# Advanced DevOps Exp-11

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

**Theory:-**

**AWS Lambda**

AWS Lambda is a serverless computing service provided by Amazon Web Services
(AWS). Users of AWS Lambda create functions, self-contained applications written in one
of the supported languages and runtimes, and upload them to AWS Lambda, which executes those functions in an efficient and flexible manner.The Lambda functions can
perform any kind of computing task, from serving web pages and processing streams of data to call APIs and integrate with other AWS services.
The concept of “serverless” computing refers to not needing to maintain your own servers to run these functions. AWS Lambda is a fully managed service that takes care of all the infrastructure for you.

**Features of AWS Lambda**

● AWS Lambda easily scales the infrastructure without any additional configuration. It
reduces the operational work involved.
● It offers multiple options like AWS S3, CloudWatch, DynamoDB, API Gateway, Kinesis,
CodeCommit, and many more to trigger an event.
● You don’t need to invest upfront. You pay only for the memory used by the lambda
function and minimal cost on the number of requests hence cost-efficient.
● AWS Lambda is secure. It uses AWS IAM to define all the roles and security policies.

● It offers fault tolerance for both services running the code and the function. You do not have to worry about the application down.

**Packaging Functions**

Lambda functions need to be packaged and sent to AWS. This is usually a process of compressing the function and all its dependencies and uploading it to an S3 bucket. And letting AWS know that you want to use this package when a specific event takes place.

To help us with In this process we use the Serverless Stack Framework (SST). We'll go over this in detail later on in this guide.

**Execution Model**

The container (and the resources used by it) that runs our function is managed completely by AWS. It is brought up when an event takes place and is turned off if it is not being used. If additional requests are made while the original event is being served, a new container is brought up to serve a request. This means that if we are undergoing a usage spike, the cloud provider simply creates multiple instances of the container with our function to serve those requests.

This has some interesting implications. Firstly, our functions are effectively stateless. Secondly, each request (or event) is served by a single instance of a Lambda function. This means that you are not going to be handling concurrent requests in your code. AWS brings up a container whenever there is a new request. It does make some optimizations here. It will hang on to the container for a few minutes (5 - 15 mins depending on the load) so it can respond to subsequent requests without a cold start.

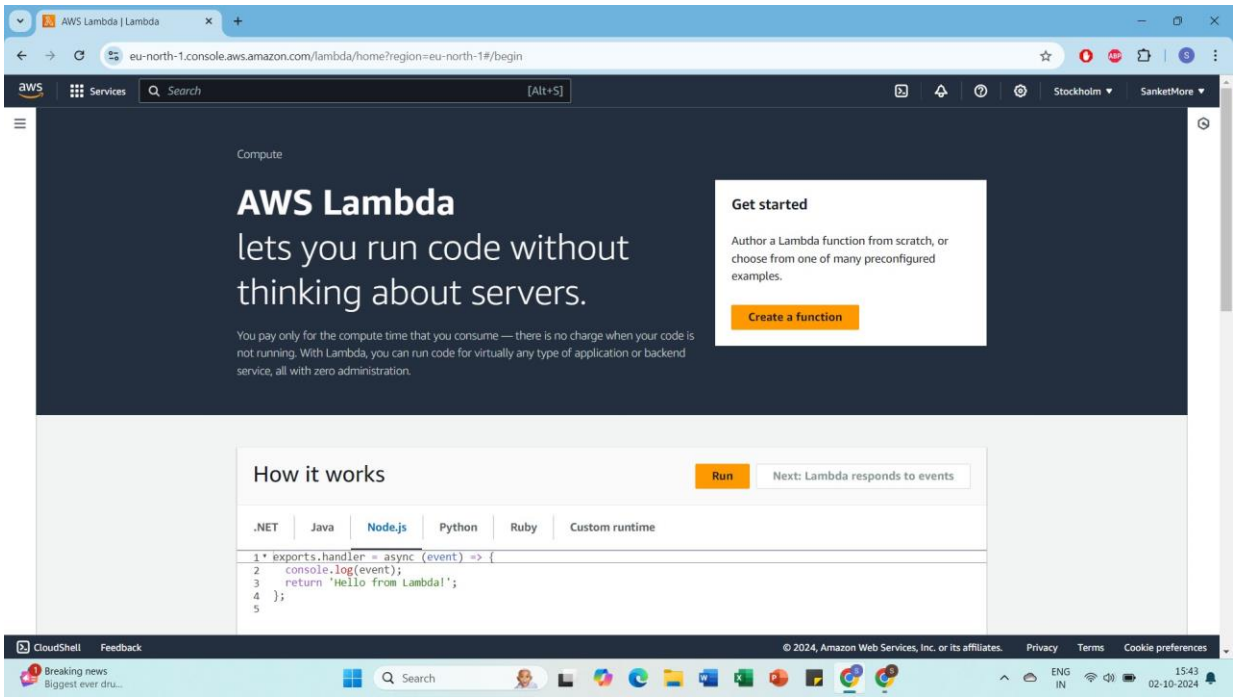
**Stateless Functions**

The above execution model makes Lambda functions effectively stateless. This means that every
time your Lambda function is triggered by an event it is invoked in a completely new
environment. You don't have access to the execution context of the previous event. However, due to the optimization noted above, the actual Lambda function is invoked only once

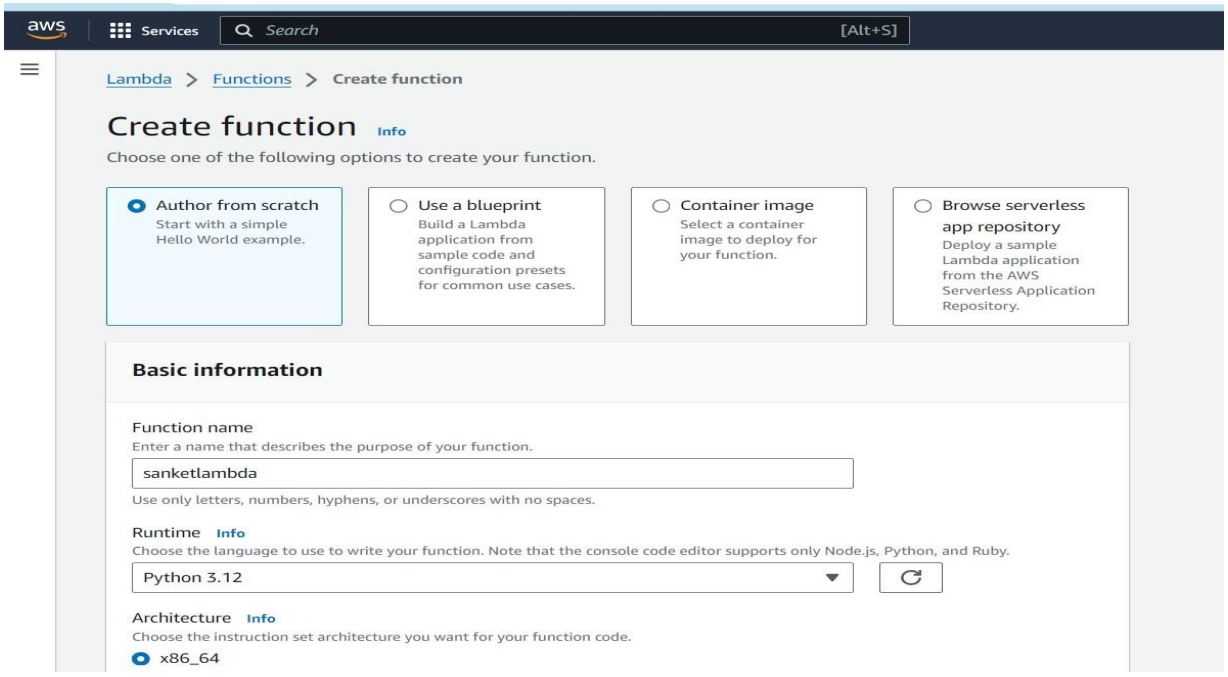
per container instantiation. Recall that our functions are run inside containers. So when a function is first invoked, all the code in our handler function gets executed and the handler
function gets invoked. If the container is still available for subsequent requests, your function
will get invoked and not the code around it.

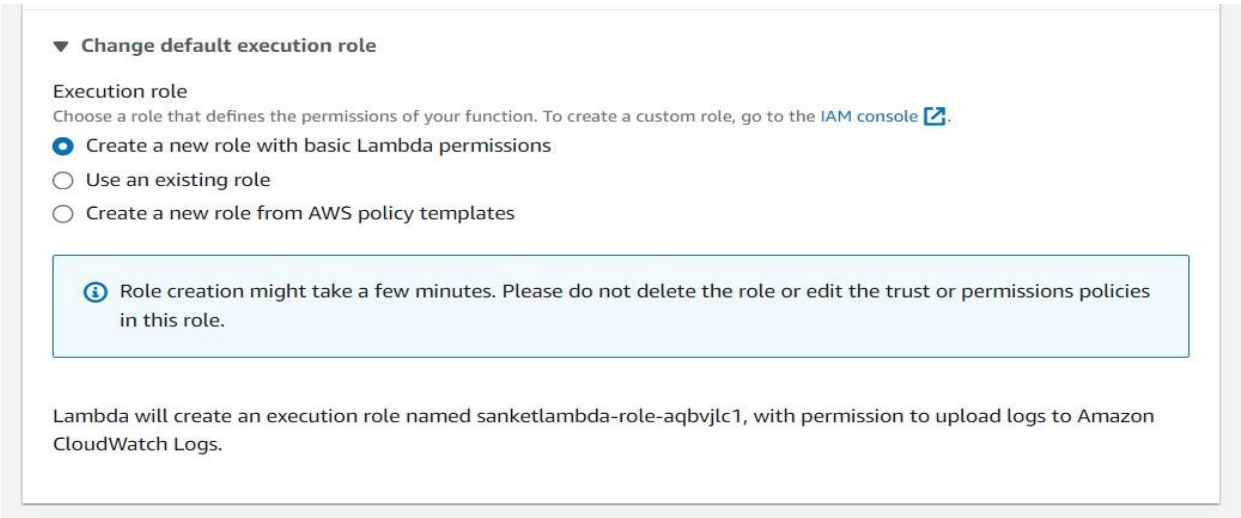
**Procedure:-**

1. Open up the Lambda Console and click on the Create button. Be mindful of where you create your functions since Lambda is region-dependent.

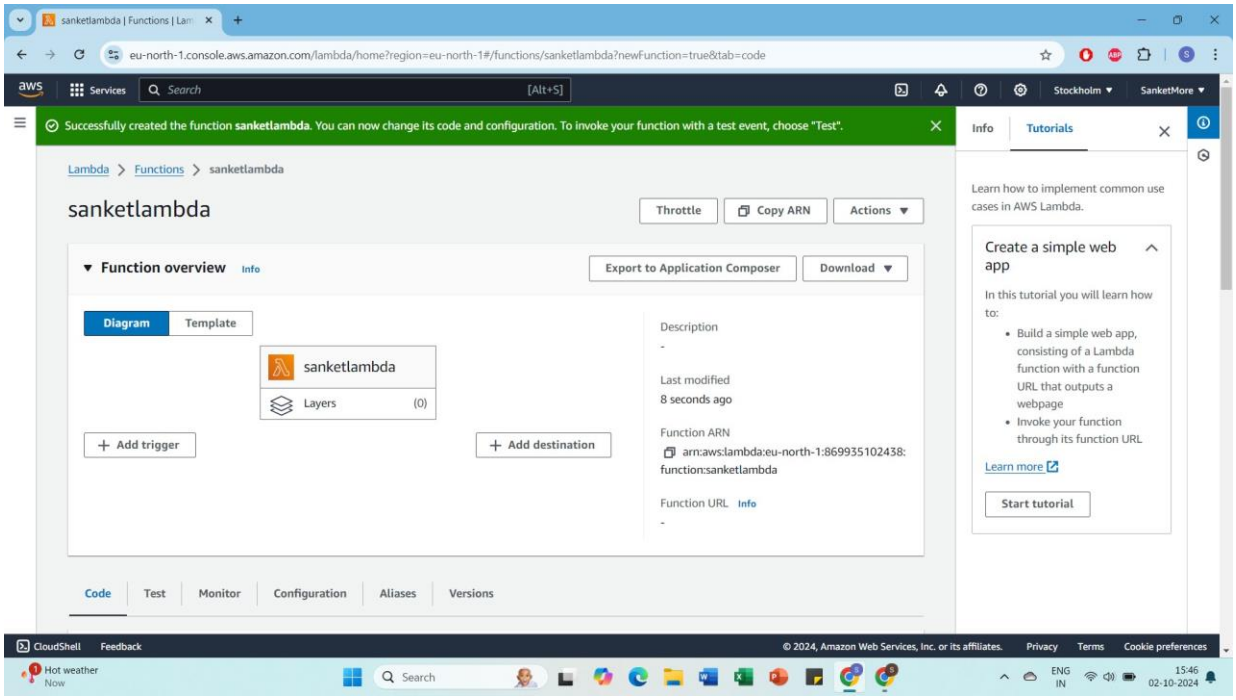


2. Choose to create a function from scratch or use a blueprint, i.e templates defined by AWSfor you with all configuration presets required for the most common use cases.
Then, choose a runtime env for your function, under the dropdown, you can see all the options AWS supports, Python, Nodejs, .NET and Java being the most popular ones.After that, choose to create a new role with basic Lambda permissions if you don't have
an existing one.

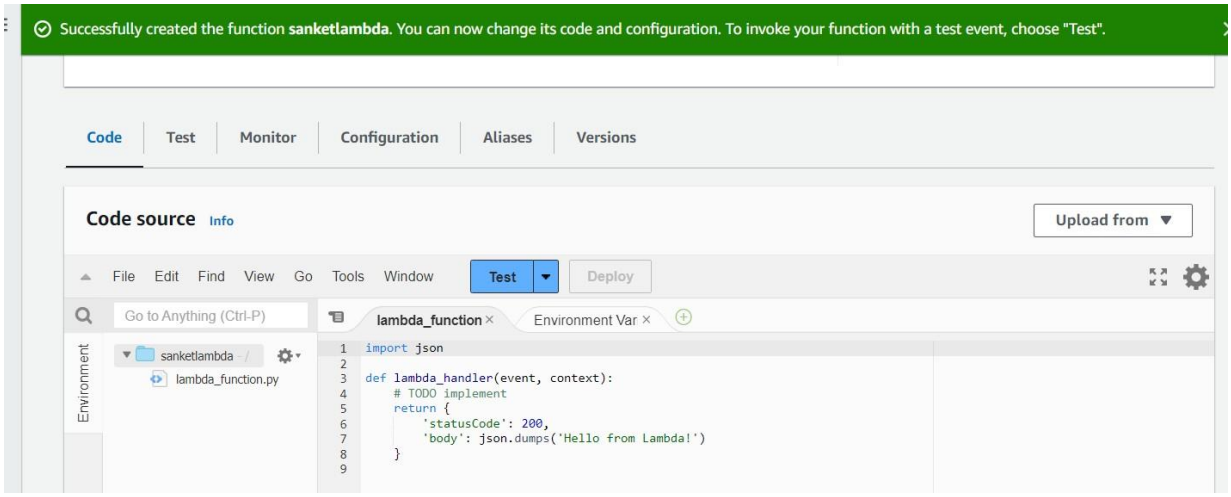


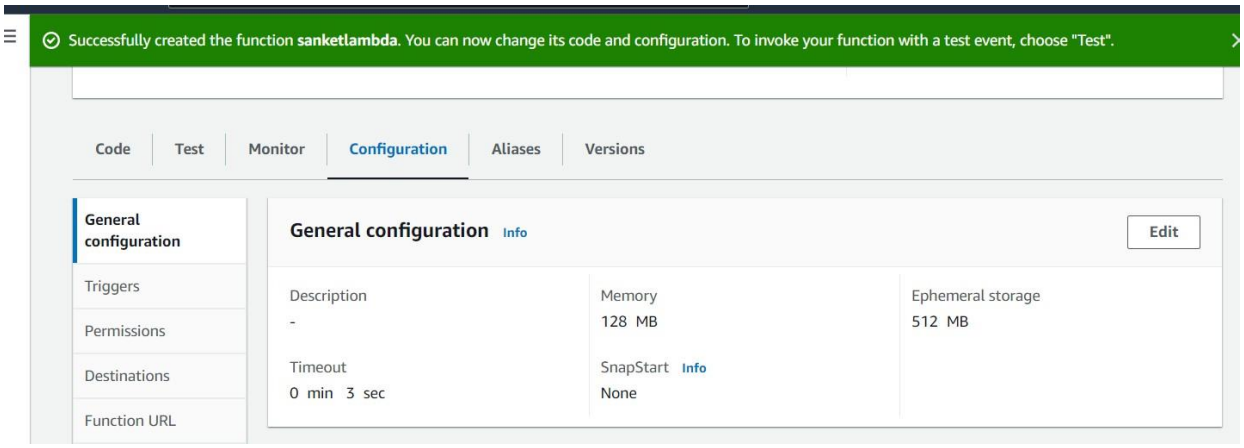
3. This process will take a while to finish and after that, you'll get a message that your function was successfully created.

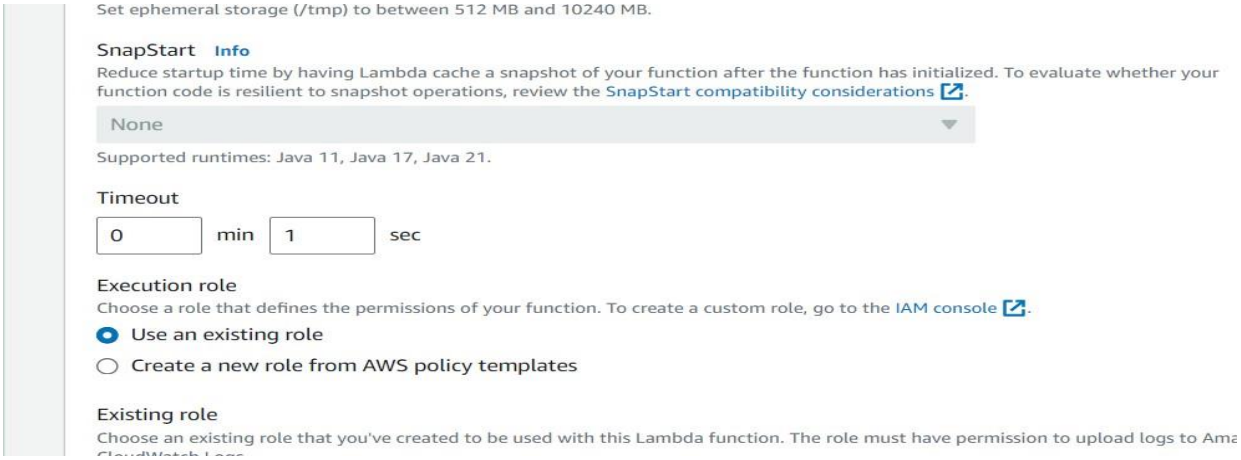


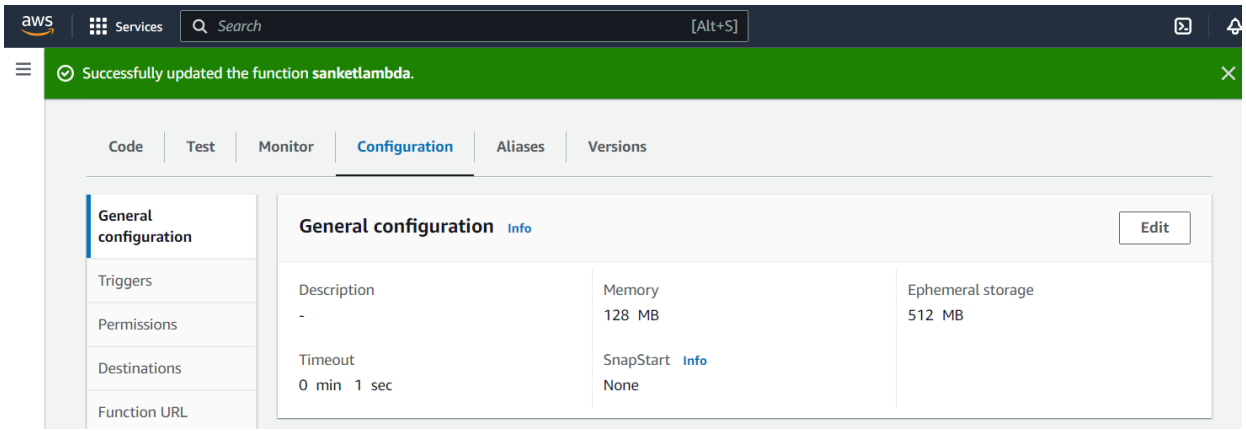

4. You can make changes to your function inside the code editor. You can also upload a zip
file of your function or upload one from an S3 bucket if needed.
Press Ctrl + S to save the file and click Deploy to deploy the changes.



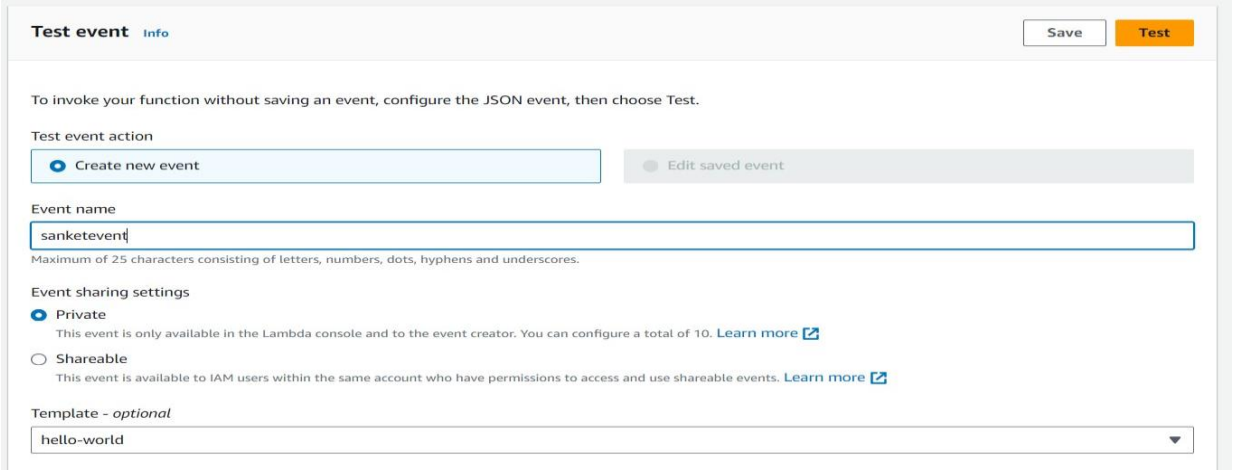
5. To change the configuration, open up the Configuration tab and under General Configuration, choose Edit.
Here, you can enter a description and change Memory and Timeout. I've changed the Timeout period to 1 sec since that is sufficient for now.



6. Click on Test and you can change the configuration, like so. If you do not have anything in the request body, it is important to specify two curly braces as valid JSON, so make sure they are there.





7. Now click on Test and you should be able to see the results.