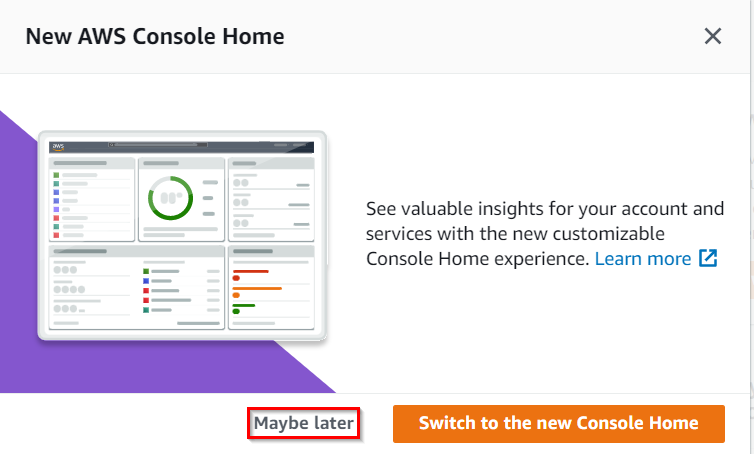
**Lab Steps**

Task 1: Sign in to AWS Management Console

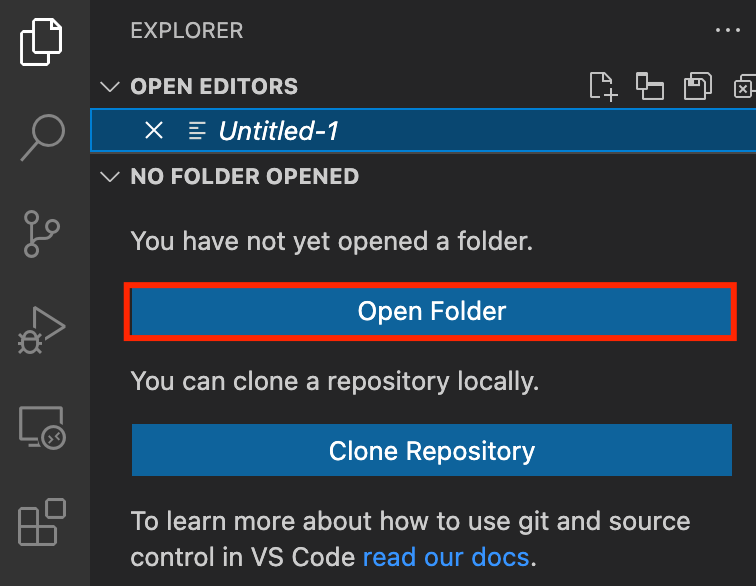
1. Click on the  button, and you will get redirected to AWS Console in a new browser tab.
2. On the AWS sign-in page,
   * Leave the Account ID as default. Never edit/remove the 12 digit Account ID present in the AWS Console. otherwise, you cannot proceed with the lab.
   * Now copy your **User Name** and **Password** in the Lab Console to the **IAM Username and Password** in AWS Console and click on the **Sign in** button.
3. Once Signed In to the AWS Management Console, Make the default AWS Region as **US East (N. Virginia) us-east-1.**
4. Select Maybe later in New AWS Console Home page pop-up.



**Note:** If you face any issues, please go through [**FAQs and Troubleshooting for Labs**](https://www.whizlabs.com/labs/support-document/faqs-and-troubleshooting).

Task 2: Setup Visual Studio Code

1. Open the visual studio code.
2. If you have already installed and using Visual studio code, open a new window.
3. A new window will open a new file and release notes page (only if you have installed or updated Visual Studio Code recently). Close the Release notes tab.
4. Open Terminal by selecting View from the Menu bar and choose Terminal.
5. It may take up to 2 minutes to open the terminal window.
6. Once the terminal is ready, let us navigate to the Desktop.
   * cd Desktop
7. Create a new folder by running the below command.
   * mkdir task\_10001\_ec2
8. Change your present working directory to use the newly created folder by running the below command:
   * cd task\_10001\_ec2
9. Get the location of the present working directory by running the below command:
   * pwd
10. Note down the location, as you will open the same in the next steps.
11. Now click on the first icon Explorer present on the left sidebar.
12. Click on the button called Open folder and navigate to the location of folder **task\_10001\_ec2**.



1. (Optional) Click on Authorize button for allowing Visual Studio Code to use the task\_10001\_ec2 folder. This will only be asked when you have been using Visual Studio code for a while as you are allowing a new folder to be accessed by VSC.
2. Visual Studio Code is now ready to use.

Task 3: Create a variables file

In this task, you will create variable files where you will declare all the global variables with a short description and a default value.

1. To create a variable file, expand the folder **task\_10001\_ec2** and click on the **New** **File** icon to add the file.
2. Name the file as **variables.tf** and press **Enter** to save it.
3. **Note:** Don't change the location of the new file, keep it default, i.e. inside the **task\_10001\_ec2** folder**.**
4. Paste the below contents in **variables.tf** file.

|  |
| --- |
| variable "access\_key" {  description = "Access key to AWS console"  }  variable "secret\_key" {  description = "Secret key to AWS console"  }  variable "region" {  description = "Region of AWS VPC"  } |

1. In the above content, you are declaring a variable called, access\_key, secret\_key, and region with a short description of all 3.
2. After pasting the above contents, save the file by pressing **ctrl + S**.
3. Now expand the folder **task\_10001\_ec2** and click on the **New** **File** icon to add the file.
4. Name the file as **terraform.tfvars** and press **Enter** to save it.
5. Paste the below content into the **terraform.tfvars** file.

|  |
| --- |
| region = "us-east-1"  access\_key = "<YOUR AWS CONSOLE ACCESS ID>"  secret\_key = "<YOUR AWS CONSOLE SECRET KEY>" |

1. In the above code, you are defining the dynamic values of variables declared earlier.
2. Replace the values of access\_key and secret\_key by copying from the lab page.
3. After replacing the values of access\_key and secret\_key, save the file by pressing Ctrl + S.

Graphical user interface, text

Description automatically generated

Task 4: Create EC2 and its components in main.tf file

 In this task, you will create a **main.tf** file where you will add details of the provider and resources.

1. To create a **main.tf** file, expand the folder **task\_10001\_ec2** and click on the **New** **File** icon to add the file.
2. Name the file as **main.tf** and press **Enter** to save it.
3. Paste the below content into the **main.tf** file.

|  |
| --- |
| provider "aws" {  region = "${var.region}"  access\_key = "${var.access\_key}"  secret\_key = "${var.secret\_key}"  } |

1. In the above code, you are defining the provider as aws.
2. Next, we want to tell Terraform to create a Security Group within AWS EC2, and populate it with rules to allow traffic on specific ports. In our case, we are allowing the tcp port 80 (HTTP).
3. We also want to make sure the instance can connect outbound on any port, so we’re including an egress section below as well.
4. Paste the below content into the **main.tf** file after the provider.

|  |
| --- |
| resource "aws\_security\_group" "web-server" {  name = "web-server"  description = "Allow incoming HTTP Connections"    ingress {  from\_port = 80  to\_port = 80  protocol = "tcp"  cidr\_blocks = ["0.0.0.0/0"]  }  egress {  from\_port = 0  to\_port = 0  protocol = "-1"  cidr\_blocks = ["0.0.0.0/0"]  }  } |

1. Finally, to complete the main.tf file, let's add another set of code after security group creation where you will create an EC2 instance.

|  |
| --- |
| resource "aws\_instance" "web-server" {  ami = "ami-02e136e904f3da870"  instance\_type = "t2.micro"  key\_name = "whizlabs-key"  security\_groups = ["${aws\_security\_group.web-server.name}"]    user\_data = <<-EOF  #!/bin/bash  sudo su  yum update -y  yum install httpd -y  systemctl start httpd  systemctl enable httpd  echo "<html><h1> Welcome to Whizlabs. Happy Learning... </h1></html>" >> /var/www/html/index.html  EOF    tags = {  Name = "web\_instance"  }  } |

1. In the above code, we have defined the Amazon Linux 2 AMI. The AMI ID mentioned above is for the us-east-1 region.
2. We have mentioned the resource which SSH key to use (which is already present in your AWS EC2 console). The security group ID is automatically taken by using the variable which will be set during the creation process.
3. We have added the user data to install the apache server.
4. We have provided tags for the EC2 instance.
5. Save the file by pressing Ctrl + S.

Task 5: Create an Output file

In this task, you will create an **output.tf** file where you will add details of the provider and resources.

1. To create an **output.tf** file, expand the folder **task\_10001\_ec2** and click on the **New** **File** icon to add the file.
2. Name the file as **output.tf** and press **Enter** to save it.
3. Paste the below content into the **output.tf** file.

|  |
| --- |
| output "web\_instance\_ip" {  value = aws\_instance.web-server.public\_ip  } |

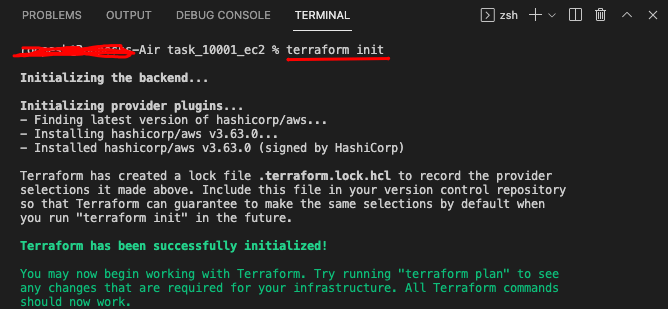
1. In the above code, we will extract the Public IP of the created EC2 instance and display it once the instance is created.

Task 6: Confirm the installation of Terraform by checking the version

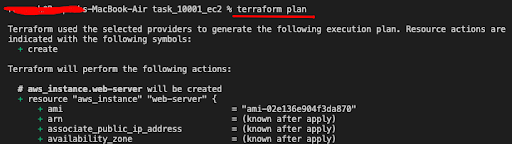
1. In the Visual Studio Code, open Terminal by selecting **View** from the Menu bar and choose **Terminal**.
2. If you are not in the newly created folder change your present working directory by running the below command.
   * cd task\_10001\_ec2
3. To confirm the installation of Terraform, run the below command to check the version:
   * terraform version
4. If you are getting output as command not found: terraform, this means that terraform is not installed on your system, To install terraform follow the official guide link provided in the Prerequisite section above.

Task 7: Apply terraform configurations

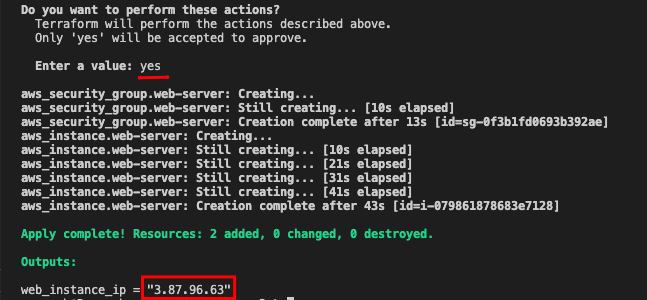
1. Initialize Terraform by running the below command,
   * terraform init
2. **Note:** terraform init will check for all the plugin dependencies and download them if required, this will be used for creating a deployment plan.



1. To generate the action plans run the below command,
   * terraform plan
2. Review the whole generated plan.



1. To create all the resources declared in main.tf configuration file, run the below command,
   * terraform apply
2. You will be able to see the resources which will be created, approve the creation of all the resources by entering **yes**.
3. It may take up to 2 minutes for the terraform apply command to create the resources.
4. Id’s of all the resources created by terraform will be visible there.
5. The output i.e Public IP of the EC2 instance is extracted and displayed. Copy the Public IP.



1. Optionally, you can note down the IDs of all the resources.

Task 8: Check the HTML page

1. In the terraform file, we have used user data to create an apache server and publish a HTML page.
2. Open a new tab in the browser and paste the Public IP of the created EC2 instance.
3. The HTML content created in the user data is displayed in the page.

Graphical user interface

Description automatically generated with medium confidence

1. We can now say that the EC2 instance has been created with the apache server and the HTML content is published properly.
2. We can also confirm that the security group is allowing HTTP incoming requests.

Task 9: Check the resources in AWS Console?

1. Make sure you are in the **US East (N. Virginia) us-east-1** Region.
2. Navigate to **EC2** by clicking on  **Services** on the top, then click on **EC2** in the **Compute** section.
3. Navigate to **Security Groups** under **Network & Security** on the left panel.
4. You will be able to see the security group with the name **web-server** which we have created in the terraform.

Graphical user interface, application

Description automatically generated

1. Navigate to **Instances** under **Instances** on the left panel**.**
2. You can see the instance created. You can check the configurations that we applied in the terraform file like key pair, security group, instance type, etc.

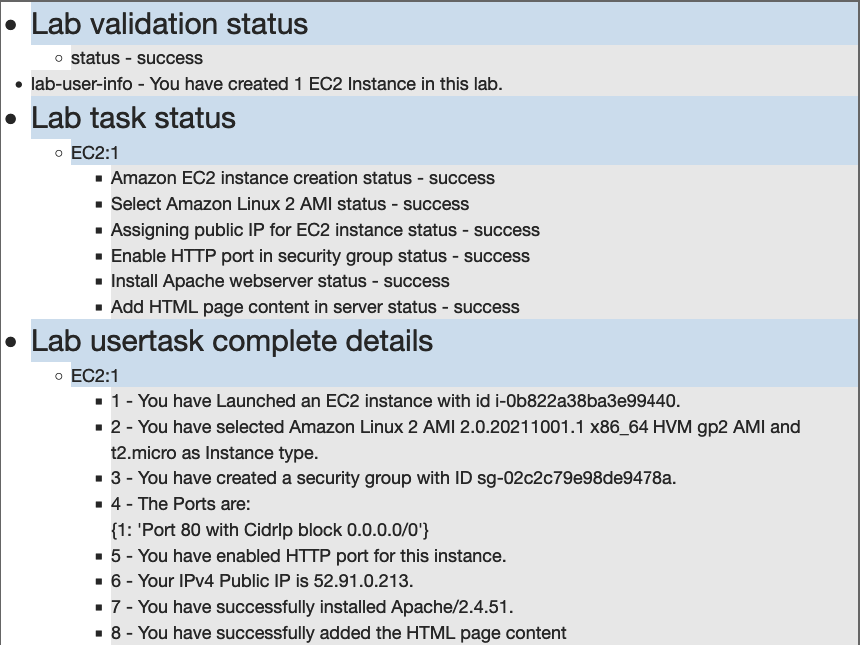
Graphical user interface, text, application

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Task 10: Validation of the lab

1. Once the lab steps are completed, please click on the A picture containing graphical user interface

   Description automatically generated button on the left side panel.
2. This will validate the resources in the AWS account and displays whether you have completed this lab successfully or not.
3. Sample output :



Task 11: Delete AWS Resources

1. To delete the resources, open Terminal again.
2. Run the below command to delete all the resources.
   * terraform destroy
3. Enter **yes** to confirm the deletion.

Graphical user interface, text

Description automatically generated

1. You can verify the deletion of resources in the AWS Console.

Graphical user interface, text, application

Description automatically generated

**Completion and Conclusion**

* You have set up the Visual Studio Code editor.
* You have created variables.tf and terraform.tfvars files.
* You have created a main.tf file.
* You have executed the terraform configuration commands to create the resources.
* You have checked all the resources created by opening the Console.
* You have deleted all the resources.

**End Lab**

1. Sign out of AWS Account.
2. You have successfully completed the lab.
3. Once you have completed the steps, click on  from your whizlabs dashboard.