Aim: To understand AWS Lambda, its workflow, various functions and create your first Lambda functions using Python / Java / Nodejs.

Theory:

AWS Lambda

A fully managed, serverless computing service where you run code without provisioning or managing servers. Lambda automatically scales your application based on the number of incoming requests or events, ensuring efficient resource utilization. You are only charged for the time your code is running, with no upfront cost, making it cost-effective for on-demand workloads.

Lambda Workflow

- **Create a Function**: Write the function code and define its handler (entry point). You can use the AWS Console, CLI, or upload a deployment package.
- **Set Event Sources**: Define how the function is triggered (e.g., when an object is uploaded to S3 or a DynamoDB table is updated).
- **Execution**: When triggered, Lambda runs your function, executes the logic, and automatically scales to handle the incoming event volume.
- **Scaling and Concurrency**: Lambda scales automatically by launching more instances of the function to handle simultaneous invocations. There are also options for configuring **reserved concurrency** to manage traffic.
- **Monitoring and Logging**: Lambda integrates with Amazon CloudWatch for logging and monitoring. Logs for each invocation are sent to CloudWatch, allowing you to track performance and troubleshoot errors.

AWS Lambda Functions

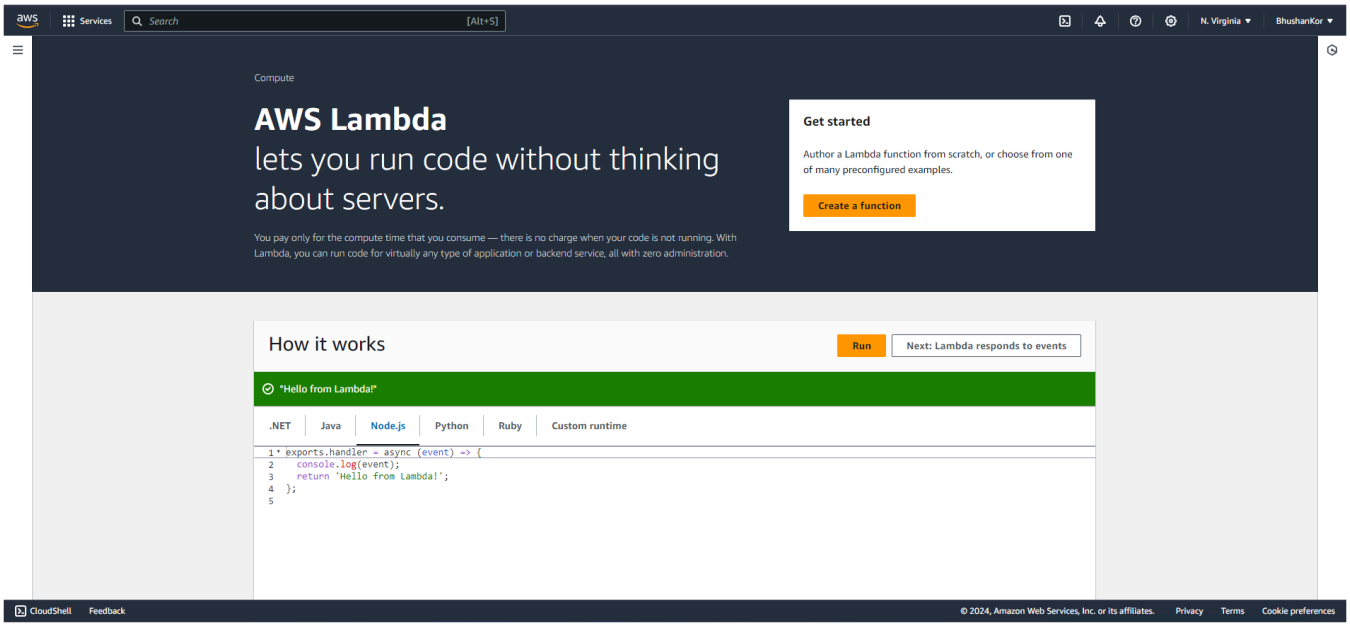
- **Python**: Great for quick development with its rich standard library and support for lightweight tasks.
- **Java**: Typically used for more complex, compute-intensive tasks. While it's robust, cold start times can be higher.
- **Node.js**: Excellent for I/O-bound tasks like handling APIs or streaming data, with fast startup times and efficient memory usage.

Prerequisites: AWS Personal/Academy Account

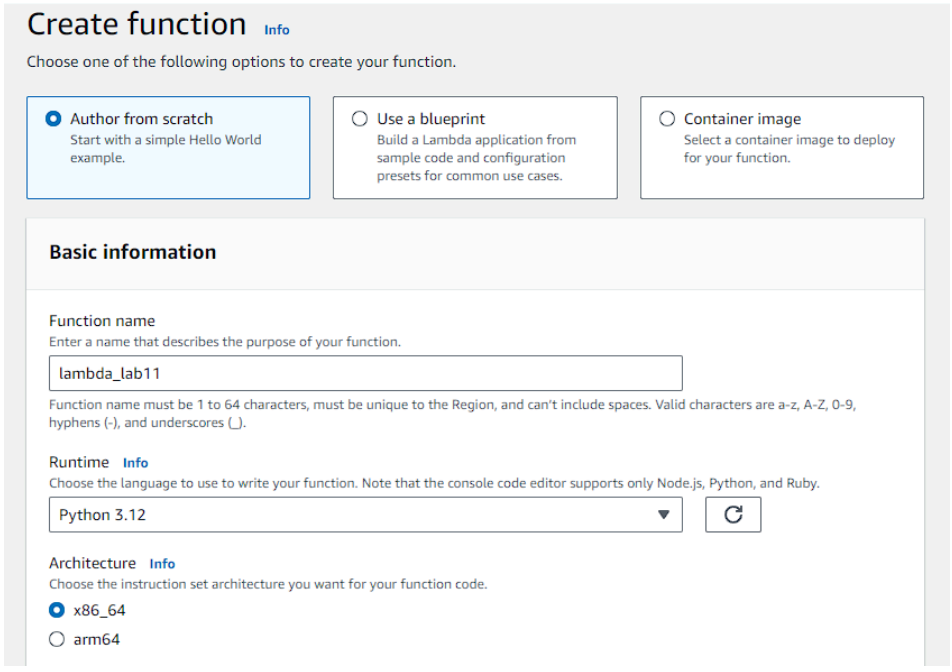
Brijesh Sharma **Roll No. 48** **Div: D15C**

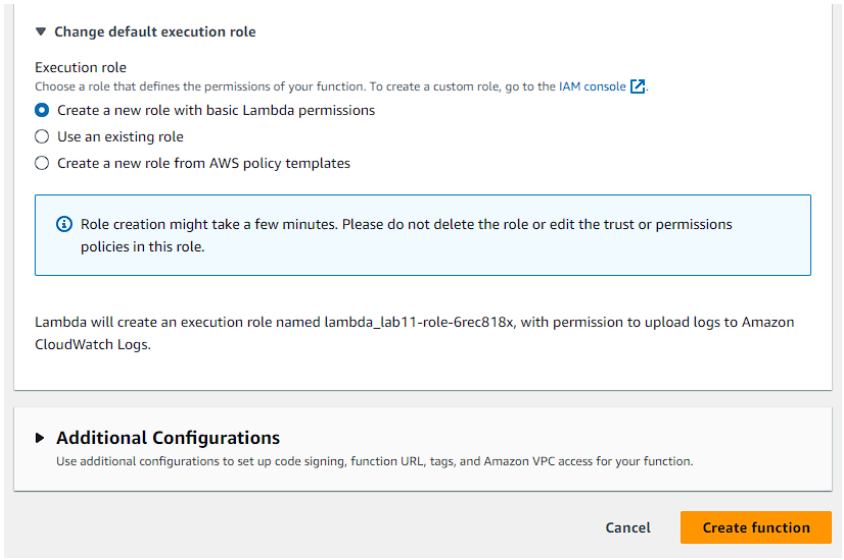
Steps To create the lambda function:

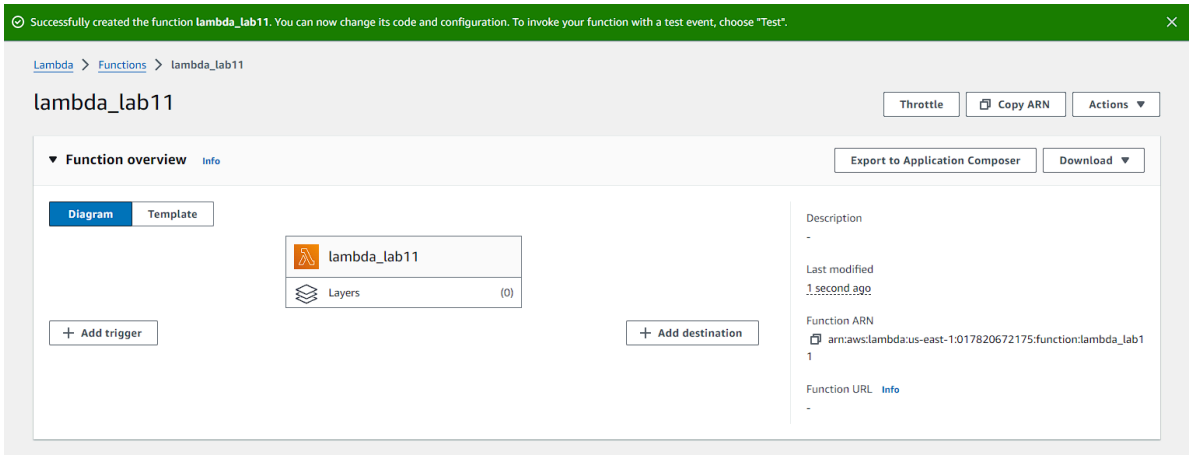
Step 1: Login to your AWS Personal/Academy Accout.Open lambda andclick on create function button.

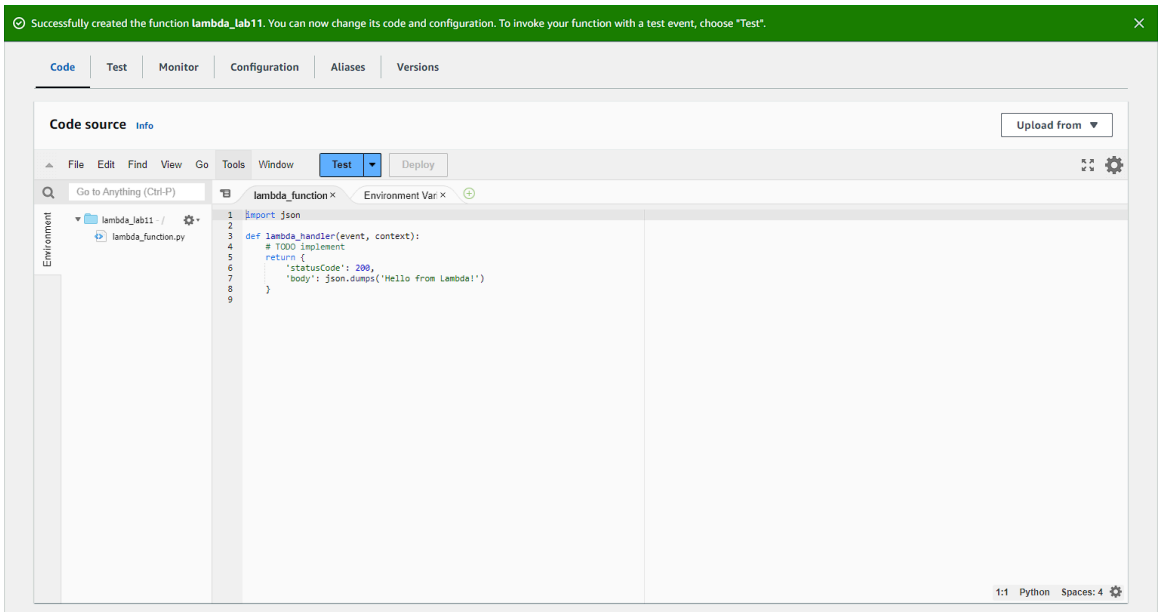


Step 2: Now Give a name to your Lambda function, Select the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby. So will select Python 3.12 , Architecture as x86, and Exceution role to Create a new role with basic Lambda permissions.

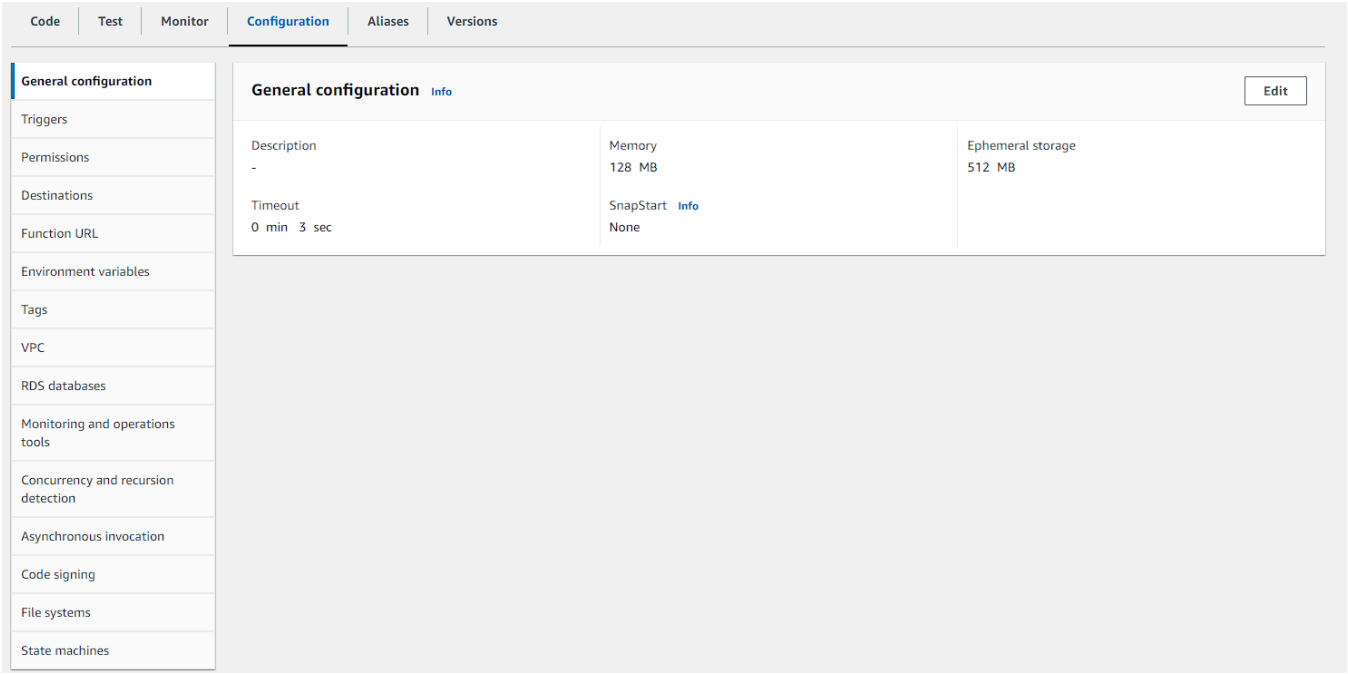



Change default execution role
Execution role
Choose a role that defines the permissions of your function. To create a custom role, go to the IAM console.
Create a new role with basic Lambda permissions
Use an existing role
Create a new role from AWS policy templates
Role creation might take a few minutes. Please do not delete the role or edit the trust or permissions policies in this role.
Lambda will create an execution role named lambda_lab11-role-6rec818x, with permission to upload logs to Amazon CloudWatch Logs.
Additional Configurations
Use additional configurations to set up code signing, function URL, tags, and Amazon VPC access for your function.
Cancel
Create function

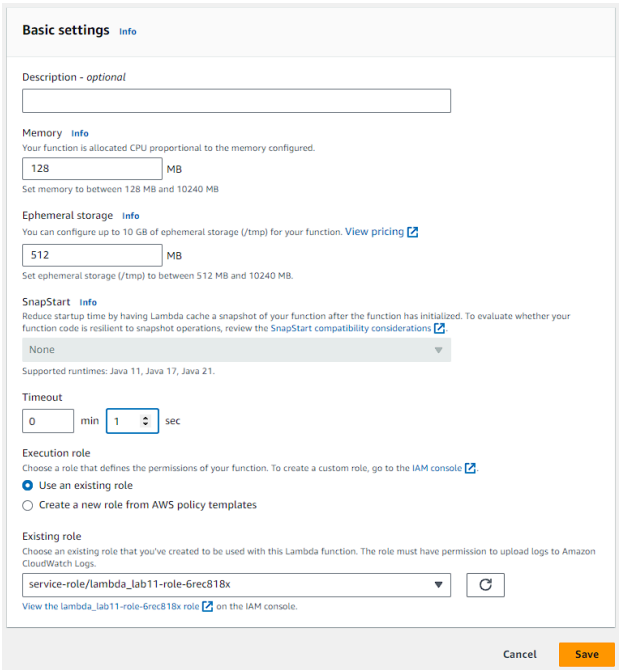

Successfully created the function lambda_lab11. You can now change its code and configuration. To invoke your function with a test event, choose "Test".
Lambda > Functions > lambda_lab11
lambda_lab11
Throttle
Copy ARN
Actions
Function overview
Info
Export to Application Composer
Download
Diagram
Template
lambda_lab11
Layers
(0)
Add trigger
Add destination
Description
-
Last modified
1 second ago
Function ARN
arn:aws:lambda:us-east-1:017820672175:function:lambda_lab11
Function URL
Info
-


Successfully created the function lambda_lab11. You can now change its code and configuration. To invoke your function with a test event, choose "Test".
Code
Test
Monitor
Configuration
Aliases
Versions
Code source
Info
Upload from
File
Edit
Find
View
Go
Tools
Window
Test
Deploy
Go to Anything (Ctrl-P)
lambda_function
Environment Var
Environment
lambda_lab11
lambda_function.py
import json
def lambda_handler(event, context):
# TODO implement
return {
'statusCode': 200,
'body': json.dumps('Hello from Lambda!')
}
1:1
Python
Spaces: 4

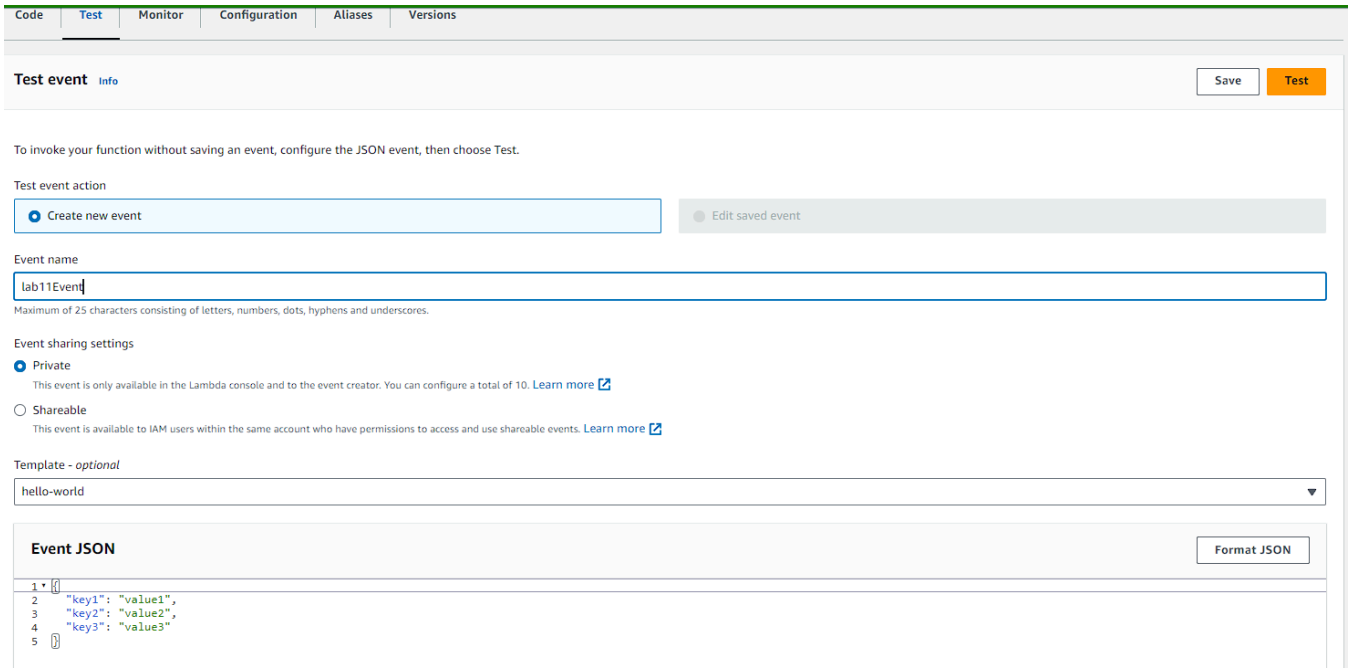
So See or Edit the basic settings go to configuration then click on edit general setting.



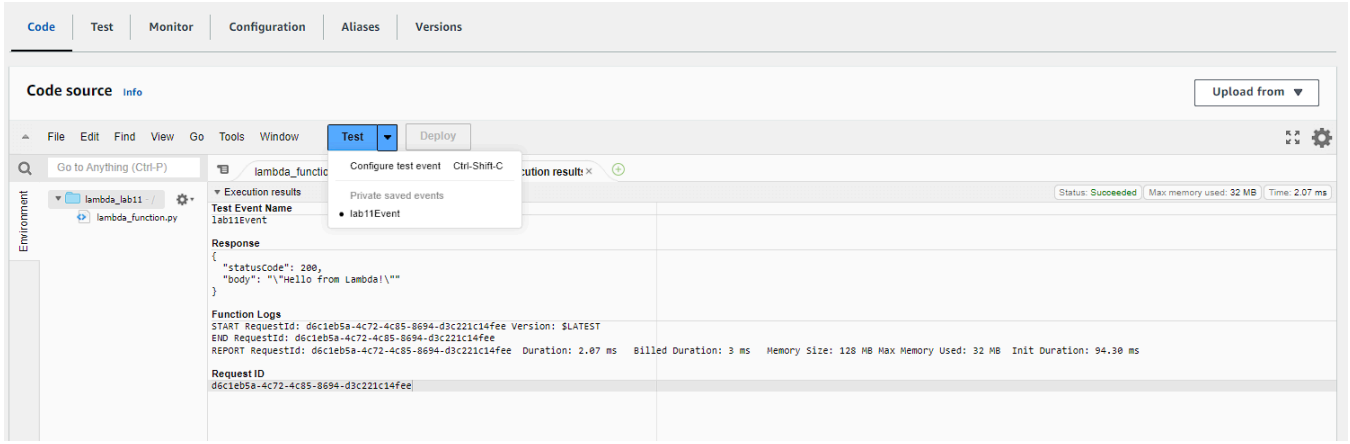
Here, you can enter a description and change Memory and Timeout. I've changed the Timeout period to 1 sec since that is sufficient for now.



Step 3: Now Click on the Test tab then select Create a new event, give a name to the event and select Event Sharing to private, and select hello-world template.



Step 4: Now In Code section select the created event from the dropdown of test then click on test . You will see the below output.



Step 5: You can edit your lambda function code. I have changed the code to display the new String. Now ctrl+s to save and click on deploy to deploy the changes.

Step 6: Now click on the test and observe the output. We can see the status code 200 and your string output and function logs. On successful deployment.

Conclusion: In this experiment, we successfully created an AWS Lambda function and walked through its essential steps. After setting up the function with Python, we configured the basic settings, including adjusting the timeout to 1 second. We then created a test event, deployed the function, and validated the output. Additionally, we modified the Lambda function's code and redeployed it to observe the changes in real-time.This practical experience demonstrated the simplicity and flexibility of AWS Lambda in creating serverless applications, allowing you to focus on code while AWS manages the infrastructure and scaling.