

- Create two Lambda Functions
- First Lambda function returns 200 Response as {"Hello": "Default"}
- Second Lambda function returns 200 Response as {"Hello": "{Dynamic route name}"}
- Configure API Gateway with that hits first lambda function on / and the second lambda function on /\*

Two lambda functions were created for this assignment:

First one is bijaykandel-hello

**Basic information**

**Function name**  
Enter a name that describes the purpose of your function.

bijaykandel-hello

Use only letters, numbers, hyphens, or underscores with no spaces.

**Runtime** [Info](#)  
Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.

Python 3.9

**Architecture** [Info](#)  
Choose the instruction set architecture you want for your function code.

☒ x86\_64

☐ arm64

And its test event is configured as default.

**Configure test event** ✕

A function can have up to 10 test events. The events are persisted so you can switch to another computer or web browser and test your function with the same events.

☒ Create new test event

☐ Edit saved test events

Event template

hello-world ▼

Event name

MyEventName

```

1 {
2   "key1": "value1",
3   "key2": "value2",
4   "key3": "value3"
5 }
```

The second lambda function is named as bijaykandel-helloDynamic

**Basic information**

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

**Runtime** [Info](#)  
Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.

**Architecture** [Info](#)  
Choose the instruction set architecture you want for your function code.  
☒ x86\_64  
☐ arm64

And its test event is configured as follows: (“rawPath” option is added in the existing default document)

**Configure test event** ×

A function can have up to 10 test events. The events are persisted so you can switch to another computer or web browser and test your function with the same events.

☐ Create new test event  
☒ Edit saved test events

Saved Test Events  
 ↻

```
1 {  
2   "key1": "value1",  
3   "key2": "value2",  
4   "key3": "value3",  
5   "rawPath": "path"  
6 }
```

First lambda function is written as:

```
1 import json  
2  
3 def lambda_handler(event, context):  
4     # TODO implement  
5     return {  
6         'statusCode': 200,  
7         'body': json.dumps({'Hello': 'General'})  
8     }  
9
```

And the second lambda function is written as:

```
1 import json  
2  
3 def lambda_handler(event, context):  
4     # TODO implement  
5     return {  
6         'statusCode': 200,  
7         'body': json.dumps(event['rawPath'])  
8     }  
9
```

Now API gateway is created: **API Gateway >> Create API gateway:**

We added two integrations for two lambda functions as follows:

Integrations [Info](#)

Lambda Remove

AWS Region: us-east-1 Lambda function: Q bijaykandel-hello X Version: 2.0 [Learn more.](#)

Lambda Remove

AWS Region: us-east-1 Lambda function: Q bijaykandel-helloDynamic X Version: 2.0 [Learn more.](#)

Add integration

And Routes are configured so that accessing the URL triggers first lambda function and accessing URL/\* triggers the second lambda function.

Configure routes [Info](#)

API Gateway uses routes to expose integrations to consumers of your API. Routes for HTTP APIs consist of two parts: an HTTP method and a resource path (e.g., GET /pets). You can define specific HTTP methods for your integration (GET, POST, PUT, PATCH, HEAD, OPTIONS, and DELETE) or use the ANY method to match all methods that you haven't defined on a given resource.

Method	Resource path	Integration target	
ANY	/	bijaykandel-hello	<span>Remove</span>
-	\$default	bijaykandel-helloDynamic	<span>Remove</span>

Add route

After creating the API gateway, we can click on the link inside our API gateway. With no path specified, the url returns the following value:

API Gateway x rd8sa3iymc.execute-api.us-east-1.amazonaws.com +

← → ↻ https://rd8sa3iymc.execute-api.us-east-1.amazonaws.com

{"Hello": "General"}

And if path is provided with url, it returns the given path as shown below:

API Gateway x rd8sa3iymc.execute-api.us-east-1.amazonaws.com +

← → ↻ https://rd8sa3iymc.execute-api.us-east-1.amazonaws.com/abd

{"path": "/abd"}

- Create a bash script to deploy your lambda functions

To deploy our lambda functions, we first created our lambda function in python:

*Sudo nano lambda-bijay-cicd.py*

```
GNU nano 4.8 lambda-bijay-cicd.py
import json
def lambda_handler(event, context):
    return {'statusCode': 200, 'body': json.dumps({'Hello': 'General-Bijay-Kandel'}) }
```

And a script is created for deploying above lambda function:

*Nano scriptlambda.sh*

Here, the role is copied from our lambda role from the previous assignment.

```
zip lambda-bijay-cicd.zip lambda-bijay-cicd.py

#to create lambda function with above content
function create-lambda-function() {
aws lambda create-function --function-name lambda-bijay-cicd \
--zip-file fileb://lambda-bijay-cicd.zip \
--runtime python3.9 \
--role arn:aws:iam::949263681218:role/service-role/bijaykandel-hello-role-x627jkqw \
--handler lambda-bijay-cicd.lambda_handler
}

create-lambda-function

#to update-lambda function
function update-lambda-function () {
aws lambda update-function-code \
--function-name lambda-bijay-cicd \
--zip-file fileb://lambda-bijay-cicd.zip
}

update-lambda-function
```

The script is made executable with command:

*Sudo chmod +x scriptlambda.sh*

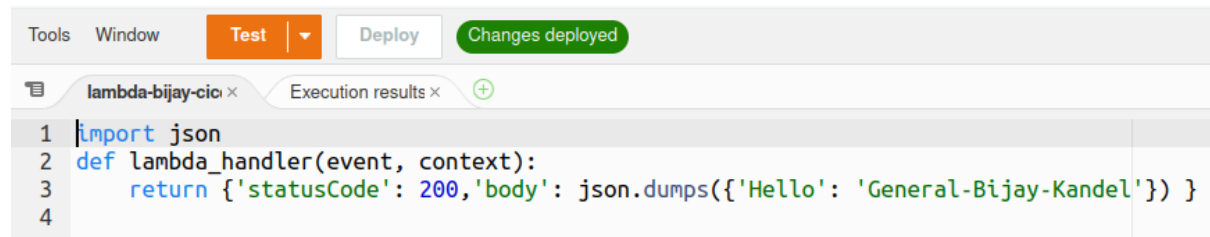
Now when we run the script with command *./scriptlambda.sh*

```

bj@batman:~/aws$ ./scriptlambda.sh
updating: lambda-bijay-cicd.py (deflated 8%)
{
  "FunctionName": "lambda-bijay-cicd",
  "FunctionArn": "arn:aws:lambda:us-east-1:949263681218:function:lambda-bijay-cicd",
  "Runtime": "python3.9",
  "Role": "arn:aws:iam::949263681218:role/service-role/bijaykandel-hello-role-x627jkqw",
  "Handler": "lambda-bijay-cicd.lambda_handler",
  "CodeSize": 313,
  "Description": "",
  "Timeout": 3,
  "MemorySize": 128,
  "LastModified": "2021-12-16T20:52:50.374+0000",
  "CodeSha256": "iat60+xsQN9hNBY6T3GDccaHZDJNB0xLOWgw0acVao=",
  "Version": "$LATEST",
  "TracingConfig": {
    "Mode": "PassThrough"
  },
  "RevisionId": "b4b1af08-1072-492f-aa93-f0268e0b9359",
  "State": "Pending",
  "StateReason": "The function is being created.",
  "StateReasonCode": "Creating",
  "PackageType": "Zip",
  "Architectures": [
    "x86_64"
  ]
}
{
  "FunctionName": "lambda-bijay-cicd",
  "FunctionArn": "arn:aws:lambda:us-east-1:949263681218:function:lambda-bijay-cicd",
  "Runtime": "python3.9",
  "Role": "arn:aws:iam::949263681218:role/service-role/bijaykandel-hello-role-x627jkqw",
  "Handler": "lambda-bijay-cicd.lambda_handler",
  "CodeSize": 313
}

```

On the console, we can see that our lambda function has been deployed.



The screenshot shows the AWS Lambda console interface. At the top, there are tabs for 'Tools', 'Window', 'Test', and 'Deploy'. A green button labeled 'Changes deployed' is visible. Below the tabs, the function name 'lambda-bijay-cicd' is displayed. The 'Execution results' tab is active, showing the following code:

```

1 import json
2 def lambda_handler(event, context):
3     return {'statusCode': 200, 'body': json.dumps({'Hello': 'General-Bijay-Kandel'}) }
4

```

- Create a bash script to deploy your react app to S3
- Integrate both these scripts with one of Jenkins, Github Actions, CircleCI or TravisCI

To deploy react app to s3, following bash script file is created:

*Sudo nano reactci.d.sh*

```
#to create a bucket
aws s3 mb s3://bijay-reactbucket --region us-east-1

#to enable public access into the bucket
aws s3api put-public-access-block --bucket bijay-reactbucket --public-access-block-configuration "BlockPublicPolicy=false,BlockPublicAcls=false,IgnorePublicAcls=false,RestrictPublicBuckets=false"

aws s3api put-bucket-policy --bucket bijay-reactbucket --policy file://bucketpolicy.json

echo 'Public access enabled and Bucket objects are now set public'
echo 'inside reactapp building static files'

#to build static files of the react application
npm run build

echo 'Build completed'
echo 'uploading static files of build folder to aws via cli'

#to copy the content of build files to the bucket
aws s3 cp build s3://bijay-reactbucket --recursive

echo 'uploading static files completed'
echo 'Now you can go to s3 bucket and see the static url link in index.js object'
echo 'OR'
echo 'click on the link below to see the hosted app'
echo ' '

#to get the public link of index.html where our static build is hosted
aws s3 presign s3://bijay-reactbucket/index.html
```

And bucket policy should be updated from a json file. So we created a json file and following part is saved to the file:

*Sudo nano bucketpolicy.json*

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicReadGetObject",
      "Effect": "Allow",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::bijay-reactbucket/*"
    }
  ]
}
```

Making the script executable: `sudo chmod +x reactcid.sh`

Running the script file with command: `./reactcid.sh`

```
bj@batman:~/react/react-bijay$ nano reactcid.sh
bj@batman:~/react/react-bijay$ ./reactcid.sh
make_bucket: bijay-reactbucket
Public access enabled and Bucket objects are now set public
inside reactapp building static files

> react-bijay@0.1.0 build /home/bj/react/react-bijay
> react-scripts build

Creating an optimized production build...
Compiled successfully.
```

After uploading the static files, we can get the link of index.html file as shown:

```
uploading static files completed
Now you can go to s3 bucket and see the static url link in index.js object
OR
click on the link below to see the hosted app

https://bijay-reactbucket.s3.us-east-1.amazonaws.com/index.html?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIA52BEGI3BCCP6PEYC%2F20211216%2Fus-east-1%2Ffs3%2Faws4_request&X-Amz-Date=20211216T193634Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Signature=cb4dff90ed3d579bd0c800001658e71003b2380cb440e069ffa680b68c71bb7c
```

When we go to the link, we can see our page being hosted statically from s3.



We can also see the bucket being publicly accessible and also the files uploaded in our s3 console.



Name	Type	Last modified	Size	Storage class
asset-manifest.json	json	December 17, 2021, 01:09:34 (UTC+05:45)	1.1 KB	Standard
favicon.ico	ico	December 17, 2021, 01:09:34 (UTC+05:45)	3.8 KB	Standard
index.html	html	December 17, 2021, 01:09:34 (UTC+05:45)	3.0 KB	Standard

