**Module 1**

**Topics to be covered:**

* Userdata in ec2 instance
* aws s3 cli
* Public and Private keys concept
* KMS encryption
* Server access log logging
* Cross origin resource sharing
* API calls
* Concept of API gateway
* Route53 basics
* Cloudwatch alarm , metrics
* SNS Topic

Best practice Exercises:

**Exercise1**:

1. Create a VPC with local IP range (192.168.0.0/16) and 2 subnets, Configure Internet gateway and NAT gateway
2. Attach it to a subnet
3. Create a EC2 machine with Amazon linux 2 AMI in free tier instance type with Public IP in one of the subnet
4. Attach Data disk to the VM 20 GB.
5. Restrict access to the EC2 using Security group and allow only 22 and 80 Port.
6. Try to run any of the linux command or aws cli commands in the user data section and check whether that command got executed or not For example: touch command or and creating a directory or any aws cli command

**Exercise2**:

1. Create S3 bucket à <https://docs.aws.amazon.com/AmazonS3/latest/userguide/GetStartedWithS3.html>
2. Go through à <https://docs.aws.amazon.com/kms/latest/developerguide/overview.html>
3. Create a KMS key à <https://docs.aws.amazon.com/kms/latest/developerguide/create-keys.html#create-symmetric-cmk>
4. Enable encryption in S3 bucket à [Enabling Amazon S3 default bucket encryption - Amazon Simple Storage Service](https://docs.aws.amazon.com/AmazonS3/latest/userguide/default-bucket-encryption.html)

**Exercise3**:

1. S3à Enable static web hosting à <https://docs.aws.amazon.com/AmazonS3/latest/userguide/EnableWebsiteHosting.html>

**Exercise4:**

1. Try out to tutorials of EC2 instances à <https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ec2-tutorials.html>

**Module 2**

**Topics to be covered:**

* Version control system
* GIT
* Bitbucket
* Github
* Devops methodsà Infrastructure and Application deployment pipeline
* Phases of the pipelines
* Image repository
* Demoà Installing terraform and provisioning resources on AWS
* Demo on Branching strategies and Bitbucket tool

Best practice Exercises:

**Exercise1**:

1. Terraform setup for AWS

* Install terraformàhttps://k21academy.com/terraform-iac/terraform-installation-overview/#win
* Install awsc cliàrun on command prompt--> msiexec.exe /i <https://awscli.amazonaws.com/AWSCLIV2.msi>
* Creation resource via terraform--> <https://kumargaurav1247.medium.com/introduction-to-terraform-ec2-instance-creation-using-terraform-ec221ec630d7#:~:text=To%20actually%20create%20the%20Instance%2C%20run%20the%20terraform%20apply%20command.&text=You'll%20notice%20that%20the,to%20deploy%20the%20EC2%20Instance>.

**Exercise2**:

1. Provision AWS resources via terraform

* Create a VPC
* Create subnets
* Create EC2 instances by referring the VPC, subnets, etc by logical relations

**Exercise3**:

1. Create Cloudwatch alarms for EC2 instances eg: CPU utilizations etcà <https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/AlarmThatSendsEmail.html>
2. Create a loadbalancer, target group and listenerà <https://docs.aws.amazon.com/elasticloadbalancing/latest/application/application-load-balancers.html>

**Exercise4**:

1. Create a free Bitbucket account
2. Create a test file and push it to bitbucketà <https://bitbucket.org/product/guides/basics/four-starting-steps#step-1-put-your-code-in-bitbucket>
3. Create a free github account and create a repository
4. Create a test file and push it to Githubà <https://www.datacamp.com/community/tutorials/git-push-pull>

**Exercise5**:

1. Go through the below links and get to know the concept of Docker

PFB links for reference:

* 1. <https://docs.docker.com/>
  2. <https://registry.terraform.io/providers/hashicorp/aws/latest/docs>
  3. <https://docs.docker.com/engine/swarm/>
  4. <https://git-scm.com/doc>
  5. <https://bitbucket.org/product/guides/basics/four-starting-steps#step-1-put-your-code-in-bitbucket>
  6. <https://bitbucket.org/product?&aceid=&adposition=&adgroup=92542403735&campaign=9128560722&creative=414608950533&device=c&keyword=%2Bbitbucket&matchtype=b&network=g&placement=&ds_kids=p51241943594&ds_e=GOOGLE&ds_eid=700000001551985&ds_e1=GOOGLE&gclid=EAIaIQobChMIltP3ncfa8AIVgAaICR3dXQsdEAAYASAAEgJWIfD_BwE&gclsrc=aw.ds>
  7. <https://www.atlassian.com/git>

1. Go through Devops videos on youtube/courses and understand the terminology better.

**Module 3**

**Topics to be covered:**

1. CI/CD introduction
2. Need for devops
3. Aws Devops introduction
4. Features of Developer tools
5. Pricing for Aws developer tools
6. Deep Dive in AWS Code commit
7. Deep Dive in AWS Code Build
8. Deep Dive in AWS Code Deploy
9. Deep Dive in AWS Code pipeline
10. Access for Developer tools via IAM
11. Demo on Code Pipelines
    1. Deployment via Code Deploy
    2. Image Building via Code Build
12. Introduction To ECS Cluster
13. Creation of basic ECS cluster, Task definition, Service

**Exercise 1:**

1. Follow the steps given in the links and the subtasks/tutorials in the below link
   1. <https://docs.aws.amazon.com/codecommit/latest/userguide/getting-started-topnode.html>

**Exercise 2:**

1. Follow the steps given in the links and the subtasks/tutorials in the below link
   1. <https://docs.aws.amazon.com/codebuild/latest/userguide/getting-started.html>

**Exercise 3:**

1. Follow the steps given in the links and the subtasks/tutorials in the below link
   1. <https://docs.aws.amazon.com/codedeploy/latest/userguide/tutorials.html>

**Exercise 4:**

1. Follow the steps given in the links and the subtasks/tutorials in the below link
   1. <https://docs.aws.amazon.com/codepipeline/latest/userguide/tutorials.html>

**Module 4**

**Topics to be covered:**

1. CI/CD introduction
2. Need for devops
3. Aws Devops introduction
4. Features of Developer tools
5. Pricing for Aws developer tools
6. Deep Dive in AWS Code commit
7. Deep Dive in AWS Code Build
8. Deep Dive in AWS Code Deploy
9. Deep Dive in AWS Code pipeline
10. Access for Developer tools via IAM
11. Demo on Code Pipelines
    1. Deployment via Code Deploy
    2. Image Building via Code Build
12. Introduction To ECS Cluster
13. Creation of basic ECS cluster, Task definition, Service

**Exercise 1:**

1. Follow the steps given in the links and the subtasks/tutorials in the below link
   1. <https://docs.aws.amazon.com/codecommit/latest/userguide/getting-started-topnode.html>

**Exercise 2:**

1. Follow the steps given in the links and the subtasks/tutorials in the below link
   1. <https://docs.aws.amazon.com/codebuild/latest/userguide/getting-started.html>

**Exercise 3:**

1. Follow the steps given in the links and the subtasks/tutorials in the below link
   1. <https://docs.aws.amazon.com/codedeploy/latest/userguide/tutorials.html>

**Exercise 4:**

1. Follow the steps given in the links and the subtasks/tutorials in the below link
   1. <https://docs.aws.amazon.com/codepipeline/latest/userguide/tutorials.html>

# Please complete AWS Cloud Practitioner Essentials free course <https://www.aws.training/Details/eLearning?id=60697&refid=ps_a134p000006geyraam&trkcampaign=acq_paid_search_brand>  and Create an test account in AWS Portal using the link below and learn the basic services we discussed by creating in the test account.

<https://aws.amazon.com/premiumsupport/knowledge-center/create-and-activate-aws-account/>