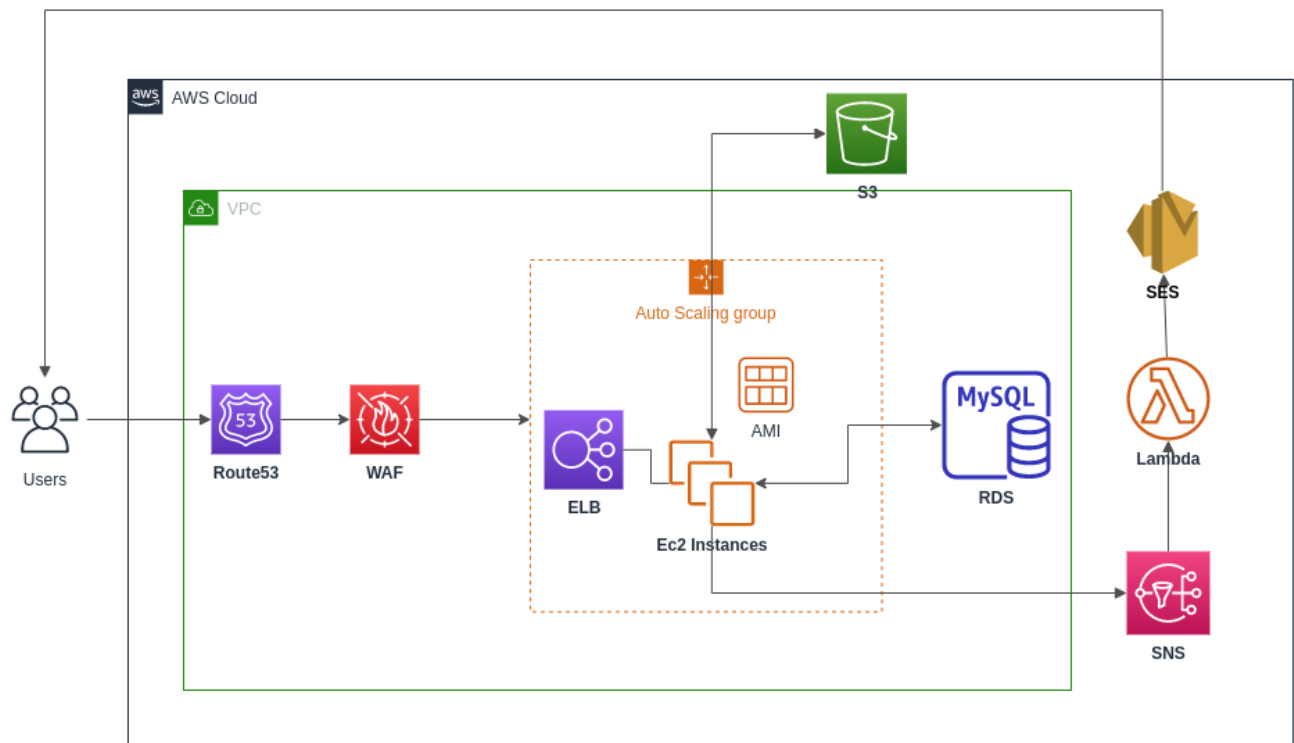
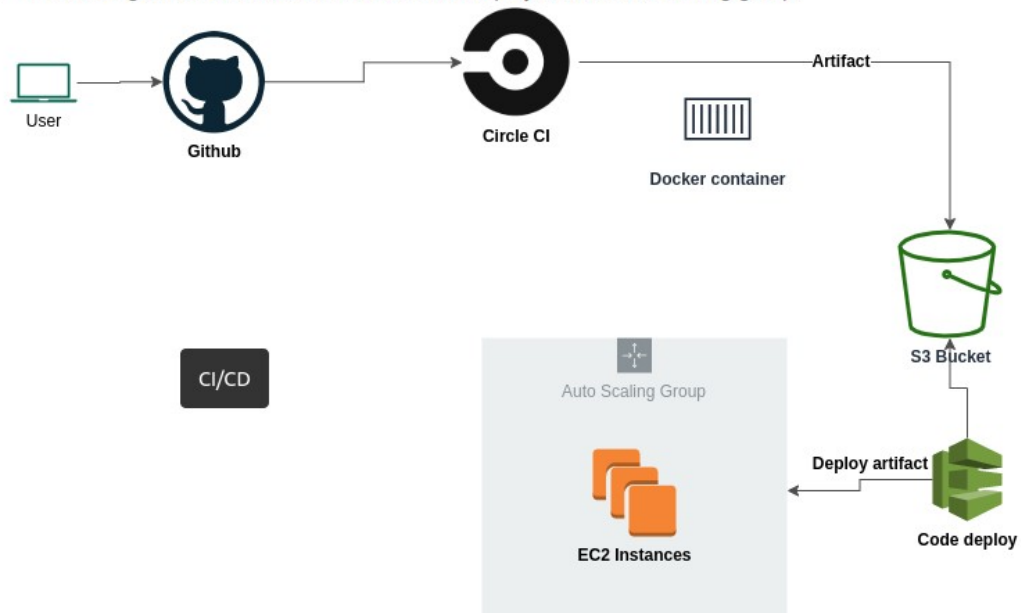


Architecture Diagram for Deploying Web Application using AWS

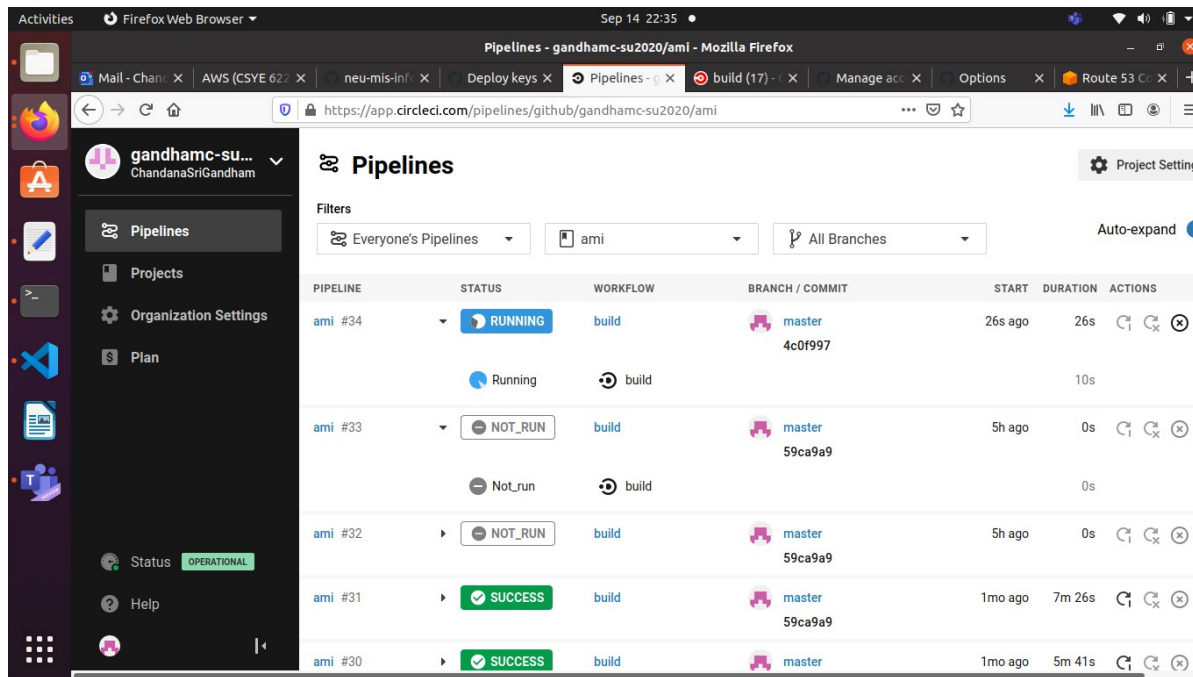


CI/CD

- Created a webhook from github to CircleCI
- Bootstrapped the docker container in CircleCI to run the unit tests, integration tests and generate the artifact
- The artifact generated is stored S3 bucket and deployed to an autoscaling group.



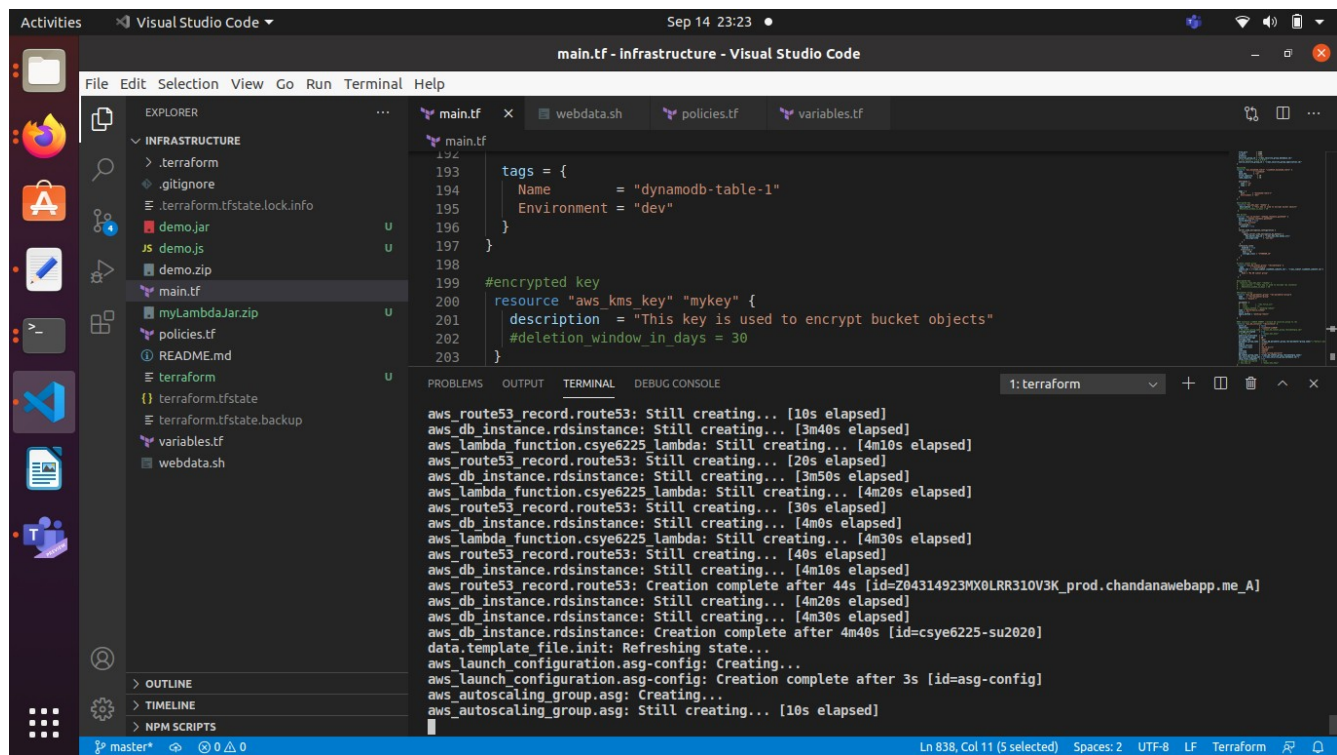
Building the Amazon Machine Image



The screenshot shows the CircleCI Pipelines interface for the 'ami' project. The left sidebar contains navigation links for Pipelines, Projects, Organization Settings, and Plan. The main area displays a table of pipelines with columns for Pipeline, Status, Workflow, Branch / Commit, Start, Duration, and Actions.

PIPELINE	STATUS	WORKFLOW	BRANCH / COMMIT	START	DURATION	ACTIONS
ami #34	RUNNING	build	master 4c0f997	26s ago	26s	[Refresh] [Cancel] [Details]
	Running	build			10s	
ami #33	NOT_RUN	build	master 59ca9a9	5h ago	0s	[Refresh] [Cancel] [Details]
	Not_run	build			0s	
ami #32	NOT_RUN	build	master 59ca9a9	5h ago	0s	[Refresh] [Cancel] [Details]
ami #31	SUCCESS	build	master 59ca9a9	1mo ago	7m 26s	[Refresh] [Cancel] [Details]
ami #30	SUCCESS	build	master	1mo ago	5m 41s	[Refresh] [Cancel] [Details]

Building the AWS Infrastructure needed using Terraform



The screenshot shows the Visual Studio Code editor with the Terraform configuration files (main.tf, webdata.sh, policies.tf, variables.tf) open. The main.tf file contains the following code:

```
tags = {
  Name = "dynamodb-table-1"
  Environment = "dev"
}

#encrypted key
resource "aws_kms_key" "mykey" {
  description = "This key is used to encrypt bucket objects"
  #deletion_window_in_days = 30
}
```

The terminal output shows the Terraform apply command being executed, displaying the progress of creating various AWS resources:

```
aws_route53_record.route53: Still creating... [10s elapsed]
aws_db_instance.rdsinstance: Still creating... [3m40s elapsed]
aws_lambda_function.csye6225_lambda: Still creating... [4m10s elapsed]
aws_route53_record.route53: Still creating... [20s elapsed]
aws_db_instance.rdsinstance: Still creating... [3m50s elapsed]
aws_lambda_function.csye6225_lambda: Still creating... [4m20s elapsed]
aws_route53_record.route53: Still creating... [30s elapsed]
aws_db_instance.rdsinstance: Still creating... [4m0s elapsed]
aws_lambda_function.csye6225_lambda: Still creating... [4m30s elapsed]
aws_route53_record.route53: Still creating... [40s elapsed]
aws_db_instance.rdsinstance: Still creating... [4m10s elapsed]
aws_route53_record.route53: Creation complete after 44s [id=Z04314923MX0LRR310V3K_prod.chandanawebapp.me_A]
aws_db_instance.rdsinstance: Still creating... [4m20s elapsed]
aws_db_instance.rdsinstance: Still creating... [4m30s elapsed]
aws_db_instance.rdsinstance: Creation complete after 4m40s [id=csye6225-su2020]
data.template_file.init: Refreshing state...
aws_launch_configuration.asg-config: Creating...
aws_launch_configuration.asg-config: Creation complete after 3s [id=asg-config]
aws_autoscaling_group.asg: Creating...
aws_autoscaling_group.asg: Still creating... [10s elapsed]
```

SShing to a Running EC2 Instance to deploy the executable file

```
ubuntu@ip-10-0-0-246: ~
"queued_at" : "2020-09-15T03:24:30.029Z",
"canceled" : false,
"author_email" : null
chandana@chandana-HP-Pavilion-Notebook:~$ ssh -i ~/.ssh/awsInstance ubuntu@54.234.143.54
The authenticity of host '54.234.143.54 (54.234.143.54)' can't be established.
ECDSA key fingerprint is SHA256:hsY/SeY3vknaVrHG+jqvutNSkJ6mwgUt+GqgkmnGNs4.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '54.234.143.54' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.4 LTS (GNU/Linux 4.15.0-1065-aws x86_64)

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

System information as of Tue Sep 15 06:13:07 UTC 2020

System load:  0.94           Processes:           95
Usage of /:   11.6% of 19.32GB Users logged in:    0
Memory usage: 21%           IP address for eth0: 10.0.0.246
Swap usage:   0%

109 packages can be updated.
65 updates are security updates.

ubuntu@ip-10-0-0-246:~$ printenv
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=00:su=37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*.t
```

A Few Screenshots Of the Deployed Ecommerce Website

Since I do not have a domain name currently available, I used the EC2 instance's IPV4 address to host my site.

Tech Stack used to Develop the Website is

Front End: Angular, JavaScript, Bootstrap, HTML, CSS
Back End: JAVA, Spring Boot, Spring JPA, Spring Hibernate
Database: Amazon RDS, MySQL
Others: StatsD, Microservices, REST API's, Junit Testing
Load Testing Done using JMeter.

