

CSCI 4452

Dr. Phani Vadrevu

Ivan Zelenkov

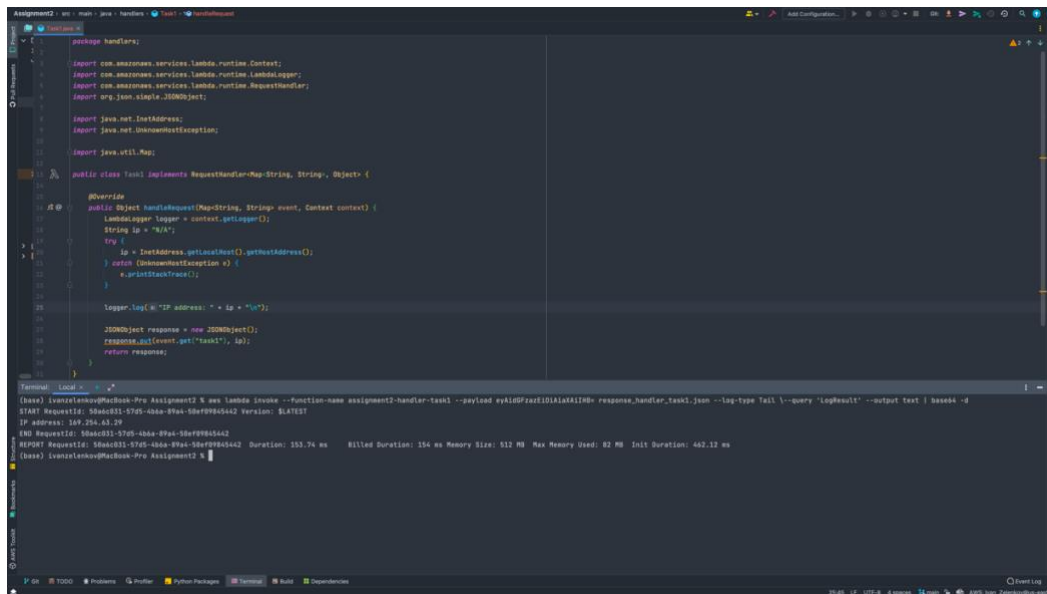
17 November 2022

## Assignment 2 Report

### Task-1

1. Run mvn clean package to create a jar file and upload it using a GUI.
2. The AWS CLI command is used to invoke the assignment2-handler-task1 function.

aws lambda invoke --function-name assignment2-handler-task1 --payload eyAidGFzazEiOiAiaXAiIH0= response\_handler\_task1.json --log-type Tail --query 'LogResult' --output text | base64 -d



```
package handlers;

import com.amazonaws.services.lambda.runtime.Context;
import com.amazonaws.services.lambda.runtime.LambdaLogger;
import com.amazonaws.services.lambda.runtime.RequestHandler;
import org.json.simple.JSONObject;

import java.net.InetAddress;
import java.net.UnknownHostException;
import java.util.Map;

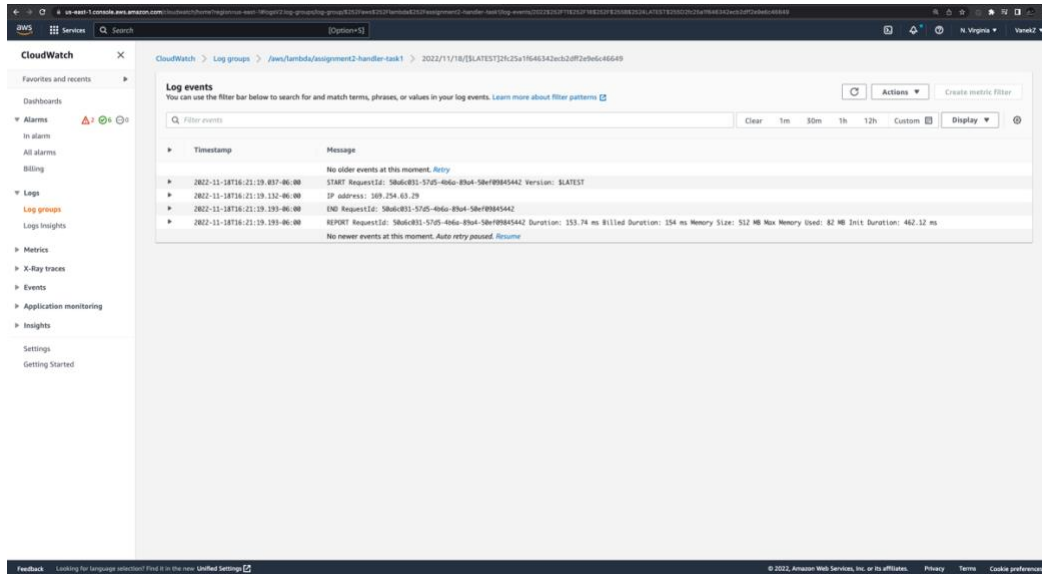
public class Task1 implements RequestHandler<Map<String, String>, Object> {

    @Override
    public Object handleRequest(Map<String, String> event, Context context) {
        LambdaLogger logger = context.getLogger();
        String ip = "N/A";
        try {
            ip = InetAddress.getLocalHost().getHostAddress();
        } catch (UnknownHostException e) {
            e.printStackTrace();
        }

        logger.log("IP address: " + ip + "ip");

        JSONObject response = new JSONObject();
        response.put(event.get("task1"), ip);
        return response;
    }
}

Terminal: Local - x
(base) [aws@intelimnux MacBook-Pro Assignment2 % aws lambda invoke --function-name assignment2-handler-task1 --payload eyAidGFzazEiOiAiaXAiIH0= response_handler_task1.json --log-type Tail --query 'LogResult' --output text | base64 -d
START RequestId: 5bacc831-57d8-4bba-8fba-5be9f986ac42 Version: $LATEST
IP address: 169.254.63.29
END RequestId: 5bacc831-57d8-4bba-8fba-5be9f986ac42
REPORT RequestId: 5bacc831-57d8-4bba-8fba-5be9f986ac42 Duration: 153.74 ms Billed Duration: 154 ms Memory Size: 512 MB Max Memory Used: 82 MB Init Duration: 462.12 ms
(base) [aws@intelimnux MacBook-Pro Assignment2 % ]
```



## Task-2

1) Run assignment2-invoker-task2 for the first time using the following command:

```
aws lambda invoke --function-name assignment2-invoker-task2 --payload eyAidGFzazEiOiAiXAIH0= response_invoker_task2.json --log-type Tail --query 'LogResult' --output text | base64 -d
```

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 758.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 16.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 18.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 17.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 42.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 16.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 23.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 18.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 21.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.13.89 executed in 29.0 ms

END RequestId: c39c6f63-eba9-4ce7-a818-be4afe25e1d7

REPORT RequestId: c39c6f63-eba9-4ce7-a818-be4afe25e1d7 Duration: 971.17 ms Billed Duration: 972 ms Memory Size: 512 MB Max Memory Used: 168 MB

2) Make a slight change in the code of assignment2-handler-task1 and run it again.

START RequestId: 3dcac288-00af-417f-9d3d-c7f5274231f0 Version: \$LATEST

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 1137.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 22.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 54.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 16.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 18.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 33.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 94.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 16.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 119.0 ms

The Lambda function assignment2-handler-task1 running on IP address 169.254.92.129 executed in 43.0 ms

END RequestId: 3dcac288-00af-417f-9d3d-c7f5274231f0

3) I will run it 8 more times, each time making small changes to the code to get the result of cold starts.

The Lambda function assignment2-handler-task1 running on IP address 169.254.124.225 executed in 1477.0 ms  
 The Lambda function assignment2-handler-task1 running on IP address 169.254.183.105 executed in 854.0 ms  
 The Lambda function assignment2-handler-task1 running on IP address 169.254.248.9 executed in 1832.0 ms  
 The Lambda function assignment2-handler-task1 running on IP address 169.254.140.85 executed in 849.0 ms  
 The Lambda function assignment2-handler-task1 running on IP address 169.254.136.197 executed in 1908.0 ms  
 The Lambda function assignment2-handler-task1 running on IP address 169.254.145.73 executed in 786.0 ms  
 The Lambda function assignment2-handler-task1 running on IP address 169.254.247.229 executed in 822.0 ms  
 The Lambda function assignment2-handler-task1 running on IP address 169.254.89.153 executed in 896.0 ms

4) Calculate the mean and median values of cold starts and warm starts.

Cold starts = [758, 1137, 1477, 854, 1832, 849, 1908, 786, 822, 896]

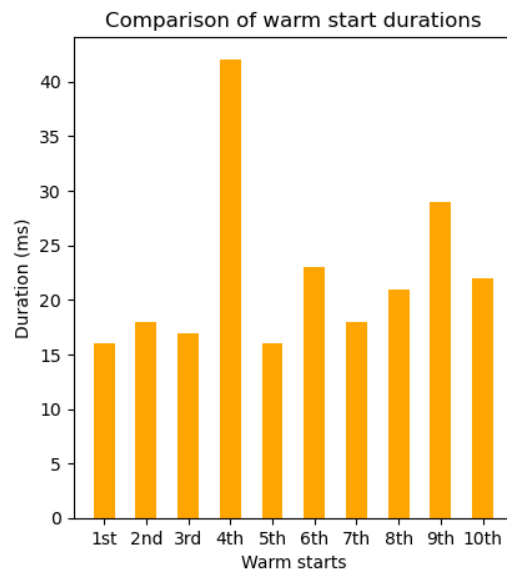
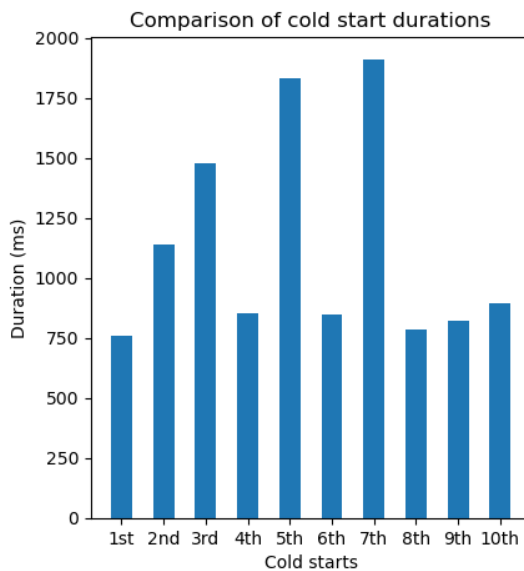
Warm starts = [16, 18, 17, 42, 16, 23, 18, 21, 29, 22]

$$\text{Mean of cold starts} = \frac{11319}{10} = 1131.9 \text{ ms}$$

$$\text{Median of cold starts} = \frac{854+849}{2} = 851.5 \text{ ms}$$

$$\text{Mean of warm starts} = \frac{222}{10} = 22.2 \text{ ms}$$

$$\text{Median of warm starts} = \frac{42+23}{2} = 32.5 \text{ ms}$$



Task-3