# AWS-Serverless REST-API with Dynamo DB

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## Installed software details

|  |
| --- |
| $ serverless -v  Framework Core: 2.43.1  Plugin: 5.1.4  SDK: 4.2.2  Components: 3.10.1  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10 (master)  $ java --version  openjdk 15.0.2 2021-01-19  OpenJDK Runtime Environment Corretto-15.0.2.7.1 (build 15.0.2+7)  OpenJDK 64-Bit Server VM Corretto-15.0.2.7.1 (build 15.0.2+7, mixed mode, sharing)  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10 (master)  $ mvn -v  Apache Maven 3.8.1 (05c21c65bdfed0f71a2f2ada8b84da59348c4c5d)  Maven home: C:\PROJECTS\Softwares\Apache-maven-3.8.1  Java version: 15.0.2, vendor: Amazon.com Inc., runtime: C:\PROJECTS\Softwares\Java\Corretto-JDK\_1.15.0.2.7.1  Default locale: en\_IN, platform encoding: Cp1252  OS name: "windows 10", version: "10.0", arch: "amd64", family: "windows"  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10 (master) |

## Create Products-API Serverless Application

|  |
| --- |
| GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10 (master)  $ serverless create --template aws-java-maven --name products-api -p aws-java-products-api  Serverless: Generating boilerplate...  Serverless: Generating boilerplate in "C:\PROJECTS\FSD-Delta-StackRoute\Asignments\Exercise-10\aws-java-products-api"  \_\_\_\_\_\_\_ \_\_  | \_ .-----.----.--.--.-----.----| .-----.-----.-----.  | |\_\_\_| -\_\_| \_| | | -\_\_| \_| | -\_\_|\_\_ --|\_\_ --|  |\_\_\_\_ |\_\_\_\_\_|\_\_| \\_\_\_/|\_\_\_\_\_|\_\_| |\_\_|\_\_\_\_\_|\_\_\_\_\_|\_\_\_\_\_|  | | | The Serverless Application Framework  | | serverless.com, v2.43.1  -------'  Serverless: Successfully generated boilerplate for template: "aws-java-maven"  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10 (master)  $ |

## Develop the application:

1. Develop Dynamo DB Adaptor (Design as Builder Pattern).

Using AmazonDynamoDBClientBuilder bind AWS-Region details

1. Develop Product,Customer,Order POJO

Define product details such like id, name, price

Define Customer details such like id, name, address

Define Order details such like id, productid, customerId

And in each POJO classes define the below methods:

Define constructor

Define list() method

Define get() method

Define save() method

Define delete() method

## Decide API Endpoints

POST /products: Create a product and save it to the DynamoDB table.

GET /products/: Retrieves all existing products.

GET /products/{id}: Retrieves an existing product by id.

DELETE /products/{id}: Deletes an existing product by id.

## Define API Endpoints in serverles.yml

Define handler with functions and URI

## Develop Handlers:

CreateProductHandler.java

ListProductHandler.java

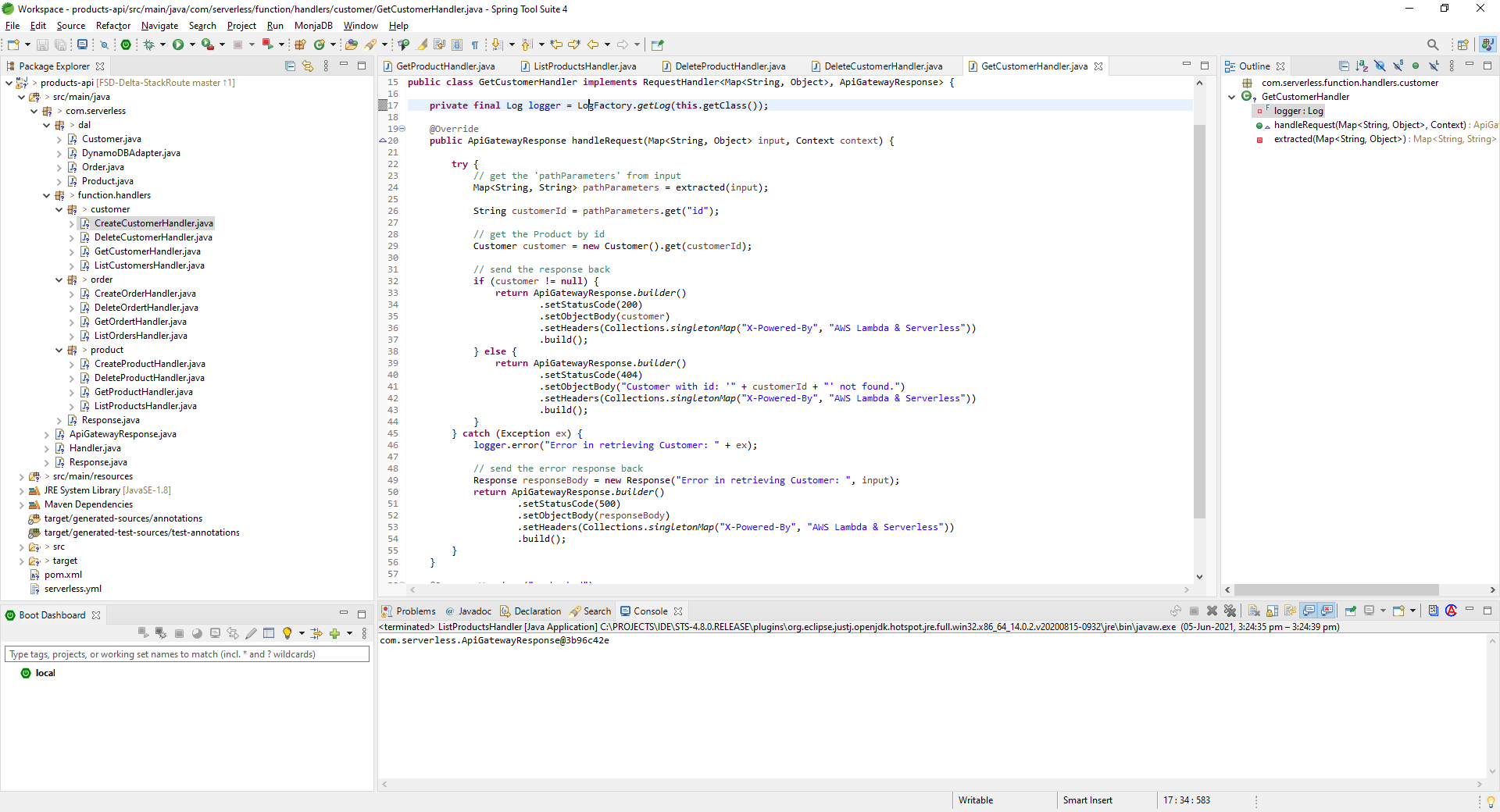
GetProductHandler.java

DeleteProductHandler.java

## serverless.yml Source:

|  |
| --- |
| # Welcome to Serverless!  #  # This file is the main config file for your service.  # It's very minimal at this point and uses default values.  # You can always add more config options for more control.  # We've included some commented out config examples here.  # Just uncomment any of them to get that config option.  #  # For full config options, check the docs:  # docs.serverless.com  #  # Happy Coding!  service: products-api  # app and org for use with dashboard.serverless.com  #app: your-app-name  #org: your-org-name  # You can pin your service to only deploy with a specific Serverless version  # Check out our docs for more details  frameworkVersion: '2'  #Define Custome variable values  custom:  customersTableName: 'customers'  ordersTableName: 'orders'  productsTableName: 'products'    provider:  name: aws  runtime: java11  lambdaHashingVersion: 20210603    region: ${opt:region, 'us-east-2'}  iamRoleStatements:  - Effect: Allow  Action:  - dynamodb:Query  - dynamodb:Scan  - dynamodb:GetItem  - dynamodb:PutItem  - dynamodb:UpdateItem  - dynamodb:DeleteItem  Resource:  - { "Fn::GetAtt": ["CustomersDynamoDBTable", "Arn" ] }  - { "Fn::GetAtt": ["OrdersDynamoDBTable", "Arn" ] }  - { "Fn::GetAtt": ["ProductsDynamoDBTable", "Arn" ] }  environment:  CUSTOMERS\_TABLE\_NAME: ${self:custom.customersTableName}  ORDERS\_TABLE\_NAME: ${self:custom.ordersTableName}  PRODUCTS\_TABLE\_NAME: ${self:custom.productsTableName}    # you can add packaging information here  package:  artifact: ../target/products-api-dev.jar  #Functions to Handle Request URI pattern  functions:  # Functions to Handle Product URI Pattern  listProducts:  handler: com.serverless.function.handlers.product.ListProductsHandler  events:  - http:  path: /products  method: get  getProduct:  handler: com.serverless.function.handlers.product.GetProductHandler  events:  - http:  path: /products/{id}  method: get  createProduct:  handler: com.serverless.function.handlers.product.CreateProductHandler  events:  - http:  path: /products  method: post  deleteProduct:  handler: com.serverless.function.handlers.product.DeleteProductHandler  events:  - http:  path: /products/{id}  method: delete  # Functions to Handle Customer URI Pattern  listCustomers:  handler: com.serverless.function.handlers.customer.ListCustomersHandler  events:  - http:  path: /customers  method: get  getCustomer:  handler: com.serverless.function.handlers.customer.GetCustomerHandler  events:  - http:  path: /customers/{id}  method: get  createCustomer:  handler: com.serverless.function.handlers.customer.CreateCustomerHandler  events:  - http:  path: /customers  method: post  deleteCustomer:  handler: com.serverless.function.handlers.customer.DeleteCustomerHandler  events:  - http:  path: /customers/{id}  method: delete    # Functions to Handle Order URI Pattern  listOrders:  handler: com.serverless.function.handlers.order.ListOrdersHandler  events:  - http:  path: /orders  method: get  getOrder:  handler: com.serverless.function.handlers.order.GetOrderHandler  events:  - http:  path: /orders/{id}  method: get  createOrder:  handler: com.serverless.function.handlers.order.CreateOrderHandler  events:  - http:  path: /orders  method: post  deleteOrder:  handler: com.serverless.function.handlers.order.DeleteOrderHandler  events:  - http:  path: /orders/{id}  method: delete  # you can add CloudFormation resource templates here sources:  # Defining Dynamo DB  resources:  Resources:  CustomersDynamoDBTable:  Type: AWS::DynamoDB::Table  Properties:  TableName: ${self:custom.customersTableName}  AttributeDefinitions:  - AttributeName: id  AttributeType: S  KeySchema:  - AttributeName: id  KeyType: HASH  ProvisionedThroughput:  ReadCapacityUnits: 1  WriteCapacityUnits: 1  OrdersDynamoDBTable:  Type: AWS::DynamoDB::Table  Properties:  TableName: ${self:custom.ordersTableName}  AttributeDefinitions:  - AttributeName: id  AttributeType: S  # - AttributeName: customerId  # AttributeType: S  # - AttributeName: productId  # AttributeType: S  KeySchema:  - AttributeName: id  KeyType: HASH  # - AttributeName: customerId  # KeyType: RANGE  # - AttributeName: productId  # KeyType: RANGE  ProvisionedThroughput:  ReadCapacityUnits: 1  WriteCapacityUnits: 1  ProductsDynamoDBTable:  Type: AWS::DynamoDB::Table  Properties:  TableName: ${self:custom.productsTableName}  AttributeDefinitions:  - AttributeName: id  AttributeType: S  - AttributeName: name  AttributeType: S  KeySchema:  - AttributeName: id  KeyType: HASH  - AttributeName: name  KeyType: RANGE  ProvisionedThroughput:  ReadCapacityUnits: 1  WriteCapacityUnits: 1 |

## Source Code in Eclipse:



## Build Application:

|  |
| --- |
| GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api (master)  $ mvn clean install  [INFO] Scanning for projects...  [INFO]  [INFO] --------------------< com.serverless:products-api >---------------------  [INFO] Building products-api dev  [INFO] --------------------------------[ jar ]---------------------------------  [INFO]  [INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ products-api ---  [INFO] Deleting C:\PROJECTS\FSD-Delta-StackRoute\Asignments\Exercise-10\aws-java-products-api\target  [INFO]  [INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ products-api ---  [INFO] Using 'UTF-8' encoding to copy filtered resources.  [INFO] Copying 1 resource  [INFO]  [INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ products-api ---  [INFO] Changes detected - recompiling the module!  [INFO] Compiling 20 source files to C:\PROJECTS\FSD-Delta-StackRoute\Asignments\Exercise-10\aws-java-products-api\target\classes  [INFO]  [INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ products-api ---  [INFO] Using 'UTF-8' encoding to copy filtered resources.  [INFO] skip non existing resourceDirectory C:\PROJECTS\FSD-Delta-StackRoute\Asignments\Exercise-10\aws-java-products-api\src\test\resources  [INFO]  [INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ products-api ---  [INFO] No sources to compile  [INFO]  [INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ products-api ---  [INFO] No tests to run.  [INFO]  [INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ products-api ---  [INFO] Building jar: C:\PROJECTS\FSD-Delta-StackRoute\Asignments\Exercise-10\aws-java-products-api\target\products-api-dev.jar  [INFO]  [INFO] --- maven-shade-plugin:2.3:shade (default) @ products-api ---  [INFO] Skipping pom dependency org.apache.logging.log4j:log4j:pom:2.14.1 in the shaded jar.  [INFO] Including com.amazonaws:aws-lambda-java-log4j2:jar:1.1.0 in the shaded jar.  [INFO] Including org.apache.logging.log4j:log4j-core:jar:2.8.2 in the shaded jar.  [INFO] Including org.apache.logging.log4j:log4j-api:jar:2.8.2 in the shaded jar.  [INFO] Including com.amazonaws:aws-lambda-java-core:jar:1.1.0 in the shaded jar.  [INFO] Including com.fasterxml.jackson.core:jackson-core:jar:2.9.10 in the shaded jar.  [INFO] Including com.fasterxml.jackson.core:jackson-databind:jar:2.9.10 in the shaded jar.  [INFO] Including com.fasterxml.jackson.core:jackson-annotations:jar:2.9.10 in the shaded jar.  [INFO] Including com.amazonaws:aws-java-sdk-dynamodb:jar:1.11.119 in the shaded jar.  [INFO] Including com.amazonaws:aws-java-sdk-s3:jar:1.11.119 in the shaded jar.  [INFO] Including com.amazonaws:aws-java-sdk-kms:jar:1.11.119 in the shaded jar.  [INFO] Including com.amazonaws:aws-java-sdk-core:jar:1.11.119 in the shaded jar.  [INFO] Including commons-logging:commons-logging:jar:1.1.3 in the shaded jar.  [INFO] Including org.apache.httpcomponents:httpclient:jar:4.5.2 in the shaded jar.  [INFO] Including org.apache.httpcomponents:httpcore:jar:4.4.4 in the shaded jar.  [INFO] Including commons-codec:commons-codec:jar:1.9 in the shaded jar.  [INFO] Including software.amazon.ion:ion-java:jar:1.0.2 in the shaded jar.  [INFO] Including com.fasterxml.jackson.dataformat:jackson-dataformat-cbor:jar:2.6.6 in the shaded jar.  [INFO] Including joda-time:joda-time:jar:2.8.1 in the shaded jar.  [INFO] Including com.amazonaws:jmespath-java:jar:1.11.119 in the shaded jar.  [INFO] Replacing original artifact with shaded artifact.  [INFO] Replacing C:\PROJECTS\FSD-Delta-StackRoute\Asignments\Exercise-10\aws-java-products-api\target\products-api-dev.jar with C:\PROJECTS\FSD-Delta-StackRoute\Asignments\Exercise-10\aws-java-products-api\target\products-api-dev-shaded.jar  [INFO]  [INFO] --- maven-install-plugin:2.4:install (default-install) @ products-api ---  [INFO] Installing C:\PROJECTS\FSD-Delta-StackRoute\Asignments\Exercise-10\aws-java-products-api\target\products-api-dev.jar to C:\Users\GaneshLakshmanan\.m2\repository\com\serverless\products-api\dev\products-api-dev.jar  [INFO] Installing C:\PROJECTS\FSD-Delta-StackRoute\Asignments\Exercise-10\aws-java-products-api\pom.xml to C:\Users\GaneshLakshmanan\.m2\repository\com\serverless\products-api\dev\products-api-dev.pom  [INFO] ------------------------------------------------------------------------  [INFO] BUILD SUCCESS  [INFO] ------------------------------------------------------------------------  [INFO] Total time: 20.979 s  [INFO] Finished at: 2021-06-05T17:33:31+05:30  [INFO] ------------------------------------------------------------------------  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api (master)  $ |

## Deploy Code in AWS:

### 

### Configure Profile:

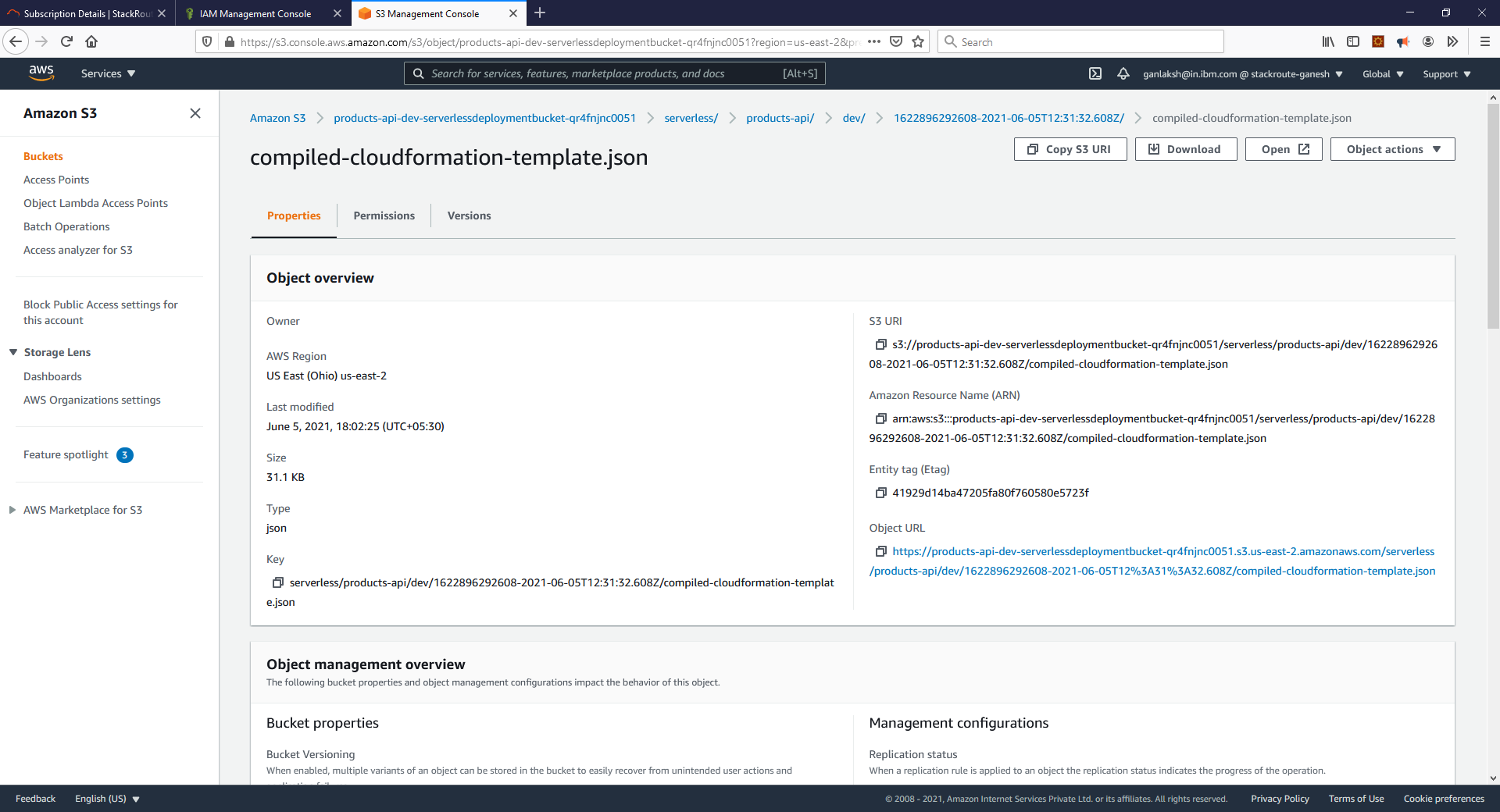
|  |
| --- |
| $ aws configure  AWS Access Key ID [\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*AZUP]: AKIAQP6YB2ZNUA6HH4WJ  AWS Secret Access Key [\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/vHW]: 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  Default region name [us-east-2]:  Default output format [None]:  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

### 

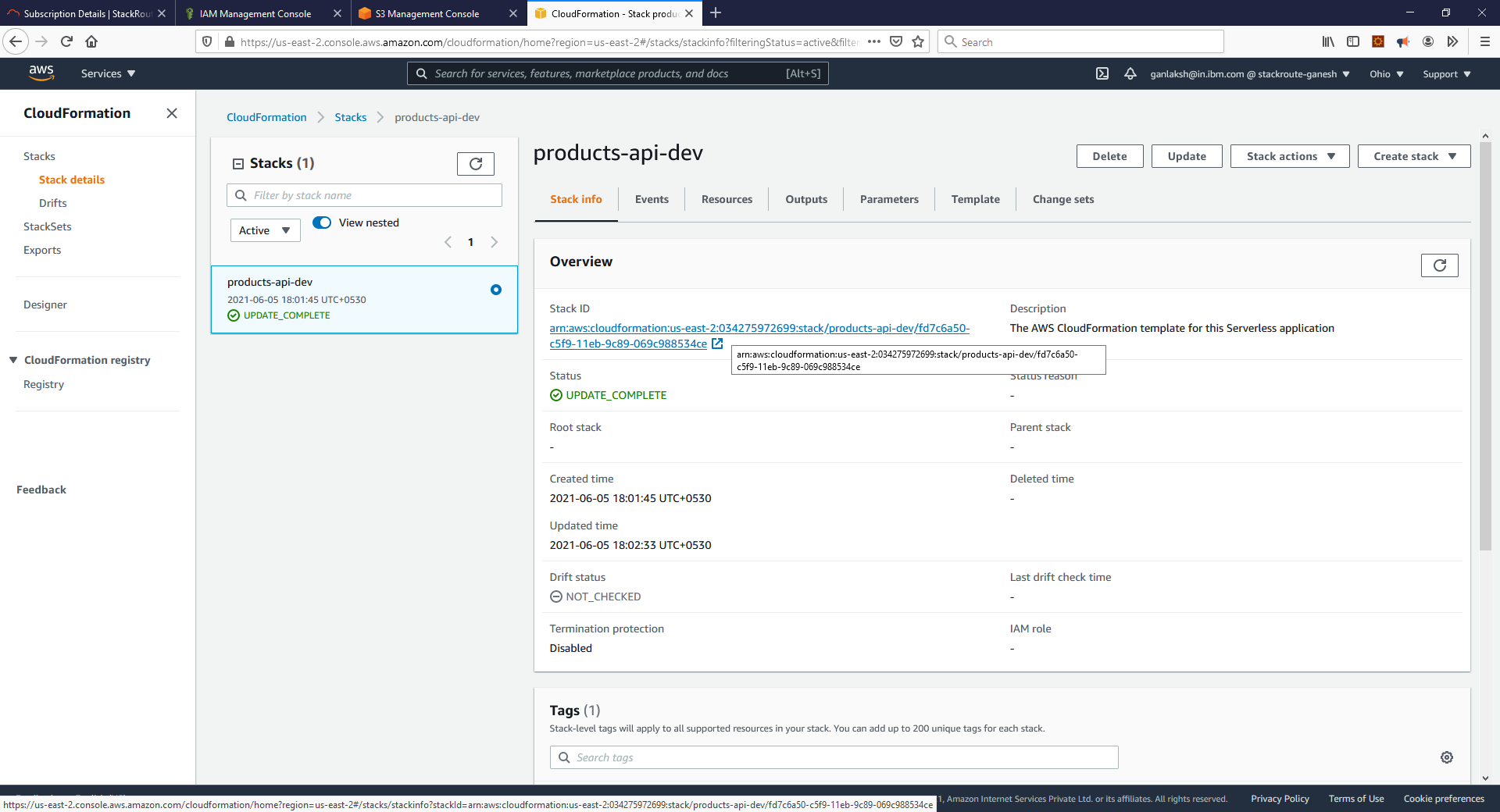
### Deploy Serverless Code:

|  |
| --- |
| GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ ls -l  total 8  -rw-r--r-- 1 GMX+04718A744 4096 5460 Jun 5 15:30 serverless.yml  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ serverless deploy  Serverless: Configuration warning at 'provider.lambdaHashingVersion': should be equal to one of the allowed values [20201221]  Serverless:  Serverless: Learn more about configuration validation here: http://slss.io/configuration-validation  Serverless:  Serverless: Deprecation warning: Starting with next major, Serverless will throw on configuration errors by default. Adapt to this behavior now by adding "configValidationMode: error" to service configuration  More Info: https://www.serverless.com/framework/docs/deprecations/#CONFIG\_VALIDATION\_MODE\_DEFAULT  Serverless: Deprecation warning: Starting with version 3.0.0, following property will be replaced:  "provider.iamRoleStatements" -> "provider.iam.role.statements"  More Info: https://www.serverless.com/framework/docs/deprecations/#PROVIDER\_IAM\_SETTINGS  Serverless: Packaging service...  Serverless: Creating Stack...  Serverless: Checking Stack create progress...  ........  Serverless: Stack create finished...  Serverless: Uploading CloudFormation file to S3...  Serverless: Uploading artifacts...  Serverless: Uploading service products-api-dev.jar file to S3 (8.84 MB)...  Serverless: Validating template...  Serverless: Updating Stack...  Serverless: Checking Stack update progress...  ...........................................................................................................................................................................................................................  Serverless: Stack update finished...  Service Information  service: products-api  stage: dev  region: us-east-2  stack: products-api-dev  resources: 74  api keys:  None  endpoints:  GET - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products  GET - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products/{id}  POST - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products  DELETE - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products/{id}  GET - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers  GET - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers/{id}  POST - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers  DELETE - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers/{id}  GET - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/orders  GET - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/orders/{id}  POST - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/orders  DELETE - https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/orders/{id}  functions:  listProducts: products-api-dev-listProducts  getProduct: products-api-dev-getProduct  createProduct: products-api-dev-createProduct  deleteProduct: products-api-dev-deleteProduct  listCustomers: products-api-dev-listCustomers  getCustomer: products-api-dev-getCustomer  createCustomer: products-api-dev-createCustomer  deleteCustomer: products-api-dev-deleteCustomer  listOrders: products-api-dev-listOrders  getOrder: products-api-dev-getOrder  createOrder: products-api-dev-createOrder  deleteOrder: products-api-dev-deleteOrder  layers:  None  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

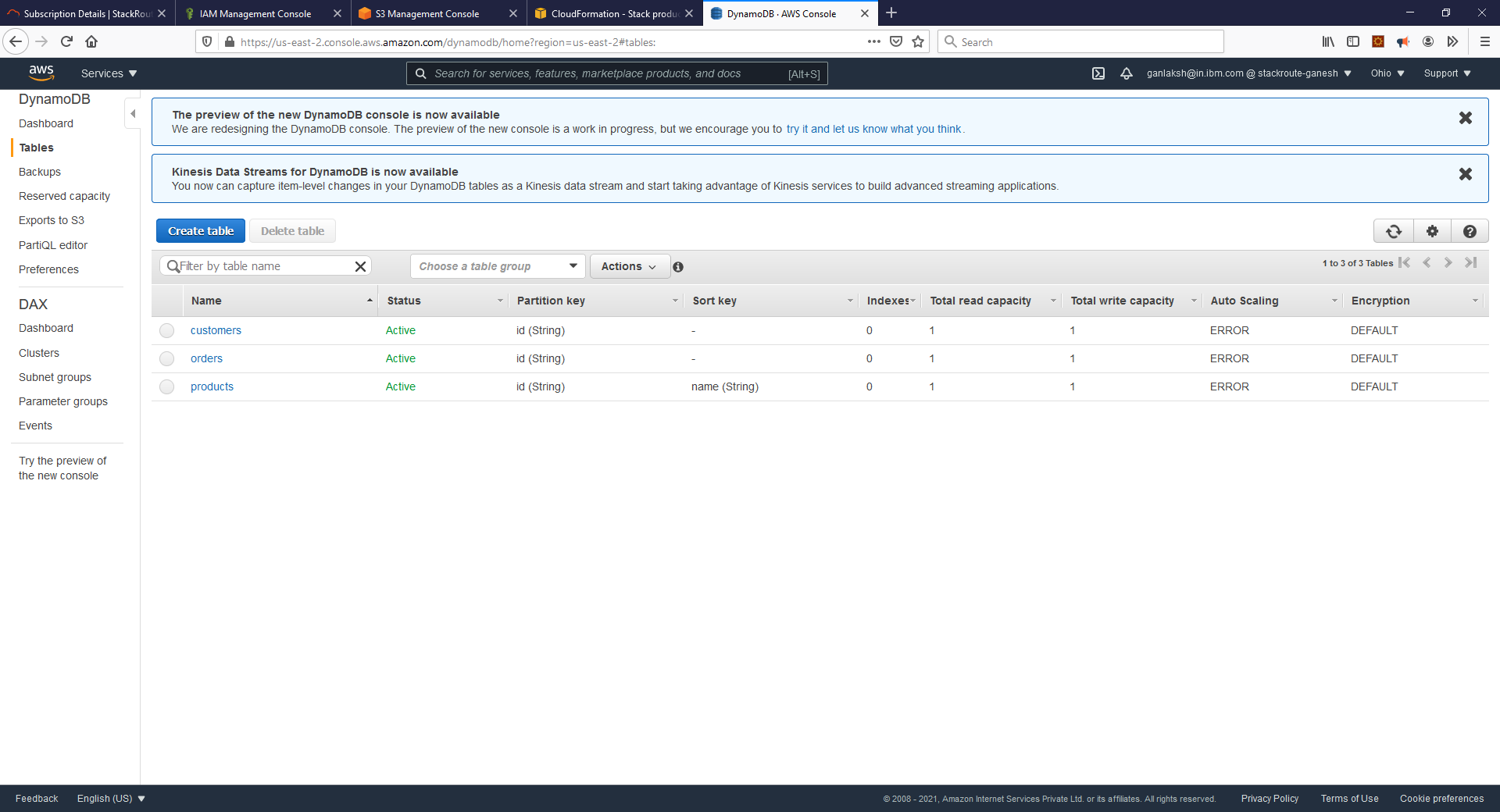
## S3 Buckets (Source Code Stored):



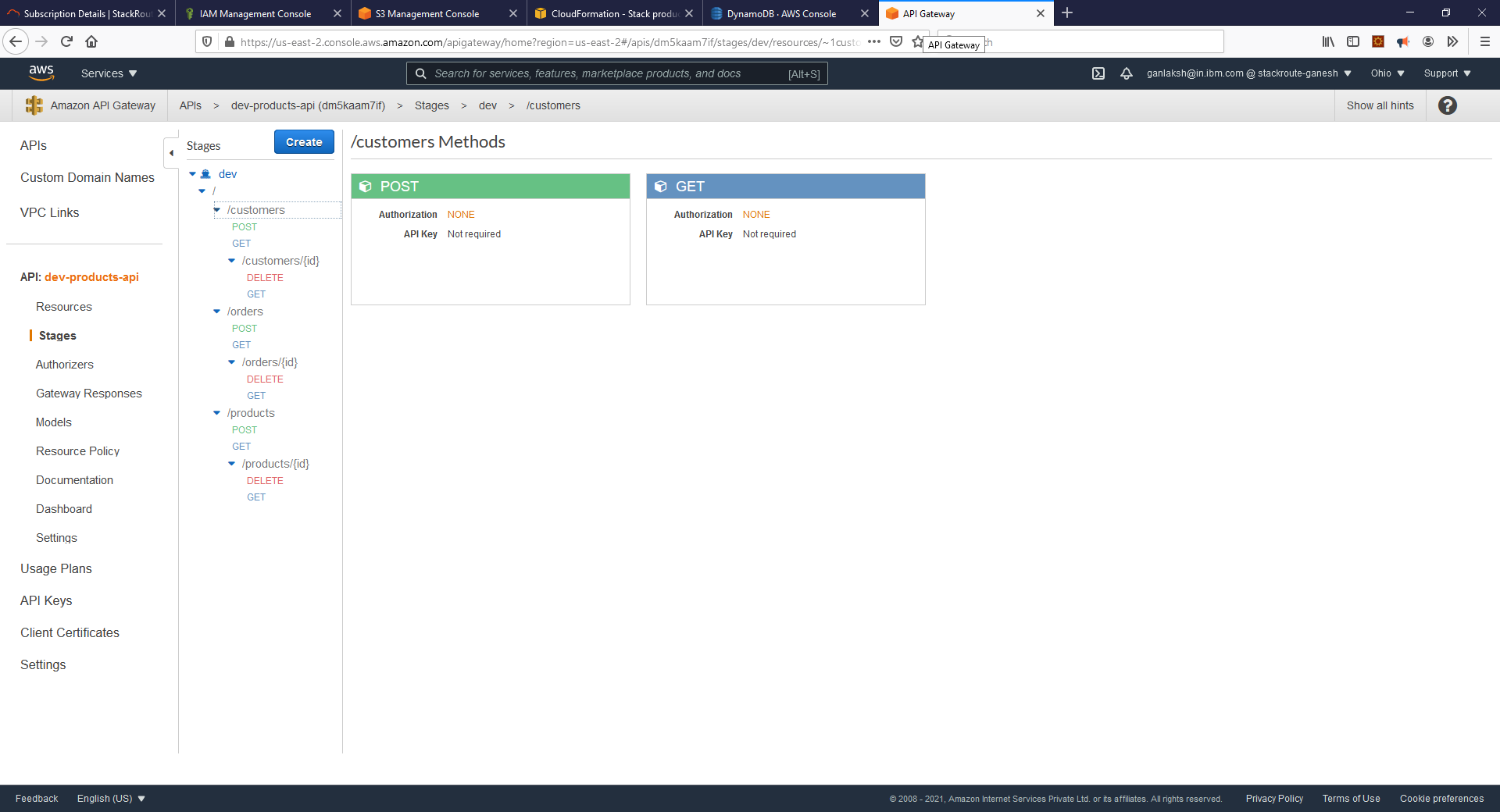
## Cloud Formation:



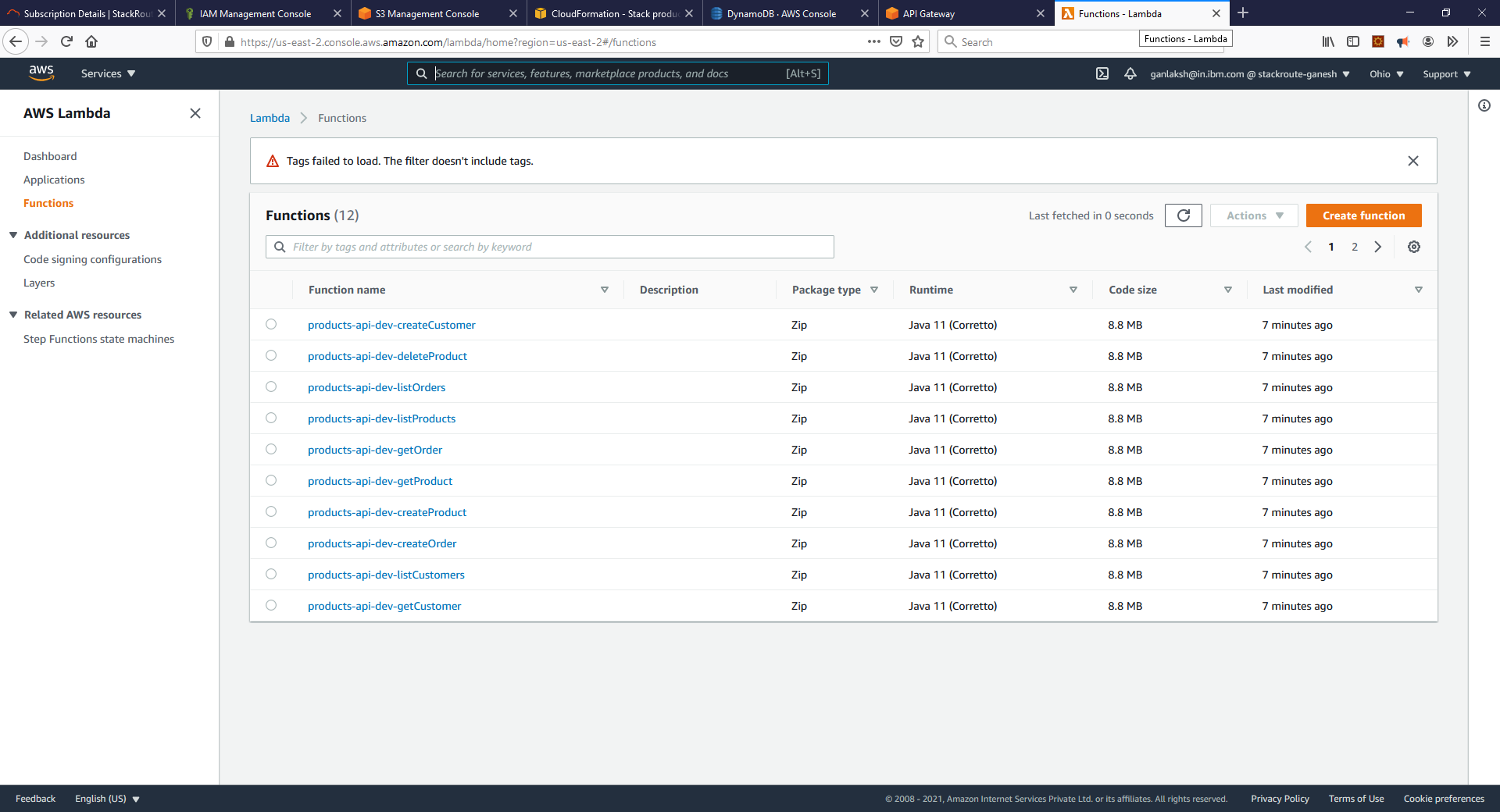
## Dynamo DB:



## API Gateway:



## Lambda API List:



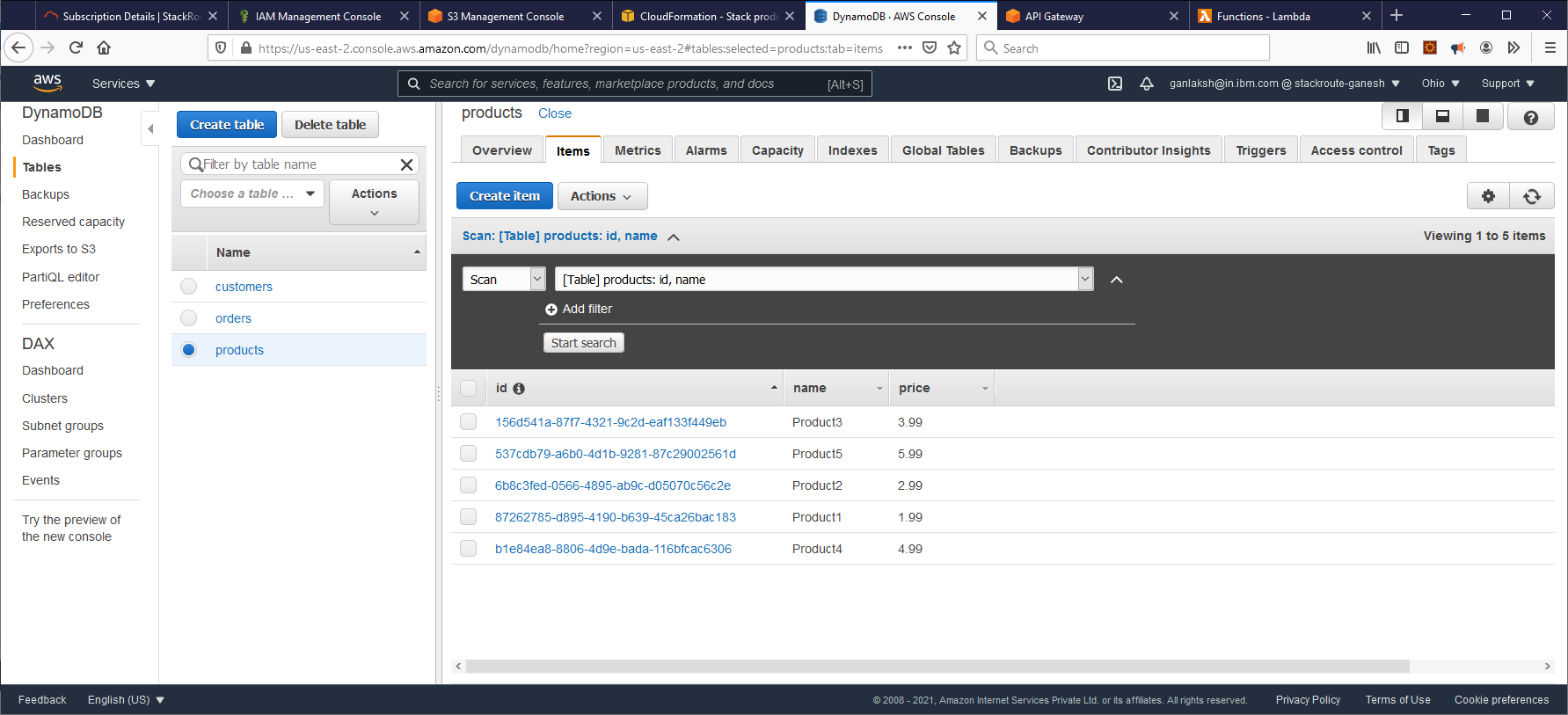
## Accessing Product Details through API:

### Create Product

#### API Call

|  |
| --- |
| curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products -d '{"name": "Product1", "price": 1.99}'  curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products -d '{"name": "Product2", "price": 2.99}'  curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products -d '{"name": "Product3", "price": 3.99}'  curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products -d '{"name": "Product4", "price": 4.99}'  curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products -d '{"name": "Product5", "price": 5.99}'    Sample Command Execution:  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products -d '{"name": "Product5", "price": 5.99}'  % Total % Received % Xferd Average Speed Time Time Time Current  Dload Upload Total Spent Left Speed  100 111 100 76 100 35 87 40 --:--:-- --:--:-- --:--:-- 131{"id":"537cdb79-a6b0-4d1b-9281-87c29002561d","name":"Product5","price":5.99}  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

#### Records in Dynamo DB



### List Products:

#### API Call

|  |
| --- |
| $ curl https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products  % Total % Received % Xferd Average Speed Time Time Time Current  Dload Upload Total Spent Left Speed  100 386 100 386 0 0 52 0 0:00:07 0:00:07 --:--:-- 93[{"id":"87262785-d895-4190-b639-45ca26bac183","name":"Product1","price":1.99},{"id":"6b8c3fed-0566-4895-ab9c-d05070c56c2e","name":"Product2","price":2.99},{"id":"b1e84ea8-8806-4d9e-bada-116bfcac6306","name":"Product4","price":4.99},{"id":"537cdb79-a6b0-4d1b-9281-87c29002561d","name":"Product5","price":5.99},{"id":"156d541a-87f7-4321-9c2d-eaf133f449eb","name":"Product3","price":3.99}]  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

### Get Product:

#### API Call

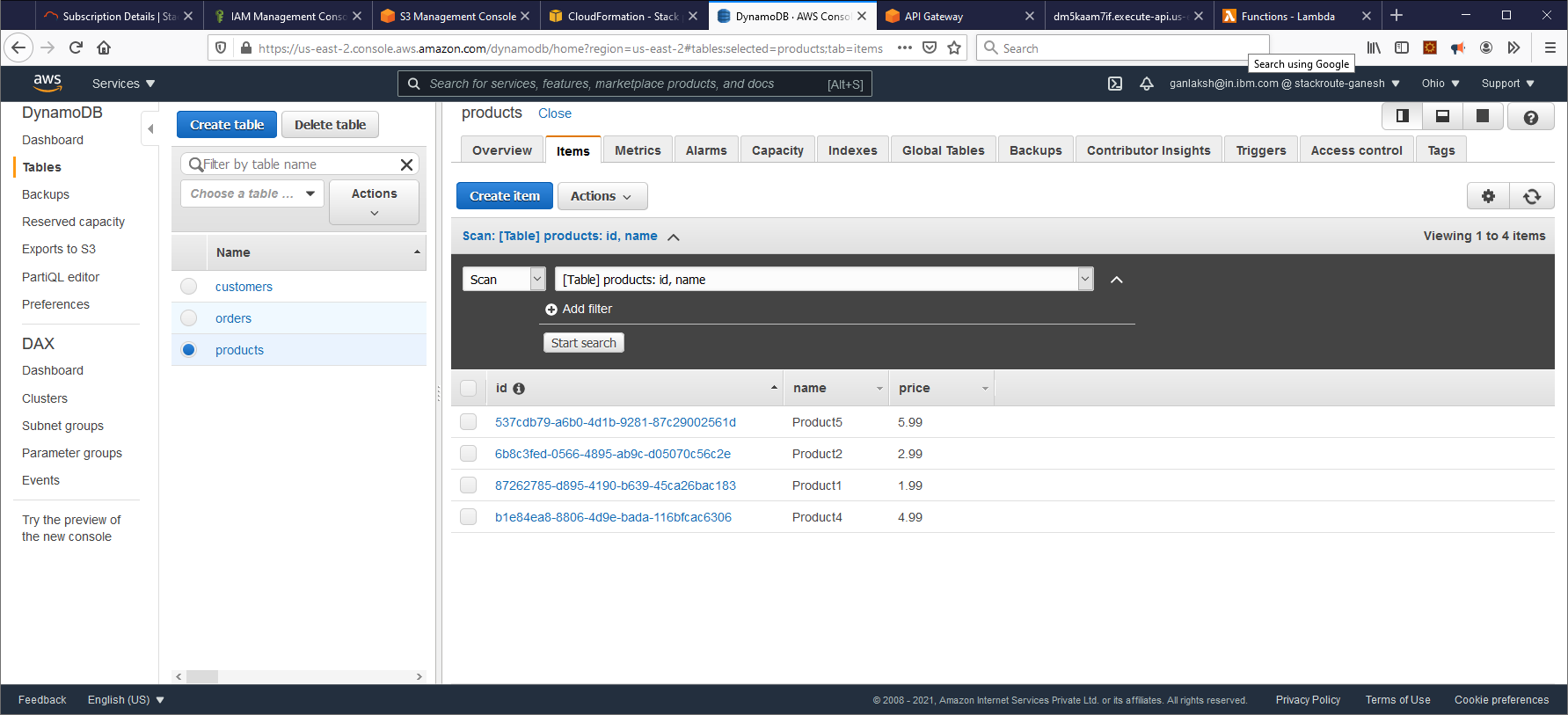
|  |
| --- |
| GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ curl https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products/156d541a-87f7-4321-9c2d-eaf133f449eb  % Total % Received % Xferd Average Speed Time Time Time Current  Dload Upload Total Spent Left Speed  100 76 100 76 0 0 10 0 0:00:07 0:00:06 0:00:01 20{"id":"156d541a-87f7-4321-9c2d-eaf133f449eb","name":"Product3","price":3.99}  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

### Delete Product:

#### API Call

|  |
| --- |
| GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ curl -X DELETE https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/products/156d541a-87f7-4321-9c2d-eaf133f449eb  % Total % Received % Xferd Average Speed Time Time Time Current  Dload Upload Total Spent Left Speed  0 0 0 0 0 0 0 0 --:--:-- 0:00:07 --:--:-- 0  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

#### Records in Dynamo DB



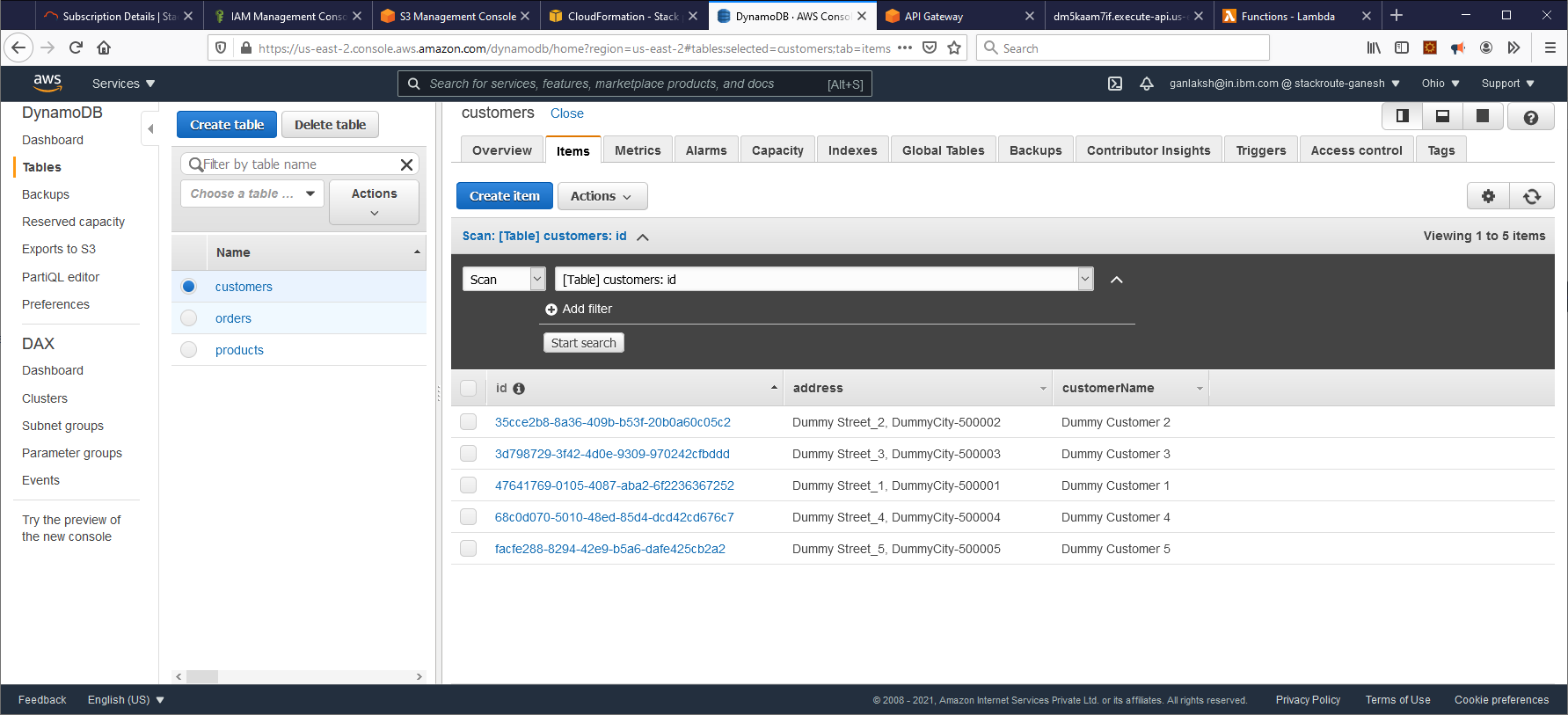
## Accessing Customer Details through API:

### Create Customer

#### API Call

|  |
| --- |
| curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers -d '{"customerNaame": "Dummy Customer 1", "address": "Dummy Street\_1, DummyCity-500001"}'  curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers -d '{"customerNaame": "Dummy Customer 2", "address": "Dummy Street\_2, DummyCity-500002"}'  curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers -d '{"customerNaame": "Dummy Customer 3", "address": "Dummy Street\_3, DummyCity-500003"}'  curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers -d '{"customerNaame": "Dummy Customer 4", "address": "Dummy Street\_4, DummyCity-500004"}'  curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers -d '{"customerNaame": "Dummy Customer 5", "address": "Dummy Street\_5, DummyCity-500005"}'  Example:  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers -d '{"customerNaame": "Dummy Customer 5", "address": "Dummy Street\_5, DummyCity-500005"}'  % Total % Received % Xferd Average Speed Time Time Time Current  Dload Upload Total Spent Left Speed  100 208 100 124 100 84 351 237 --:--:-- --:--:-- --:--:-- 594{"id":"facfe288-8294-42e9-b5a6-dafe425cb2a2","customerName":"Dummy Customer 5","address":"Dummy Street\_5, DummyCity-500005"}  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

#### Records in Dynamo DB



### List Customers:

#### API Call

|  |
| --- |
| $ curl https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers  % Total % Received % Xferd Average Speed Time Time Time Current  Dload Upload Total Spent Left Speed  100 626 100 626 0 0 684 0 --:--:-- --:--:-- --:--:-- 685[{"id":"3d798729-3f42-4d0e-9309-970242cfbddd","customerName":"Dummy Customer 3","address":"Dummy Street\_3, DummyCity-500003"},{"id":"35cce2b8-8a36-409b-b53f-20b0a60c05c2","customerName":"Dummy Customer 2","address":"Dummy Street\_2, DummyCity-500002"},{"id":"68c0d070-5010-48ed-85d4-dcd42cd676c7","customerName":"Dummy Customer 4","address":"Dummy Street\_4, DummyCity-500004"},{"id":"47641769-0105-4087-aba2-6f2236367252","customerName":"Dummy Customer 1","address":"Dummy Street\_1, DummyCity-500001"},{"id":"facfe288-8294-42e9-b5a6-dafe425cb2a2","customerName":"Dummy Customer 5","address":"Dummy Street\_5, DummyCity-500005"}]  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

### Get Customer:

#### API Call

|  |
| --- |
| $ curl https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers/3d798729-3f42-4d0e-9309-970242cfbddd  % Total % Received % Xferd Average Speed Time Time Time Current  Dload Upload Total Spent Left Speed  100 124 100 124 0 0 17 0 0:00:07 0:00:07 --:--:-- 31{"id":"3d798729-3f42-4d0e-9309-970242cfbddd","customerName":"Dummy Customer 3","address":"Dummy Street\_3, DummyCity-500003"}  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

### Delete Customer:

#### API Call

|  |
| --- |
| GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ curl -X DELETE https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/customers/3d798729-3f42-4d0e-9309-970242cfbddd  % Total % Received % Xferd Average Speed Time Time Time Current  Dload Upload Total Spent Left Speed  0 0 0 0 0 0 0 0 --:--:-- 0:00:06 --:--:-- 0  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

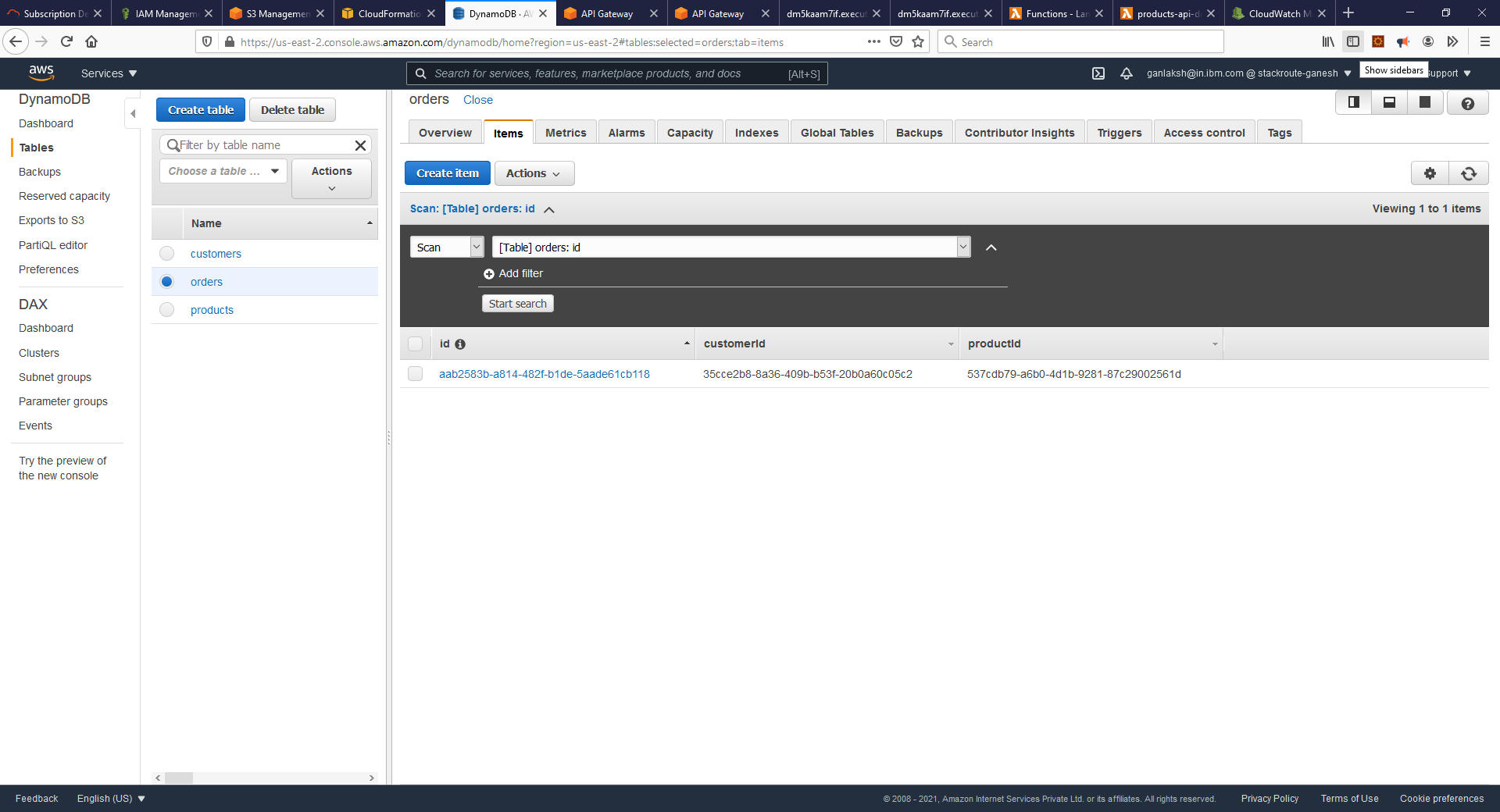
## Accessing Order Details through API:

### Create Order

#### API Call

|  |
| --- |
| GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ curl -X POST https://dm5kaam7if.execute-api.us-east-2.amazonaws.com/dev/orders -d '{"customerId": "35cce2b8-8a36-409b-b53f-20b0a60c05c2","productId": "537cdb79-a6b0-4d1b-9281-87c29002561d"}'  % Total % Received % Xferd Average Speed Time Time Time Current  Dload Upload Total Spent Left Speed  100 254 100 148 100 106 20 14 0:00:07 0:00:07 --:--:-- 39{"id":"aab2583b-a814-482f-b1de-5aade61cb118","customerId":"35cce2b8-8a36-409b-b53f-20b0a60c05c2","productId":"537cdb79-a6b0-4d1b-9281-87c29002561d"}  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |

#### Records in Dynamo DB



### List Orders:

#### API Call

Do same like products/customers

### Get Customer:

#### API Call

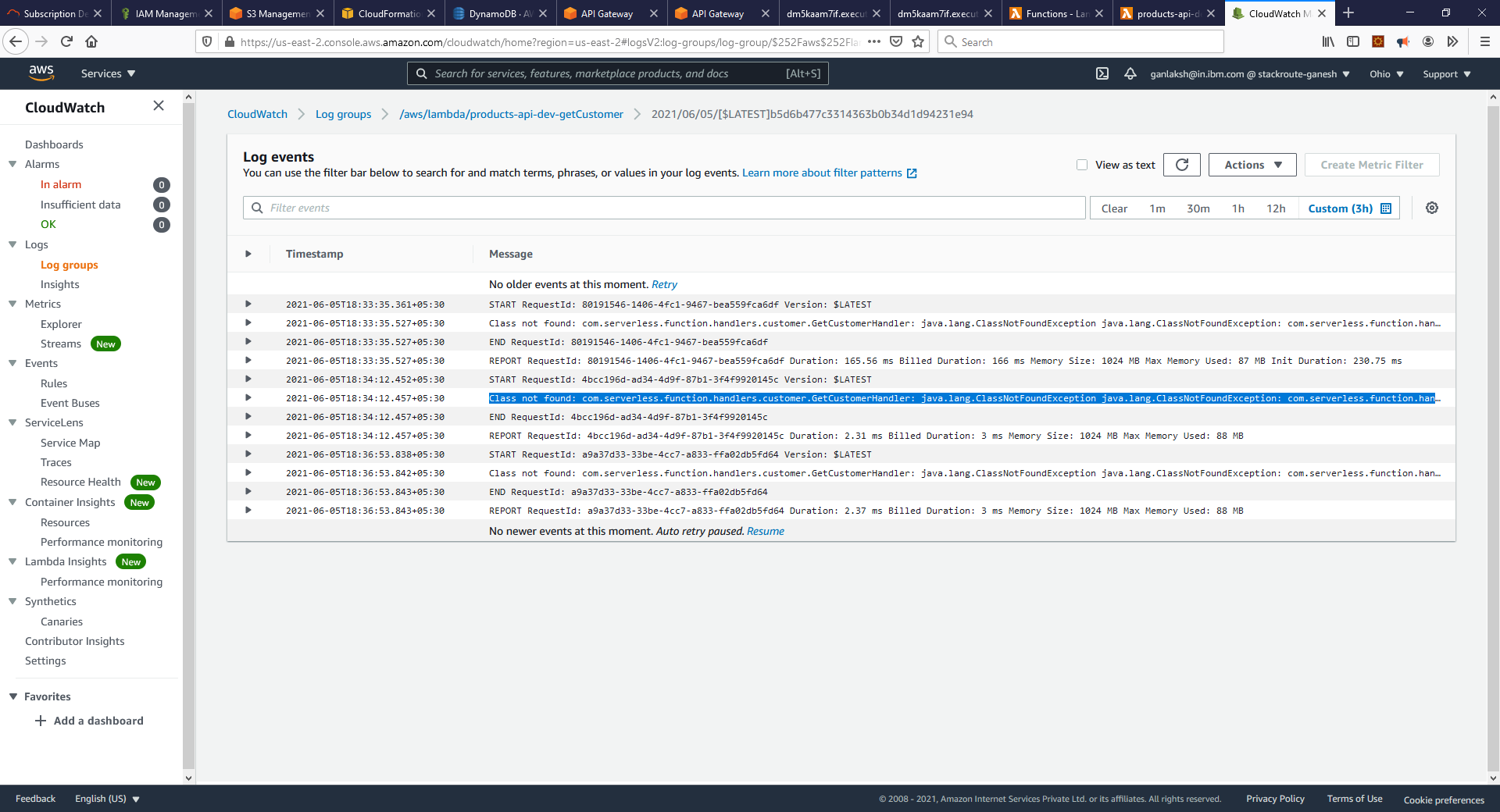
Do same like products/customers

### Delete Customer:

#### API Call

#### Do same like products/customers

## Sample Log analysis Using CloudWatch:



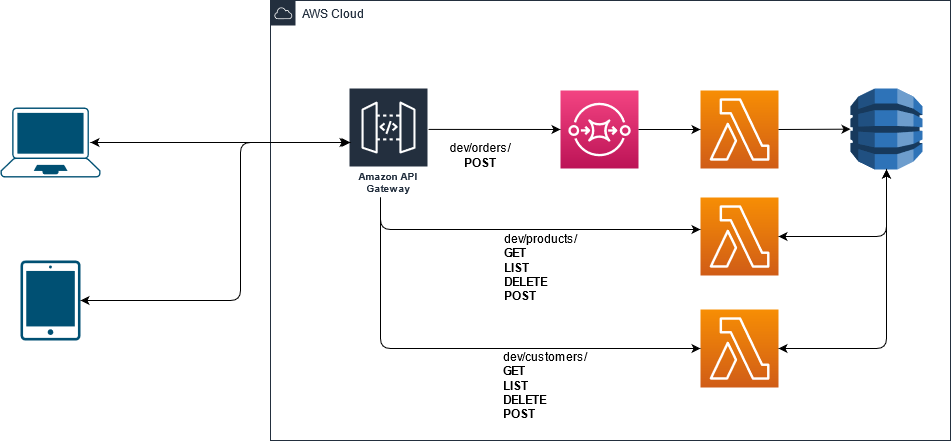
## What is Next?

#### Problem and Solution:

|  |
| --- |
| Currently Orders table contains customer id and product id. This table designed as RDBMS model. But, Dynamo DB is No-SQL Database. I need to redesign the Orders table to store Customer and ordered Product list. For this we can send customer id and product id to SQS and then Using Lambda fetch the customer id and product details and store along with Order Date. |

#### 

#### Architecture:



## Cleanup Serverless Service:

|  |
| --- |
| GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ serverless remove  Serverless: Configuration warning at 'provider.lambdaHashingVersion': should be equal to one of the allowed values [20201221]  Serverless:  Serverless: Learn more about configuration validation here: http://slss.io/configuration-validation  Serverless:  Serverless: Deprecation warning: Starting with next major, Serverless will throw on configuration errors by default. Adapt to this behavior now by adding "configValidationMode: error" to service configuration  More Info: https://www.serverless.com/framework/docs/deprecations/#CONFIG\_VALIDATION\_MODE\_DEFAULT  Serverless: Deprecation warning: Starting with version 3.0.0, following property will be replaced:  "provider.iamRoleStatements" -> "provider.iam.role.statements"  More Info: https://www.serverless.com/framework/docs/deprecations/#PROVIDER\_IAM\_SETTINGS  Serverless: Getting all objects in S3 bucket...  Serverless: Removing objects in S3 bucket...  Serverless: Removing Stack...  Serverless: Checking Stack delete progress...  ......................................................................................................................................  Serverless: Stack delete finished...  Serverless: Stack delete finished...  GMX+04718A744@win\_hm\_01 MINGW64 /c/PROJECTS/FSD-Delta-StackRoute/Asignments/Exercise-10/aws-java-products-api/aws-serverless (master)  $ |