Advance Devops Lab 11

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

Theory:

AWS Lambda is a serverless computing service offered by Amazon Web Services (AWS). It enables you to run code without provisioning or managing servers. This eliminates the need for upfront infrastructure costs and allows you to focus on building applications.

Workflow:

1. **Event Source:** An event triggers the execution of your Lambda function. This event could originate from various sources, such as:
    - **AWS Services:** S3, DynamoDB, Kinesis, API Gateway, and more.
    - **Third-party Services:** Salesforce, HubSpot, etc.
    - **Custom Events:** Triggered by your own applications or systems.
2. **Lambda Function:** The function is executed in response to the event. It runs within a containerized environment provided by AWS. You write the function's code using a supported programming language (e.g., Node.js, Python, Java, Go).
3. **Execution Environment:** AWS manages the underlying infrastructure, including servers, operating systems, and runtime environments. You don't need to worry about scaling or maintaining these resources.
4. **Output:** The function returns a result or triggers further actions based on its output. This output can be used to update other AWS resources or external systems.

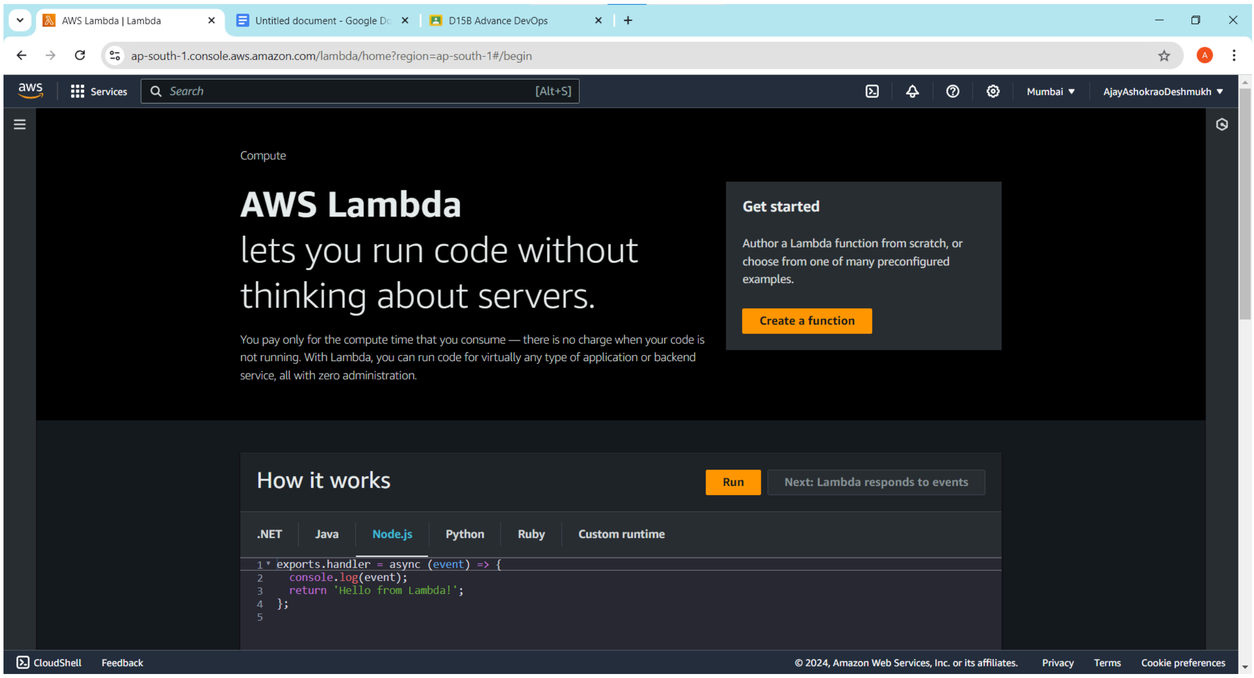
Key Functions and Features:

- **Event-Driven:** Lambda functions are triggered by events, making them highly scalable and efficient.
- **Serverless:** You don't need to manage servers, reducing operational overhead and costs.
- **Pay-as-You-Go:** You only pay for the compute time your functions consume.
- **High Availability:** Lambda functions are distributed across multiple availability zones for redundancy and fault tolerance.
- **Integration with Other AWS Services:** Lambda integrates seamlessly with a wide range of AWS services, enabling you to build complex applications.
- **Custom Runtimes:** You can create custom runtimes to use with Lambda for specific use cases.

Creating a Lambda Function with Node.js:

1. **Create a Lambda Function:** Log in to the AWS Management Console and navigate to the Lambda service. Click on "Create function".
2. **Choose a Blueprint:** Select a blueprint or start from scratch.
3. **Configure Function:** Provide a name, runtime (Node.js), and handler function.
4. **Write Code:** Write your Node.js code in the editor or upload a ZIP file.
5. **Configure Triggers:** Set up event triggers to invoke your function.
6. **Test:** Test your function using the test event feature.

Steps: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Compute

AWS Lambda

lets you run code without thinking about servers.

You pay only for the compute time that you consume — there is no charge when your code is not running. With Lambda, you can run code for virtually any type of application or backend service, all with zero administration.

Get started

Author a Lambda function from scratch, or choose from one of many preconfigured examples.

How it works

```
exports.handler = async (event) => {
  console.log(event);
  return 'Hello from Lambda!';
};
```

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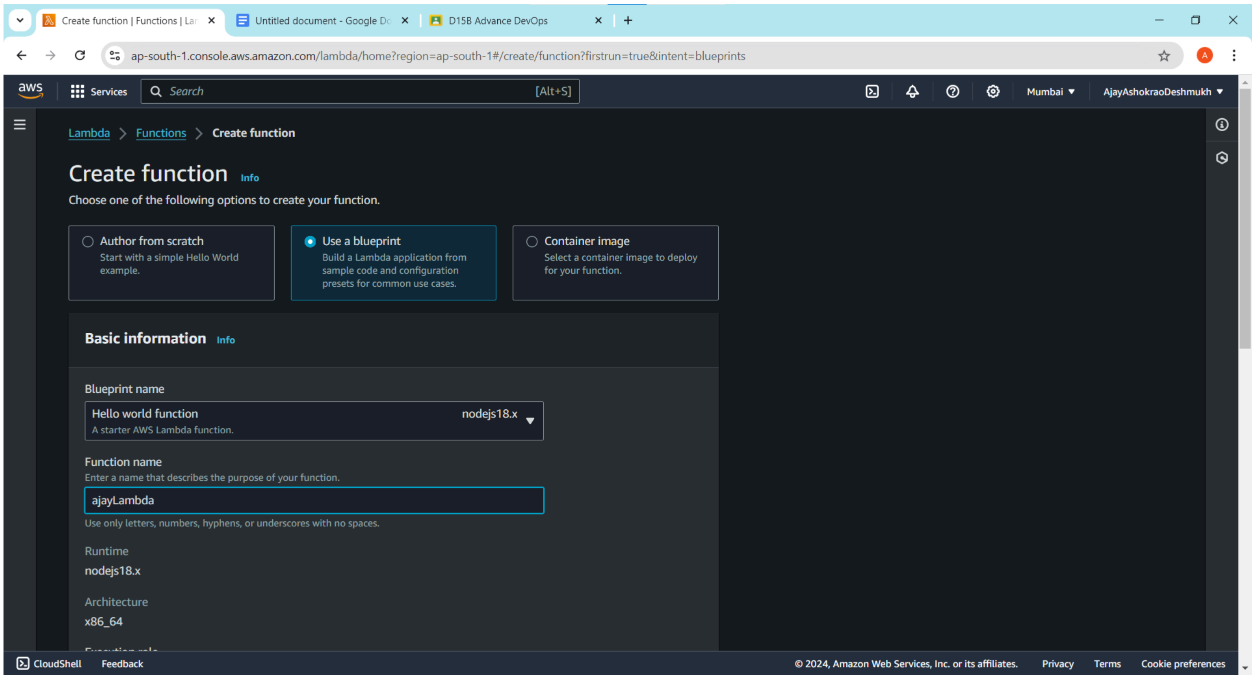
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Lambda > Functions > Create function

Create function Info

Choose one of the following options to create your function.

○ Author from scratch
Start with a simple Hello World example.

● Use a blueprint
Build a Lambda application from sample code and configuration presets for common use cases.

○ Container image
Select a container image to deploy for your function.

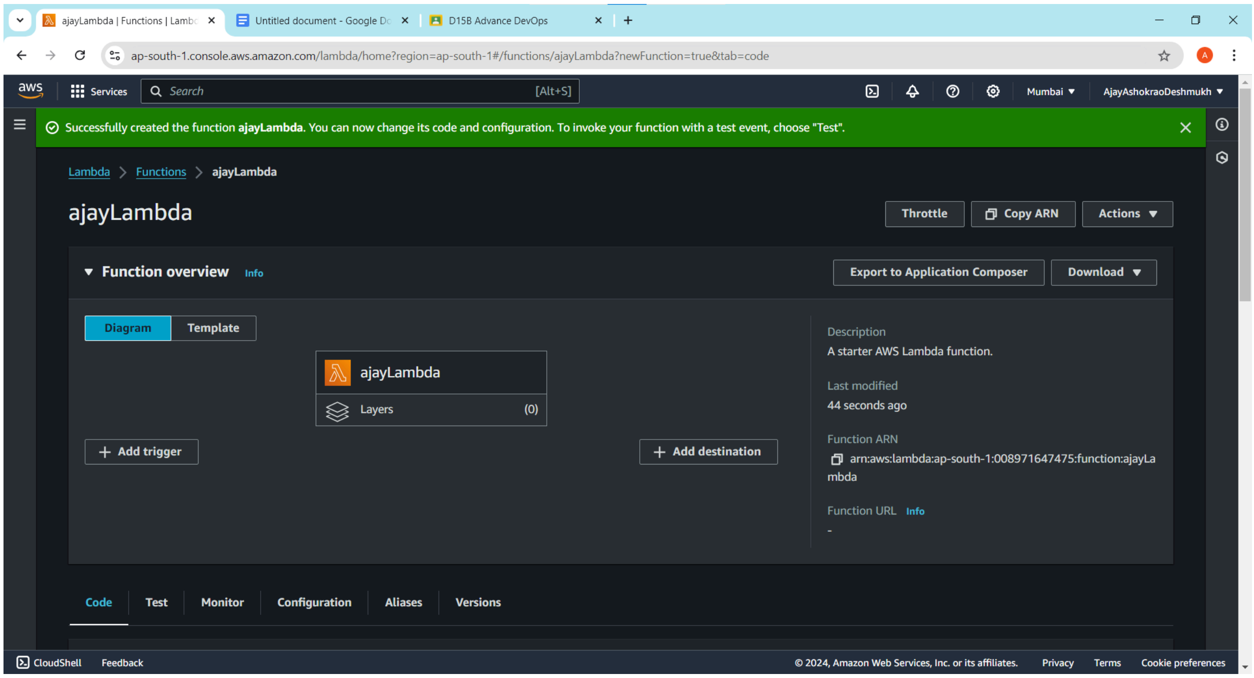
Basic information Info

Blueprint name
Hello world function — nodejs18.x
A starter AWS Lambda function.

Function name
Enter a name that describes the purpose of your function.
ajayLambda
Use only letters, numbers, hyphens, or underscores with no spaces.

Runtime
nodejs18.x

Architecture
x86_64



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ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/ajayLambda?newFunction=true&tab=code
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Successfully created the function **ajayLambda**. You can now change its code and configuration. To invoke your function with a test event, choose "Test".

Lambda > Functions > ajayLambda

ajayLambda

Function overview Info

ajayLambda

Layers (0)

Description

A starter AWS Lambda function.

Last modified

44 seconds ago

Function ARN

arn:aws:lambda:ap-south-1:008971647475:function:ajayLambda

Function URL Info

-

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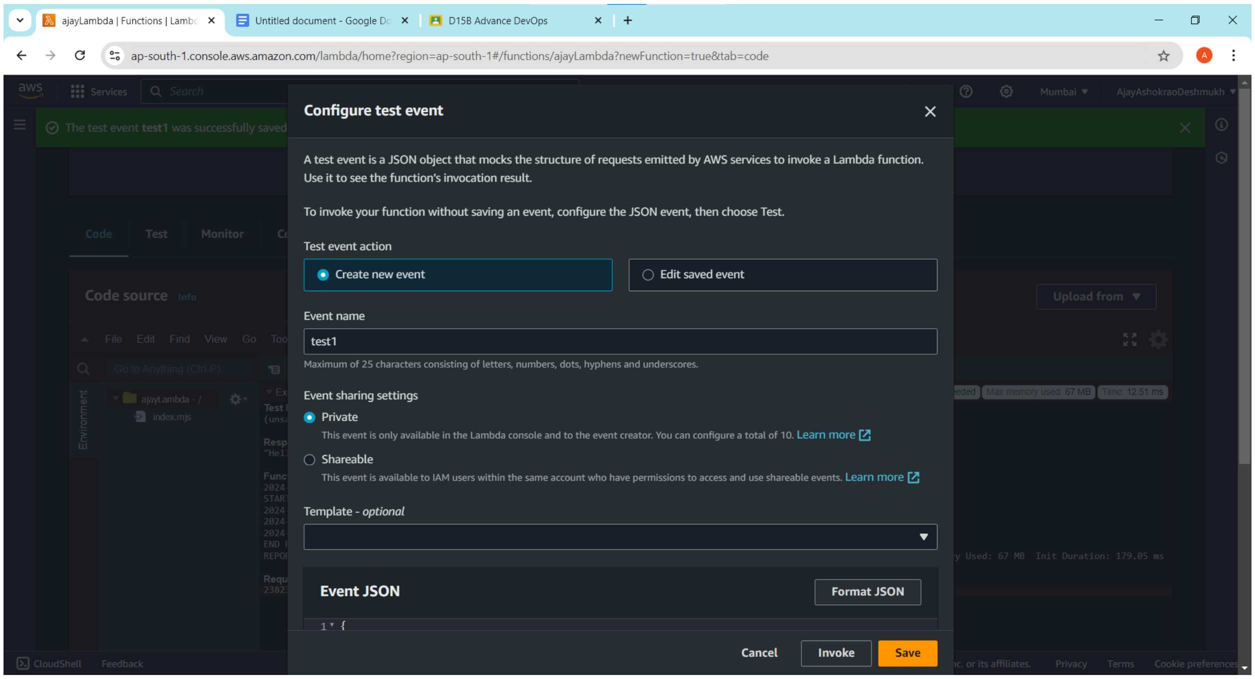

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ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/ajayLambda?newFunction=true&tab=code
Code
Test
Monitor
Code source Info
Upload from ▼
File Edit Find View Go Tools
Go to Anything (Ctrl-P)
Environment
ajayLambda - /
index.mjs

The test event **test1** was successfully saved

Configure test event

A test event is a JSON object that mocks the structure of requests emitted by AWS services to invoke a Lambda function. Use it to see the function's invocation result.

To invoke your function without saving an event, configure the JSON event, then choose Test.

Test event action

● Create new event ○ Edit saved event

Event name

test1

Maximum of 25 characters consisting of letters, numbers, dots, hyphens and underscores.

Event sharing settings

● Private

This event is only available in the Lambda console and to the event creator. You can configure a total of 10. Learn more

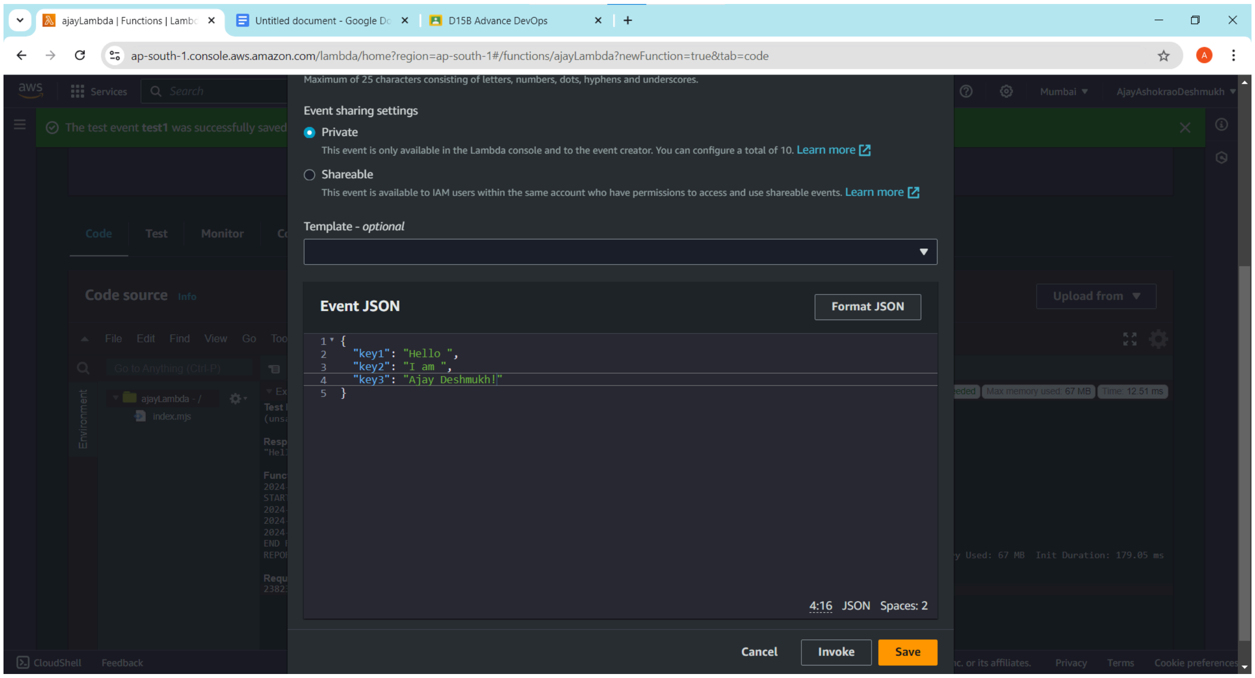
○ Shareable

This event is available to IAM users within the same account who have permissions to access and use shareable events. Learn more

Template - *optional*

Event JSON

```
{
```



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ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/ajayLambda?newFunction=true&tab=code
Cancel
Invoke
Save
Format JSON

Maximum of 25 characters consisting of letters, numbers, dots, hyphens and underscores.

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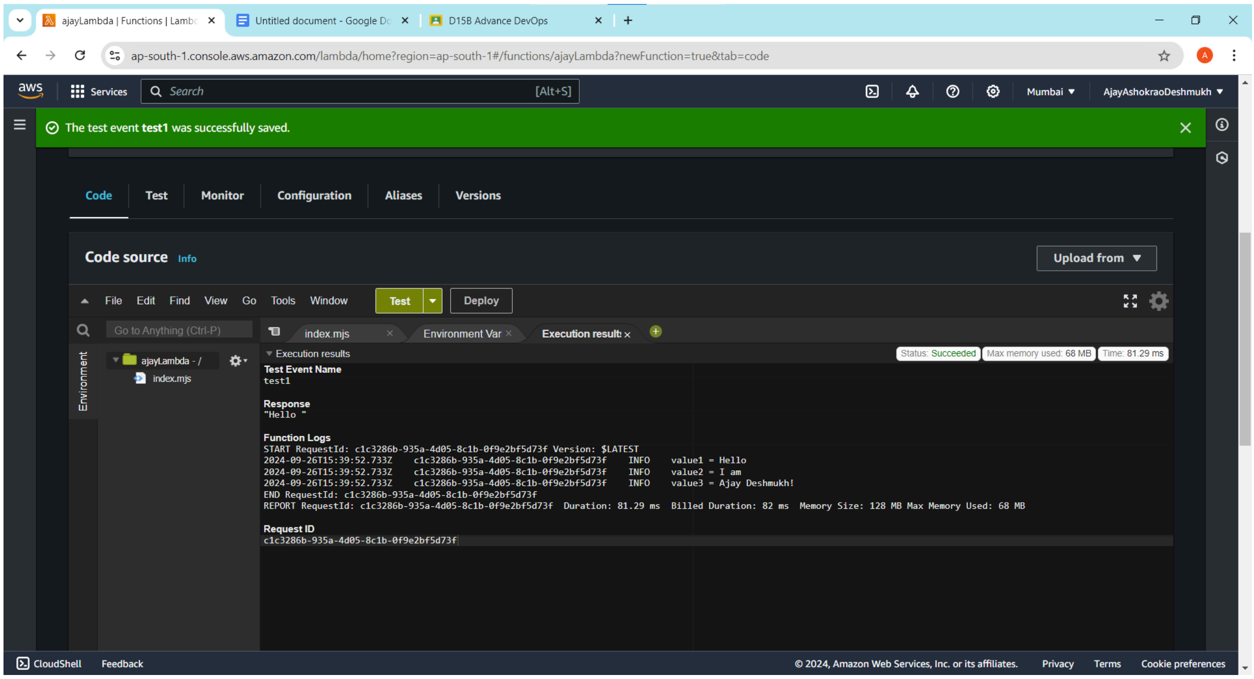
Template - *optional*

Event JSON

```
{
  "key1": "Hello ",
  "key2": "I am ",
  "key3": "Ajay Deshmukh!"
}
```

4:16 JSON Spaces: 2



The test event **test1** was successfully saved.

Code source Info

Execution results

Status: Succeeded | Max memory used: 68 MB | Time: 81.29 ms

Test Event Name

```
test1
```

Response

```
"Hello "
```

Function Logs

```
START RequestId: c1c3286b-935a-4d05-8c1b-0f9e2bf5d73f Version: $LATEST
2024-09-26T15:39:52.733Z    c1c3286b-935a-4d05-8c1b-0f9e2bf5d73f    INFO    value1 = Hello
2024-09-26T15:39:52.733Z    c1c3286b-935a-4d05-8c1b-0f9e2bf5d73f    INFO    value2 = I am
2024-09-26T15:39:52.733Z    c1c3286b-935a-4d05-8c1b-0f9e2bf5d73f    INFO    value3 = Ajay Deshmukh!
END RequestId: c1c3286b-935a-4d05-8c1b-0f9e2bf5d73f
REPORT RequestId: c1c3286b-935a-4d05-8c1b-0f9e2bf5d73f  Duration: 81.29 ms  Billed Duration: 82 ms  Memory Size: 128 MB Max Memory Used: 68 MB
```

Request ID

```
c1c3286b-935a-4d05-8c1b-0f9e2bf5d73f
```