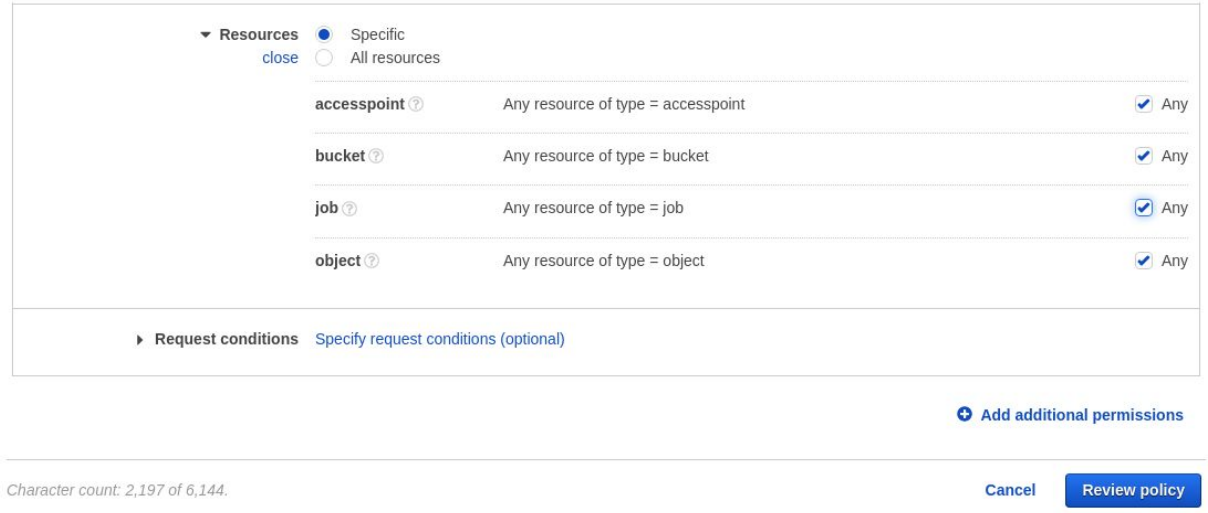
ARN: Input and output Buckets (no conditions)

Firstly create a user alice-maithely

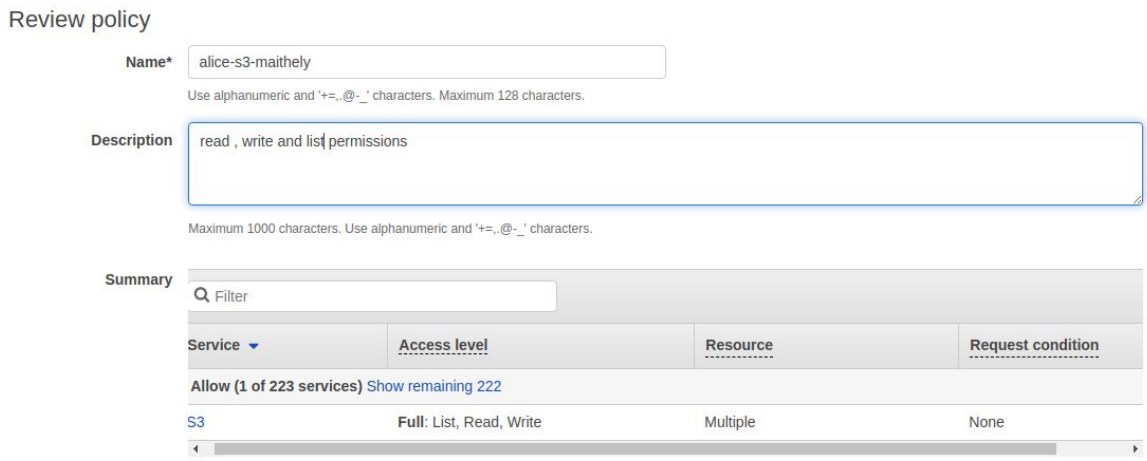


Add the specified services to it

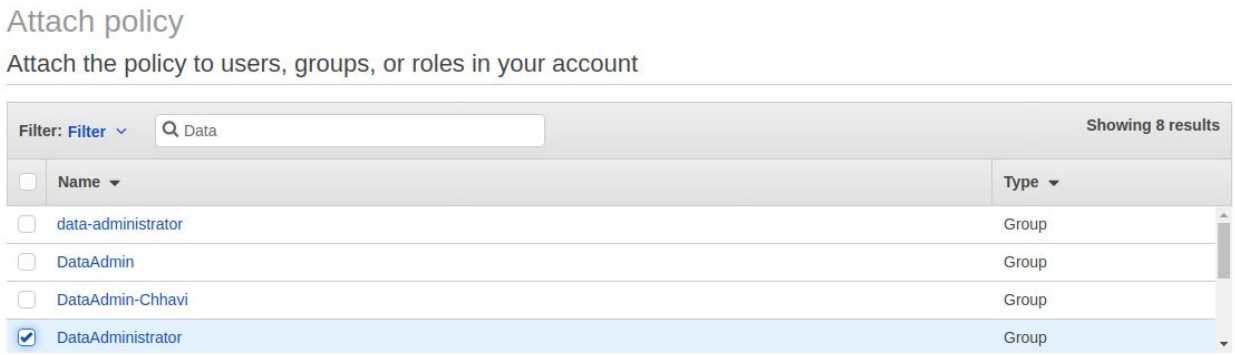




Now create a policy



Now attach this policy to the group created of data administrator



5. Create a group for the "Developer group " where the user 'bob ' is a member of this group. This group with Test Newly Developed Features for which they require access to EC2 instances. Provide the following access to this group:

Service: Amazon EC2

Action: *Instances, *Volume, Describe*, CreateTags;

Condition: Dev Subnets only

Firstly create a group “Developer-Maithely” and grant EC2fullaccess to it

Attach Policy

Select one or more policies to attach. Each group can have up to 10 policies attached.

Filter: Policy Type ▾ Search

Showing 583 results

	Policy Name	Attached Entities	Creation Time
☐	AmazonS3FullAccess	30	2015-02-07 00:10 UTC...
☐	AmazonEC2ContainerServiceforEC2Role	17	2015-03-20 00:15 UTC...
☐	AmazonEC2ContainerRegistryFullAccess	16	2015-12-21 22:36 UTC...
☑	AmazonEC2FullAccess	16	2015-02-07 00:10 UTC...
☐	CloudWatchFullAccess	8	2015-02-07 00:10 UTC...
☐	AmazonSNSFullAccess	6	2015-02-07 00:11 UTC...
☐	AmazonDynamoDBFullAccess	5	2015-02-07 00:10 UTC...
☐	CloudWatchLogsFullAccess	3	2015-02-07 00:10 UTC...

Cancel Previous Next Step

Now create a BOB user

Set user details

You can add multiple users at once with the same access type and permissions. Learn more

User name* Bob-maithely

Add another user

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. Learn more

Access type* ☐ **Programmatic access**
Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.

☑ **AWS Management Console access**
Enables a **password** that allows users to sign-in to the AWS Management Console.

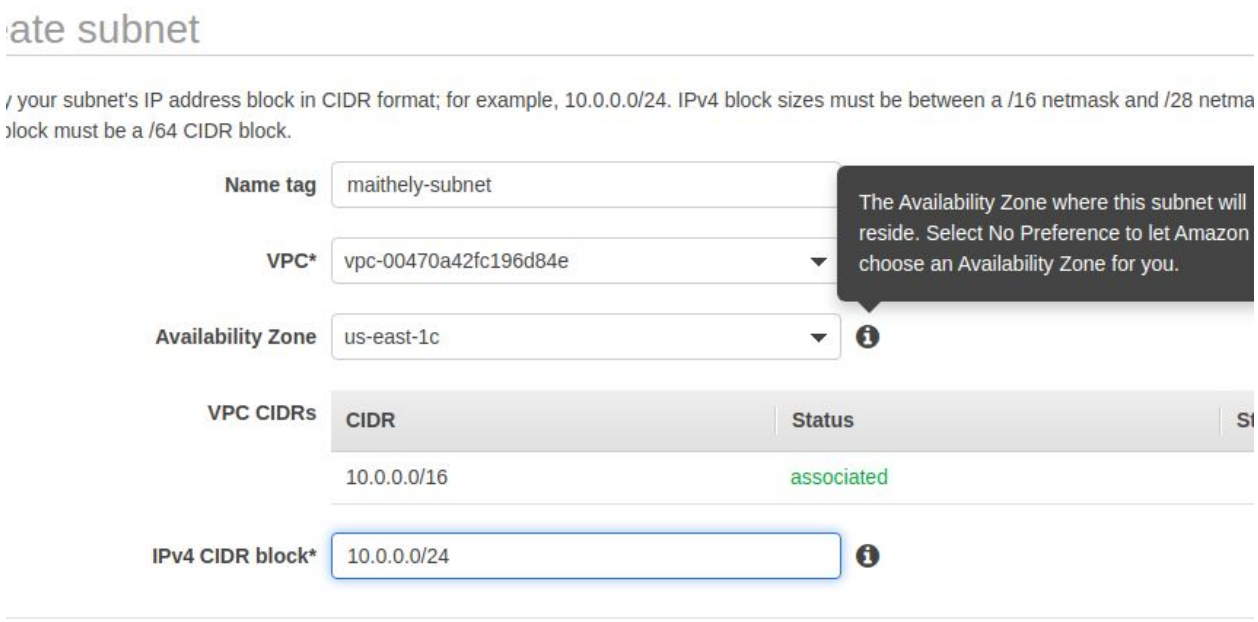
Console password* ○ Autogenerated password
● Custom password

* Required

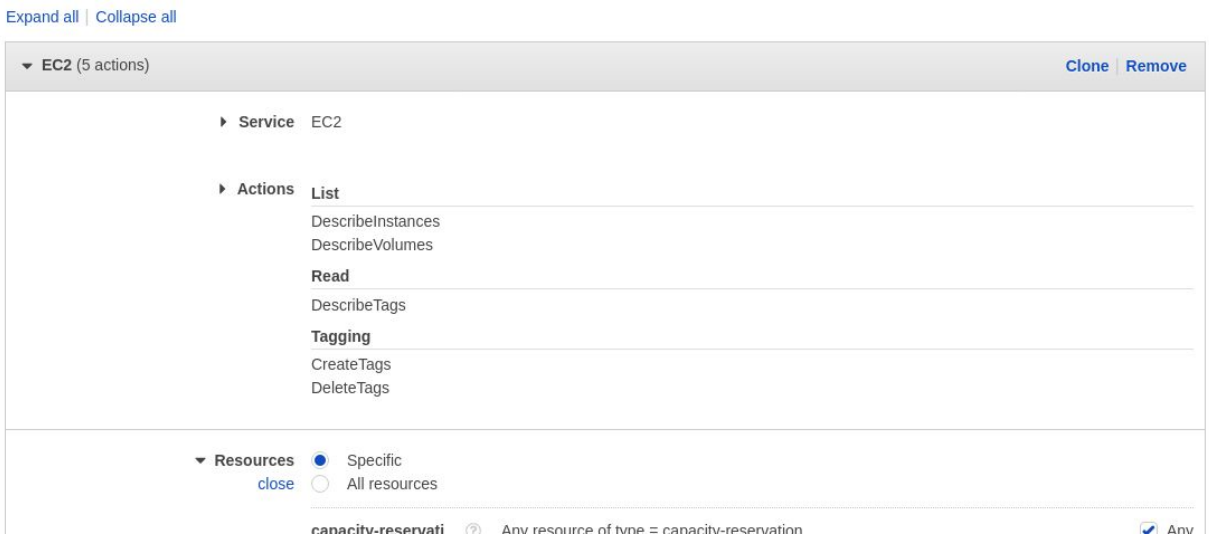
Cancel Next: Permissions

Add the user:BOB to the “Developers” group

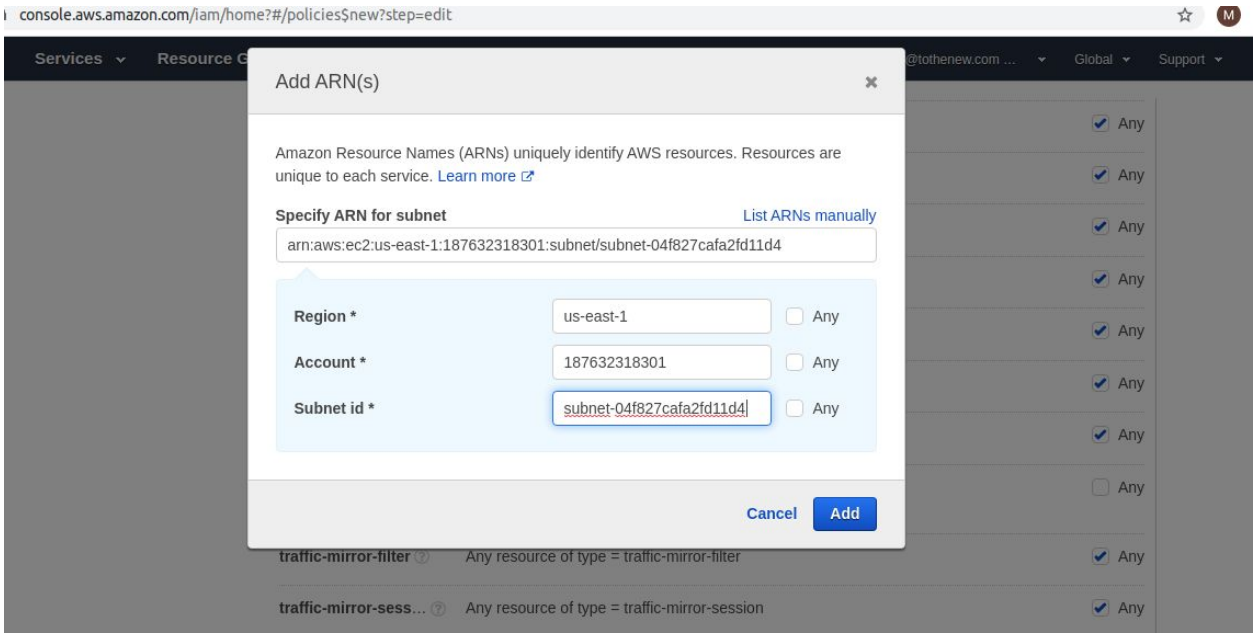
Now create a subnet which is going to get attached to the policy



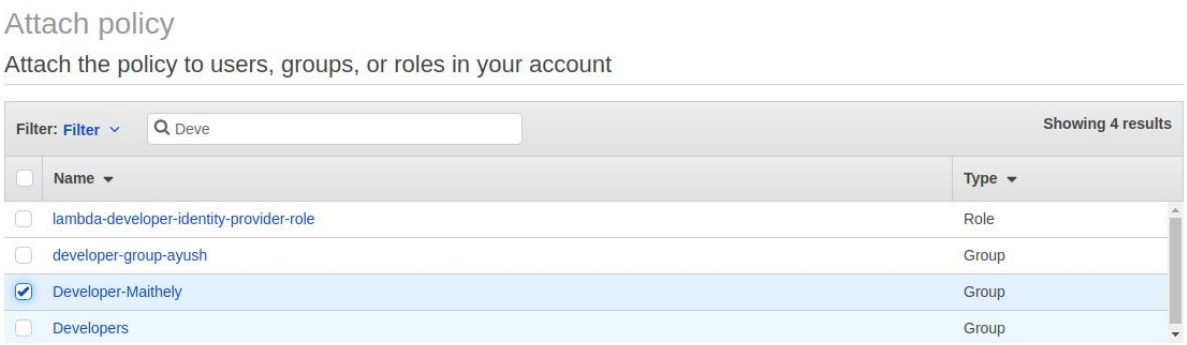
Now create a policy



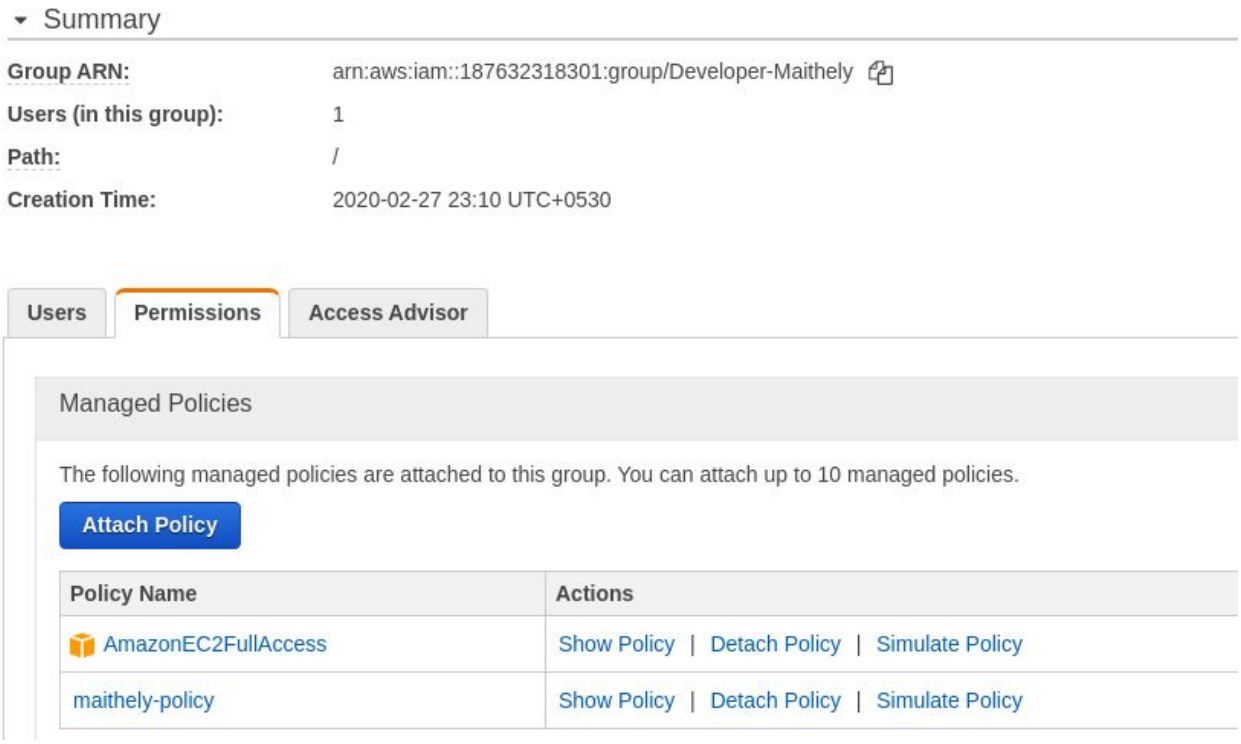
In that policy you have to add ARN for that specified subnet



After the policy has been created, you have to attach this policy to the Developers group



Now you can see that in Developers group that the policy has been attached



6. Identify the unused IAM users/credentials using AWS CLI.

For seeing the unused password through AWS cli:

Lists the IAM users that have the specified path prefix. If no path prefix is specified, the operation returns all users in the AWS account. If there are none, the operation returns an empty list.

```
maithely@maithely:~$ aws iam list-users
{
    "Users": [
        {
            "Path": "/",
            "UserName": "abhishek.chauhan1@tothenew.com",
            "UserId": "AIDASXL6B65OQ4RMZ427Z",
            "Arn": "arn:aws:iam::187632318301:user/abhishek.chauhan1@tothenew.com",
            "CreateDate": "2020-02-19T11:03:23Z",
            "PasswordLastUsed": "2020-02-28T05:03:08Z"
        },
        {
            "Path": "/",
            "UserName": "aditya.upadhyay@tothenew.com",
            "UserId": "AIDASXL6B65OYD7UUCZUJ",
            "Arn": "arn:aws:iam::187632318301:user/aditya.upadhyay@tothenew.com",
            "CreateDate": "2020-02-19T11:03:25Z",
            "PasswordLastUsed": "2020-02-28T04:46:17Z"
        },
        {
            "Path": "/",
```

```
 {
     "Path": "/",
     "UserName": "Gargi_Alice",
     "UserId": "AIDASXL6B65OWNUVPT664",
     "Arn": "arn:aws:iam::187632318301:user/Gargi_Alice",
     "CreateDate": "2020-02-27T10:45:35Z"
 },
 {
     "Path": "/",
     "UserName": "garima.dabral@tothenew.com",
     "UserId": "AIDASXL6B65OZMUKAFYLP",
     "Arn": "arn:aws:iam::187632318301:user/garima.dabral@tothenew.com",
     "CreateDate": "2020-02-19T11:03:44Z"
 },
 {
```

```
maithely@maithely:~$ aws iam list-users |jq '.Users[]| select(.PasswordLastUsed==null) |.UserName '
"Alice"
"Alice-Chhavi"
"alice-maithely"
"asusumeuser"
"Bob"
"Bob-maithely"
"bobpooja"
"CloudCheckr"
"dikshaTomar"
"Gargi_Alice"
"garima.dabral@tothenew.com"
"HAWK2.0-user"
"poojaalice"
"raghu.sharma@tothenew.com"
"s3pooja"
"vivek.yadav1@tothenew.com"
maithely@maithely:~$
```

For seeing unused access keys:

Returns information about the access key IDs associated with the specified IAM user. If there is none, the operation returns an empty list.

```
maithely@maithely:~$ aws iam list-access-keys
{
    "AccessKeyMetadata": [
        {
            "UserName": "maithely.sharma@tothenew.com",
            "AccessKeyId": "AKIASXL6B65OXQFOJAKS",
            "Status": "Active",
            "CreateDate": "2020-02-27T10:35:52Z"
        }
    ]
}
maithely@maithely:~$
```

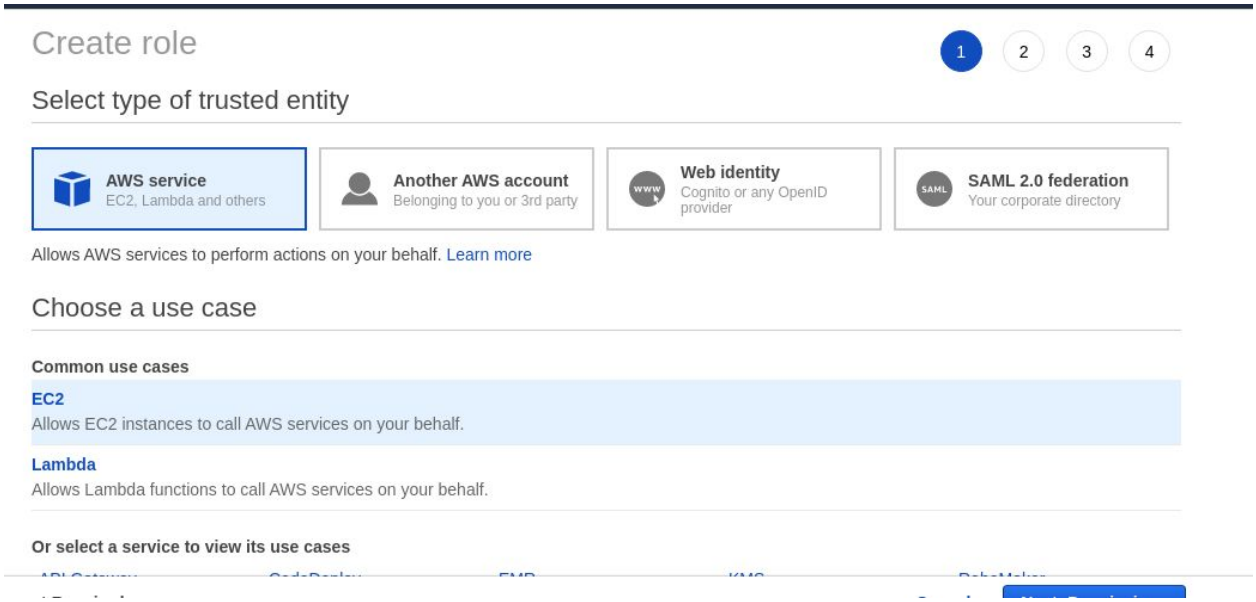
```
maithely@maithely:~$ aws iam get-access-key-last-used --access-key-id AKIASXL6B65OXQFOJAKS
{
    "UserName": "maithely.sharma@tothenew.com",
    "AccessKeyLastUsed": {
        "LastUsedDate": "2020-02-28T05:38:00Z",
        "ServiceName": "iam",
        "Region": "us-east-1"
    }
}
maithely@maithely:~$
```

7. Identify all the instances having the tag key-value "backup=true" using AWS CLI.

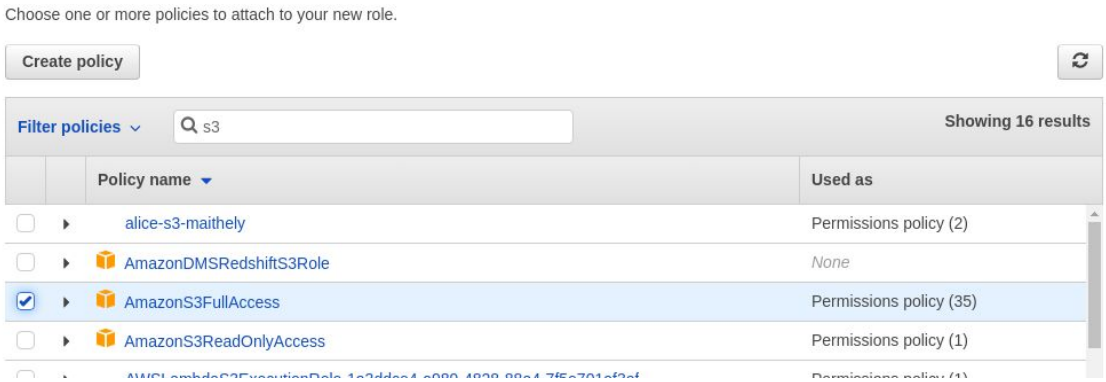
```
maithely@maithely:~$ aws ec2 describe-instances --filters "Name=tag:backup,Values=true"
{
    "Reservations": []
}
maithely@maithely:~$
```

8. An EC2 Instance hosts a Java-based application that accesses an s3 bucket. This EC2 Instance is currently serving production users. Create the role and assign the role to EC2 instance.

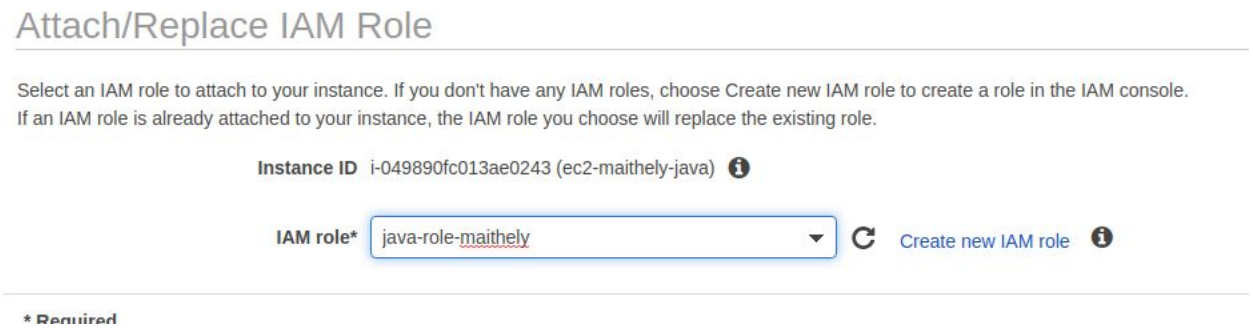
Create a role with ec2 service



Now give S3 permission



Now create an instance and attach it to role



Now to check this

```
maithely@maithely:~$ ssh -i "maithelykeypair.pem" ubuntu@ec2-52-207-215-48.compute-1.amazonaws.com
Warning: Identity file maithelykeypair.pem not accessible: No such file or directory.
The authenticity of host 'ec2-52-207-215-48.compute-1.amazonaws.com (52.207.215.48)' can't be establ
ECDSA key fingerprint is SHA256:GumXvaCiY/WqkXUc+g2KxYBZ7eMyvjPiiXto98k39P0.
Are you sure you want to continue connecting (yes/no)? YES
Warning: Permanently added 'ec2-52-207-215-48.compute-1.amazonaws.com,52.207.215.48' (ECDSA) to the
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1057-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Fri Feb 28 06:46:23 UTC 2020

  System load:  0.0               Processes:           88
  Usage of /:   13.6% of 7.69GB   Users logged in:     0
  Memory usage: 15%               IP address for eth0: 172.31.104.188
  Swap usage:   0%

0 packages can be updated.
0 updates are security updates.
```

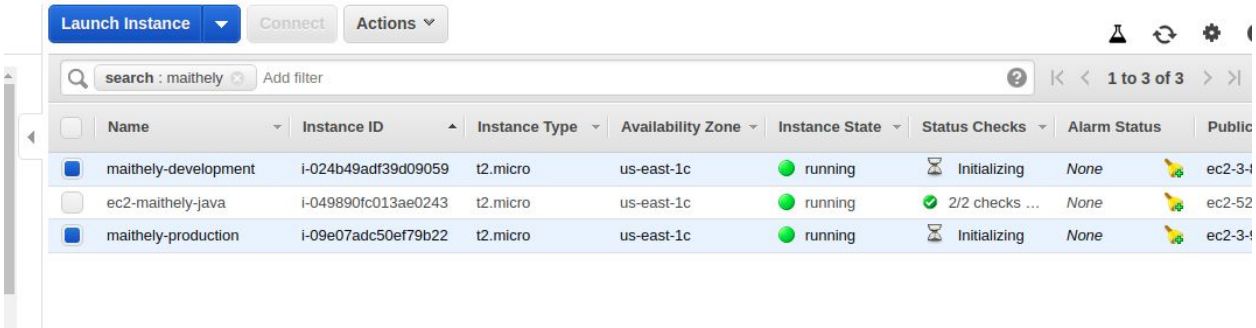
```
ubuntu@ip-172-31-104-188:~$ aws s3 ls
2019-06-26 12:11:08 0testuser11
2018-04-20 16:59:22 187632318301-awsmacietrail-dataevent
2019-04-02 10:11:33 7testdemo
2019-03-11 04:51:59 abhimanyucftemplate
2019-03-04 06:55:23 abneesh1
2019-03-11 11:00:41 adityamun007
2020-02-26 16:26:29 akshaybuck1
2020-02-27 08:55:25 aman-khandelwal-1
2019-03-07 09:40:48 anmol-bootcamp19
2019-03-08 00:25:58 avcabc
2017-09-07 03:41:42 aws-codestar-us-east-1-187632318301
2017-09-07 04:23:01 aws-codestar-us-east-1-187632318301-codestartest2-app
2017-09-07 04:23:07 aws-codestar-us-east-1-187632318301-codestartest2-pipe
2017-09-07 03:41:48 aws-codestar-us-east-1-187632318301-codestarttest-pipe
2019-06-26 05:39:55 aws-lambda-trigger-ronozor
2020-02-28 03:56:49 ayush-public-bucket
2020-02-25 07:02:11 baban-123
2018-02-14 12:28:43 cf-templates-71mx96ojlvv5-us-east-1
2019-03-27 15:57:27 cfront1
2020-02-26 11:51:54 chirag-bucket-2
2020-02-26 11:46:43 chirag-bucket1
2019-03-27 20:34:52 cloudfront8
2020-02-25 10:59:18 copy-test-delete
2020-02-26 08:17:11 diksha.static.website
2019-06-26 10:49:10 ec2-access-bucket
2019-03-28 05:23:51 ec2-ttn
2019-03-01 07:28:00 ekanshbucket
2019-03-14 10:29:37 elasticbeanstalk-us-east-1-187632318301
2016-10-17 07:46:10 elasticbeanstalk-us-west-2-187632318301
2017-10-06 09:11:17 geekcombat-ttn
2020-02-27 15:22:31 kaushubucket
2019-06-25 05:48:05 mynewtrialbucket
```

9. You have both production and development based instances running on your VPC. It is required to ensure that people responsible for the development instances do not have access to work on production instances for better security. Define the tags on the test and production servers and add a condition to the IAMPolicy which allows access to specific tags.

We have create two instances in the default VPC:

1)maithely-production

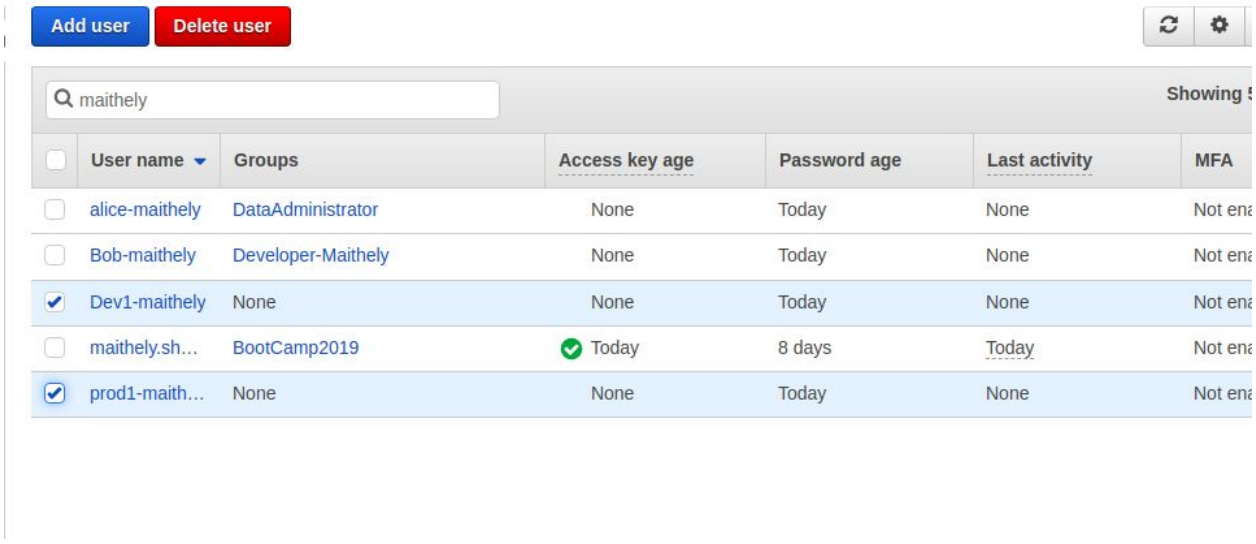
2)maithely-development



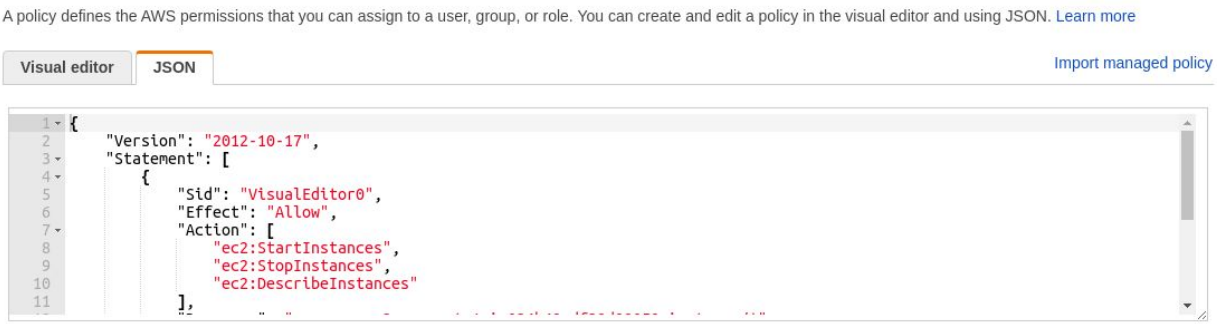
Now create 2 users :

1)Dev1-maithely

2)prod1-maithely



Now create a policy for development server



Visual editor | JSON | Import managed policy

```
            ],
            "Resource": "arn:aws:ec2:us-east-1:i-024b49adf39d09059:instance/*",
            "Condition": {
                "StringEquals": {
                    "ec2:ResourceTag/Name": "maithelydevelopment",
                    "aws:PrincipalTag/Name": "Dev1-maithely"
                }
            }
        }
    ]
}
```

And similarly for production server

10. Create a policy for allowing users to set or rotate their credentials, such as their console password, their programmatic access keys, and their MFA devices.

Create a policy that has all these actions

Service IAM

Actions

List

ListAccessKeys
ListMFADevices
ListPoliciesGrantingServiceAccess
ListVirtualMFADevices

Read

GenerateOrganizationsAccessReport
GenerateServiceLastAccessedDetails
GetAccessKeyLastUsed
GetAccountPasswordPolicy
GetOrganizationsAccessReport
GetServiceLastAccessedDetails
GetServiceLastAccessedDetailsWithEntities

Write

ChangePassword
CreateAccessKey
CreateVirtualMFADevice
DeactivateMFADevice
DeleteAccessKey
DeleteVirtualMFADevice
EnableMFADevice
PassRole
ResyncMFADevice
UpdateAccessKey
UpdateAccountPasswordPolicy

Permissions management

DeleteAccountPasswordPolicy

Resources Specific