

IST 412

Engineering of Complex Software Systems

Fall 2018

Joe Oakes

AWS ERP

Team Vinyl

Unit Testing – AWS Lambda

Chan Morn

Ricky Zhao

Michael Morrell

Zachary Sigamony

James O'Connell

Johnathan Seitz

Sales Order Module (SOM)

Post Sale

Saved test event

PostSalesOrder

```
1 {
2   "httpMethod": "POST",
3   "body": {
4     "TableName": "Sales_Order",
5     "Item": {
6       "Customer_ID": "d769cb9a-4e23-49f7-988c-0e8bf11ad9ea",
7       "Date": "10-8-2018",
8       "Payment_Method": "Credit",
9       "Product_Design": [
10        {
11          "Product_Serial_Number": "BLU510",
12          "Quantity": 1
13        },
14        {
15          "Product_Serial_Number": "YEL671",
16          "Quantity": 1
17        }
18      ],
19      "Sales_Order_Number": 9006,
20      "Shipping_Information": {
21        "Shipping_Address": "123 Fake St",
22        "Shipping_City": "Philadelphia, PA",
23        "Shipping_Country": "US",
24        "Shipping_Email": "mrm6068@psu.edu",
25        "Shipping_Name": "Ricky Zhao",
26        "Shipping_Phone_Number": "6463383108",
27        "Shipping_State": "PA",
28        "Shipping_Zip_Code": "123"
29      },
30      "Total": "23.40"
31    }
32  }
```

Lambda > Functions > SOM ARN - arn:aws:lambda:us-east-1:802749809537:function:SOM

SOM

Throttle Qualifiers Actions PostSalesOrder Test Save

✓ Execution result: succeeded (logs) ✕

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{
  "statusCode": "200",
  "body": "{}",
  "headers": {
    "Content-Type": "application/json",
    "Access-Control-Allow-Origin": "*"
  }
}
```

Summary

Code SHA-256	Request ID
pwnWeJrhKe+6dtGYndIMxc1GKHfZaOkN7OHI3TOlcXQ=	393ed9fc-f5eb-11e8-8787-05a1e376250b
Duration	Billed duration

Delete Sale

DeleteSale

```
1 {  
2   "httpMethod": "DELETE",  
3   "queryStringParameters": {  
4     "TableName": "Sales_Order"  
5   },  
6   "body": {  
7     "TableName": "Sales_Order",  
8     "Key": {  
9       "Sales_Order_Number": 801  
10    }  
11  }  
12 }
```

Lambda > Functions > SOM

ARN - arn:aws:lambda:us-east-1:802749809537:function:SOM

SOM

Throttle

Qualifiers ▼

Actions ▼

DeleteSale ▼

Test

Save

✓ Execution result: succeeded (logs)

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{}",  
  "headers": {  
    "Content-Type": "application/json",  
    "Access-Control-Allow-Origin": "*"   
  }  
}
```

Summary

Code SHA-256

pwnWeJrhKe+6dtGYndIMxc1GKHfZaOkN7OHI3TOlcXQ=

Request ID

59bbdffa-f5e9-11e8-8715-c5a09b5ba7aa

Duration

Billed duration

Update Sale

 Edit saved test events

Saved test event

PutSale



```
1 {
2   "httpMethod": "PUT",
3   "queryStringParameters": {
4     "TableName": "Sales_Order"
5   },
6   "body": {
7     "TableName": "Sales_Order",
8     "Key": {
9       "Sales_Order_Number": 801
10    },
11    "UpdateExpression": "set Payment_Method = :a, Customer_ID = :b",
12    "ExpressionAttributeValues": {
13      ":a": "PayPal",
14      ":b": "23.40"
15    },
16    "ReturnValues": "UPDATED_NEW"
17  }
18 }
```

Lambda > Functions > SOM

ARN - arn:aws:lambda:us-east-1:802749809537:function:SOM

SOM

Throttle

Qualifiers ▼

Actions ▼

PutSale ▼

Test

Save

✓ Execution result: succeeded (logs)



▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{
  "statusCode": "200",
  "body": "{\\"Attributes\\":{\\"Customer_ID\\":\\"22.22\\",\\"Payment_Method\\":\\"PayPal\\"}}",
  "headers": {
    "Content-Type": "application/json",
    "Access-Control-Allow-Origin": "*"
  }
}
```

Summary

Get All Sales

Saved test event

GetWholeSalesOrdersTable ▼



```
1 {
2   "httpMethod": "GET",
3   "queryStringParameters": {
4     "TableName": "Sales_Order"
5   }
6 }
```

Lambda > Functions > SOM

ARN - arn:aws:lambda:us-east-1:802749809537:function:SOM

SOM

Throttle

Qualifiers ▼

Actions ▼

GetWholeSalesOrdersT... ▼

Test

Save

✓ Execution result: succeeded (logs) ✕

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{
  "statusCode": "200",
  "body": "{\\Items\\":[{\\Customer_ID\\":\\\"5334f5d1-8242-40e3-b472-f7c08351613b\\\",\\Payment_Method\\\":\\\"Credit\\\",\\Product_Design\\\":{\\Quantity\\\":1,\\Product_Serial_Number\\\":\\\"nullYEL670\\\"},{\\Quantity\\\":1,\\Product_Serial_Number\\\":\\\"YEL671\\\"}],\\Date\\\":\\\"10-16-2018\\\",\\Sales_Order_Number\\\":1542404160892,\\Total\\\":\\\"21.40\\\",\\Shipping_Information\\\":{\\Shipping_City\\\":\\\"Levittown\\\",\\Shipping_Country\\\":\\\"United States\\\",\\Shipping_Email\\\":\\\"mrm6068@psu.edu\\\",\\Shipping_Address\\\":\\\"12 Shadywood Rd\\\",\\Shipping_State\\\":\\\"PA\\\",\\Shipping_Name\\\":\\\"Michael
```

Summary

Code SHA-256

Request ID

Get Single Sale by Key Value

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 event

GetItem

```
1 {
2   "httpMethod": "GET",
3   "queryStringParameters": {
4     "TableName": "Sales_Order",
5     "id": 801,
6     "Type": "getItem"
7   }
8 }
```

Lambda > Functions > SOM

ARN - arn:aws:lambda:us-east-1:802749809537:function:SOM

SOM

Throttle Qualifiers Actions GetItem Test Save

✓ Execution result: succeeded (logs)

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{\"Quantity\":1,\"Product_Serial_Number\":\"YEL671\"},\"Date\":\"10-8-2018\", \"Sales_Order_Number\":801, \"Total\": \"23.40\", \"Shipping_Information\": {\"Shipping_City\": \"Philadelphia, PA\", \"Shipping_Country\": \"US\", \"Shipping_Email\": \"mrm6068@psu.edu\", \"Shipping_Address\": \"123 Fake St\", \"Shipping_State\": \"PA\", \"Shipping_Name\": \"Ricky Zhao\", \"Shipping_Phone_Number\": \"6463383108\", \"Shipping_Zip_Code\": \"123\"}}\", \"headers\": {\"Content-Type\": \"application/json\", \"Access-Control-Allow-Origin\": \"*\"}}
```

Summary

Get Sale(s) by Any Attribute

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 event

GetSalesOrder



```
1 {  
2   "httpMethod": "GET",  
3   "queryStringParameters": {  
4     "TableName": "Sales_Order",  
5     "id": "d769cb9a-4e23-49f7-988c-0e8bf11ad9ea",  
6     "attribute": "Customer_ID",  
7     "Type": "getByAttribute"  
8   }  
9 }
```

Lambda > Functions > SOM

ARN - arn:aws:lambda:us-east-1:802749809537:function:SOM

SOM

Throttle

Qualifiers ▼

Actions ▼

GetSalesOrder ▼

Test

Save

✓ Execution result: succeeded (logs)



▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{\\\"Items\\\": [{\\\"Customer_ID\\\": \\\"d769cb9a-4e23-49f7-988c-0e8bf11ad9ea\\\", \\\"Payment_Method\\\": \\\"Credit\\\", \\\"Product_Design\\\": [{\\\"Quantity\\\": 1, \\\"Product_Serial_Number\\\": \\\"BLU510\\\"}, {\\\"Quantity\\\": 1, \\\"Product_Serial_Number\\\": \\\"YEL671\\\"}], \\\"Date\\\": \\\"10-8-2018\\\", \\\"Sales_Order_Number\\\": 88801, \\\"Total\\\": \\\"23.40\\\", \\\"Shipping_Information\\\": {\\\"Shipping_City\\\": \\\"Philadelphia, PA\\\", \\\"Shipping_Country\\\": \\\"US\\\", \\\"Shipping_Email\\\": \\\"mrm6068@psu.edu\\\", \\\"Shipping_Address\\\": \\\"123 Fake St\\\", \\\"Shipping_State\\\": \\\"PA\\\", \\\"Shipping_Name\\\": \\\"Ricky Zhao\\\", \\\"Shipping_Phone_Number\\\": \\\"6463383108\\\", \\\"Shipping_Zip_Code\\\": \\\"123\\\"}}, {\\\"Customer_ID\\\": \\\"d769cb9a-4e23-49f7-988c-0e8bf11ad9ea\\\", \\\"Payment_Method\\\": \\\"Credit\\\", \\\"Product_Design\\\":
```

Purchase Order Module (POM)

Post PO

Saved test event

PostPO



```
1 {  
2   "httpMethod": "POST",  
3   "body": {  
4     "TableName": "Purchase_Order",  
5     "Item": {  
6       "Arrival_Date": "6-3-1",  
7       "Date_Issued": "1-1-1",  
8       "Material_ID": "1",  
9       "Order_Placement_Date": "1-1-1",  
10      "Payment_Method": "1",  
11      "Purchase_Order_Number": 4,  
12      "Purchase_Order_Total": "$1",  
13      "Supplier_ID": "4",  
14      "Warehouse_ID": "2"  
15    }  
16  }  
17 }
```

Lambda > Functions > POM

ARN - arn:aws:lambda:us-east-1:802749809537:function:f

POM

Throttle

Qualifiers ▼

Actions ▼

PostPO ▼

Test

Save

✓ Execution result: succeeded ([logs](#))



▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{}",  
  "headers": {  
    "Content-Type": "application/json",  
    "Access-Control-Allow-Origin": ""  
  }  
}
```

Summary

Delete PO

Saved test event

DeletePO



```
1 {  
2   "httpMethod": "DELETE",  
3   "queryStringParameters": {  
4     "TableName": "Purchase_Order"  
5   },  
6   "body": {  
7     "TableName": "Purchase_Order",  
8     "Key": {  
9       "Purchase_Order_Number": 4  
10    }  
11  }
```

Lambda > Functions > POM

ARN - arn:aws:lambda:us-east-1:802749809537:function:

POM

Throttle

Qualifiers ▼

Actions ▼

DeletePO ▼

Test

Sav

✓ Execution result: succeeded (logs) >

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{}",  
  "headers": {  
    "Content-Type": "application/json",  
    "Access-Control-Allow-Origin": "*"   
  }  
}
```

Summary

Update PO

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 event

UpdatePO

```
1 {
2   "httpMethod": "PUT",
3   "queryStringParameters": {
4     "TableName": "Purchase_Order"
5   },
6   "body": {
7     "TableName": "Purchase_Order",
8     "Key": {
9       "Purchase_Order_Number": 1
10    },
11    "UpdateExpression": "set Arrival_Date = :a, Date_Issued = :b",
12    "ExpressionAttributeValues": {
13      ":a": "5-5-5",
14      ":b": "5-5-5"
15    },
16    "ReturnValues": "UPDATED_NEW"
17  }
18 }
```

Lambda > Functions > POM

ARN - arn:aws:lambda:us-east-1:802749809537:function:POM

POM

Throttle

Qualifiers ▼

Actions ▼

UpdatePO ▼

Test

Save

✓ Execution result: succeeded (logs)

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{
  "statusCode": "200",
  "body": "{\"Attributes\":{\"Arrival_Date\":\"5-5-5\",\"Date_Issued\":\"5-5-5\"}}",
  "headers": {
    "Content-Type": "application/json",
    "Access-Control-Allow-Origin": "*"
  }
}
```

Summary

Get All POs

Saved test event

getTablePO

```
1 {  
2   "httpMethod": "GET",  
3   "queryStringParameters": {  
4     "TableName": "Purchase_Order"  
5   }  
6 }
```

Lambda > Functions > POM

ARN - arn:aws:lambda:us-east-1:802749809537:function:POM

POM

Throttle

Qualifiers ▼

Actions

getTablePO

Test

Save

✔ Execution result: succeeded (logs)

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{
  "statusCode": "200",
  "body": {
    "Items": [
      {
        "Payment_Method": "1",
        "Date_Issued": "1-1-1",
        "Purchase_Order_Total": "$1",
        "Supplier_ID": "2",
        "Material_ID": "1",
        "Order_Placement_Date": "1-1-1",
        "Arrival_Date": "6-3-1",
        "Warehouse_ID": "2",
        "Purchase_Order_Number": 2,
        "Payment_Method": "1",
        "Date_Issued": "1-1-1",
        "Purchase_Order_Total": "$1",
        "Supplier_ID": "4",
        "Material_ID": "1",
        "Order_Placement_Date": "1-1-1",
        "Arrival_Date": "6-3-1",
        "Warehouse_ID": "2",
        "Purchase_Order_Number": 4,
        "Payment_Method": "1",
        "Date_Issued": "1-1-1",
        "Purchase_Order_Total": "$1",
        "Supplier_ID": "1",
        "Material_ID": "1",
        "Order_Placement_Date": "1-1-1"
      }
    ]
  }
}
```

Summary

Get Single PO by Key

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

- ☐ Create new test event
- ☒ Edit saved test events

Saved test event

GetItemByKey

```
1 {  
2   "httpMethod": "GET",  
3   "queryStringParameters": {  
4     "TableName": "Purchase_Order",  
5     "id": 1,  
6     "Type": "getItem"  
7   }  
8 }
```

Lambda > Functions > POM

ARN - arn:aws:lambda:us-east-1:802749809537:function:POM

POM

Throttle

Qualifiers ▼

Actions ▼

GetItemByKey ▼

Test

Save

✓ Execution result: succeeded (logs)

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{\n    \"Item\": {\n      \"Payment_Method\": \"1\",  
      \"Date_Issued\": \"1-1-1\",  
      \"Purchase_Order_Total\": \"$1\",  
      \"Supplier_ID\": \"1\",  
      \"Material_ID\": \"1\",  
      \"Order_Placement_Date\": \"1-1-1\",  
      \"Arrival_Date\": \"1-3-1\",  
      \"Warehouse_ID\": \"1\",  
      \"Purchase_Order_Number\": 1\n    }\n  }\",  
  "headers": {\n    "Content-Type": "application/json",  
    "Access-Control-Allow-Origin": "*" \n  }  
}
```

Summary

Get PO(s) by any Attribute

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 event

GetPOByAttribute ▼



```
1 {  
2   "httpMethod": "GET",  
3   "queryStringParameters": {  
4     "TableName": "Purchase_Order",  
5     "id": 2,  
6     "attribute": "Purchase_Order_Number",  
7     "Type": "getByAttribute"  
8   }  
9 }
```

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 event

GetPOByAttribute ▼



```
1 {  
2   "httpMethod": "GET",  
3   "queryStringParameters": {  
4     "TableName": "Purchase_Order",  
5     "id": 2,  
6     "attribute": "Purchase_Order_Number",  
7     "Type": "getByAttribute"  
8   }  
9 }
```

Inventory Module (IM)

Post Material

PostMaterial ▼ ↺

```
1 {  
2   "httpMethod": "POST",  
3   "body": {  
4     "TableName": "Material",  
5     "Item": {  
6       "Material_Components": "5555r",  
7       "Material_Count": "555",  
8       "Material_Description": "5555",  
9       "Material_ID": "5555",  
10      "Material_Level": "Medium",  
11      "Product_Serial_Number": "CTX714",  
12      "Warehouse_ID": "5555"  
13    }  
14  }  
15 }
```

Lambda > Functions > IM ARN - arn:aws:lambda:us-east-1:802749809537:function:IM

IM Throttle Qualifiers ▼ Actions ▼ PostMaterial ▼ Test Save

✓ Execution result: succeeded (logs) ✕

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{}",  
  "headers": {  
    "Content-Type": "application/json",  
    "Access-Control-Allow-Origin": "*"   
  }  
}
```

Delete Material

Saved test event

DeleteMaterial



```
1 {  
2   "httpMethod": "DELETE",  
3   "queryStringParameters": {  
4     "TableName": "Material"  
5   },  
6   "body": {  
7     "TableName": "Material",  
8     "Key": {  
9       "Material_ID": "5555"  
10    }  
11  }  
12 }
```

IM

Throttle

Qualifiers ▼

Actions ▼

DeleteMaterial ▼

Test

Save

✓ Execution result: succeeded (logs)



▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{}",  
  "headers": {  
    "Content-Type": "application/json",  
    "Access-Control-Allow-Origin": "*"   
  }  
}
```

Update Material

Saved test event

UpdateMaterial ▼



```
1 {  
2   "httpMethod": "PUT",  
3   "queryStringParameters": {  
4     "TableName": "Material"  
5   },  
6   "body": {  
7     "TableName": "Material",  
8     "Key": {  
9       "Material_ID": "5555"  
10    },  
11    "UpdateExpression": "set Material_Description = :a, Material_Level = :b",  
12    "ExpressionAttributeValues": {  
13      ":a": "test",  
14      ":b": "test"  
15    },  
16    "ReturnValues": "UPDATED_NEW"  
17  }  
18 }
```

Lambda > Functions > IM

ARN - arn:aws:lambda:us-east-1:802749809537:function:IM

IM

Throttle

Qualifiers ▼

Actions ▼

UpdateMaterial ▼

Test

Save

✓ Execution result: succeeded (logs)



▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{\\\"Attributes\\\":{\\\"Material_Description\\\":\\\"test\\\",\\\"Material_Level\\\":\\\"test\\\"}}",  
  "headers": {  
    "Content-Type": "application/json",  
    "Access-Control-Allow-Origin": "*"   
  }  
}
```


Get Material Table

Saved test event

GetMaterialTable



```
1 {  
2   "httpMethod": "GET",  
3   "queryStringParameters": {  
4     "TableName": "Material"  
5   }  
6 }
```

IM

Throttle

Qualifiers ▼

Actions ▼

GetMaterialTable ▼

Test

Save

✓ Execution result: succeeded (logs)



▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{\n    \"Items\": [\n      {\n        \"Material_Count\": \"50\",  
        \"Material_ID\": \"WOOD480\",  
        \"Material_Description\": \"Wood material used for the Vinyl Product\",  
        \"Material_Components\": \"Balsa Wood\",  
        \"Product_Serial_Number\": \"BW00D764\",  
        \"Material_Level\": \"Low\",  
        \"Warehouse_ID\": \"A174\"\n      },  
      {\n        \"Material_Count\": \"500\",  
        \"Material_ID\": \"A761\",  
        \"Material_Description\": \"Fabric material used to make the Vinyl Product\",  
        \"Material_Components\": \"Fabrics\",  
        \"Product_Serial_Number\": \"AX140\",  
        \"Material_Level\": \"High\",  
        \"Warehouse_ID\": \"A174\"\n      },  
      {\n        \"Material_Count\": \"180\",  
        \"Material_ID\": \"CT237\",  
        \"Material_Description\": \"Vinyl cutter used to cut the Vinyl Product\",  
        \"Material_Components\": \"Cutter\",  
        \"Product_Serial_Number\": \"CTX714\",  
        \"Material_Level\": \"Medium\",  
        \"Warehouse_ID\": \"A174\"\n      }\n    ]\n  }"
```

Get Single Material by Key

Saved test event

GetMaterialByKey



```
1 {  
2   "httpMethod": "GET",  
3   "queryStringParameters": {  
4     "TableName": "Material",  
5     "id": "A761",  
6     "Type": "getItem"  
7   }  
8 }
```

Lambda > Functions > IM

ARN - arn:aws:lambda:us-east-1:802749809537:function:IM

IM

Throttle

Qualifiers ▼

Actions ▼

GetMaterialByKey ▼

Test

Save

✓ Execution result: succeeded (logs)



▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{\\\"Item\\\":{\\\"Material_Count\\\":\\\"500\\\",\\\"Material_ID\\\":\\\"A761\\\",\\\"Material_Description\\\":\\\"Fabric material used to make the Vinyl Product\\\",\\\"Material_Components\\\":\\\"Fabrics\\\",\\\"Product_Serial_Number\\\":\\\"AX140\\\",\\\"Material_Level\\\":\\\"High\\\",\\\"Warehouse_ID\\\":\\\"A174\\\"}}\",  
  \"headers\": {  
    \"Content-Type\": \"application/json\",  
    \"Access-Control-Allow-Origin\": \"**\"  
  }  
}
```

Summary

Get Material(s) by any Attribute

Saved test event

GetMaterialByAttribute ▼



```
1 {  
2   "httpMethod": "GET",  
3   "queryStringParameters": {  
4     "TableName": "Material",  
5     "id": "test2",  
6     "attribute": "Material_Level",  
7     "Type": "getByAttribute"  
8   }  
9 }
```

IM

Throttle

Qualifiers ▼

Actions ▼

GetMaterialByAttribute ▼

Test

Save

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "statusCode": "200",  
  "body": "{\n    \"Items\":  
    [{\n      \"Material_Description\": \"test2\",  
      \"Material_ID\": \"5555\",  
      \"Material_Level\": \"test2\"  
    }],  
    \"Count\": 1,  
    \"ScannedCount\": 6  
  }\",  
  "headers": {  
    "Content-Type": "application/json",  
    "Access-Control-Allow-Origin": "*"   
  }  
}
```

Summary