

DTS JUnit-JMeter Capstone Assignment

1. Small e-commerce application testing using Eclipse IDE:

a) Product.java:

```
package Shop;
public class Product {
    // Attributes
    private String name; // The name of the product (e.g., "Laptop")
    private double price; // The price of the product (e.g., 1000.0)
    private int quantity; // The quantity of the product (e.g., 2)

    // Constructor
    public Product(String name, double price, int quantity) {
        if (price < 0 || quantity < 0) {
            throw new IllegalArgumentException("Price and quantity must
be non-negative.");
        }
        this.name = name;
        this.price = price;
        this.quantity = quantity;
    }

    // Methods
    public double getTotalPrice() {
        return price * quantity; // Returns the total price (price *
quantity)
    }

    public String getName() {
        return name; // Returns the name of the product
    }

    public double getPrice() {
        return price; // Returns the price of the product
    }

    public int getQuantity() {
        return quantity; // Returns the quantity of the product
    }
}
```

b) ShoppingCart.java:

```
package Shop;
import java.util.List;
import java.util.ArrayList;
public class ShoppingCart {
    // Attribute
    private List<Product> products; // A list to store products in the cart

    // Constructor
    public ShoppingCart() {
        this.products = new ArrayList<>();
    }

    // Methods
    public void addProduct(Product product) {
        this.products.add(product); // Adds a product to the cart
    }

    public double getTotalPrice() {
        double total = 0;
        for (Product product : products) {
            total += product.getTotalPrice(); // Calculates the total price
        }
        return total;
    }

    public int getProductCount() {
        return products.size(); // Returns the number of products in the cart
    }

    public List<Product> getProducts() {
        return products; // Returns the list of products in the cart
    }
}
```

c) ProductTests.java:

```
package Tests;
import org.junit.jupiter.api.Assertions;
import org.junit.jupiter.api.Test;
import Shop.Product;
public class ProductTests {

    @Test
    void testProductTotalPrice() {
        Product product = new Product("Laptop", 1000.0, 2);
        double totalPrice = product.getTotalPrice();
        Assertions.assertEquals(2000.0, totalPrice, 0.001);
    }
}
```

d) ShoppingCartTests.java:

```
package Tests;
import org.junit.jupiter.api.Assertions;
import org.junit.jupiter.api.Test;
import Shop.Product;
import Shop.ShoppingCart;
public class ShoppingCartTests {

    @Test
    void testAddProductToShoppingCart() {
        ShoppingCart cart = new ShoppingCart();
        Product product = new Product("Laptop", 1000.0, 1);
        cart.addProduct(product);
        Assertions.assertTrue(cart.getProducts().contains(product));
    }

    @Test
    void testGetTotalPriceOfShoppingCart() {
        ShoppingCart cart = new ShoppingCart();
        Product product1 = new Product("Laptop", 1000.0, 1);
        Product product2 = new Product("Mouse", 50.0, 2);
        cart.addProduct(product1);
        cart.addProduct(product2);
        double totalPrice = cart.getTotalPrice();
        Assertions.assertEquals(1100.0, totalPrice, 0.001);
    }

    @Test
    void testGetProductCountInShoppingCart() {
```

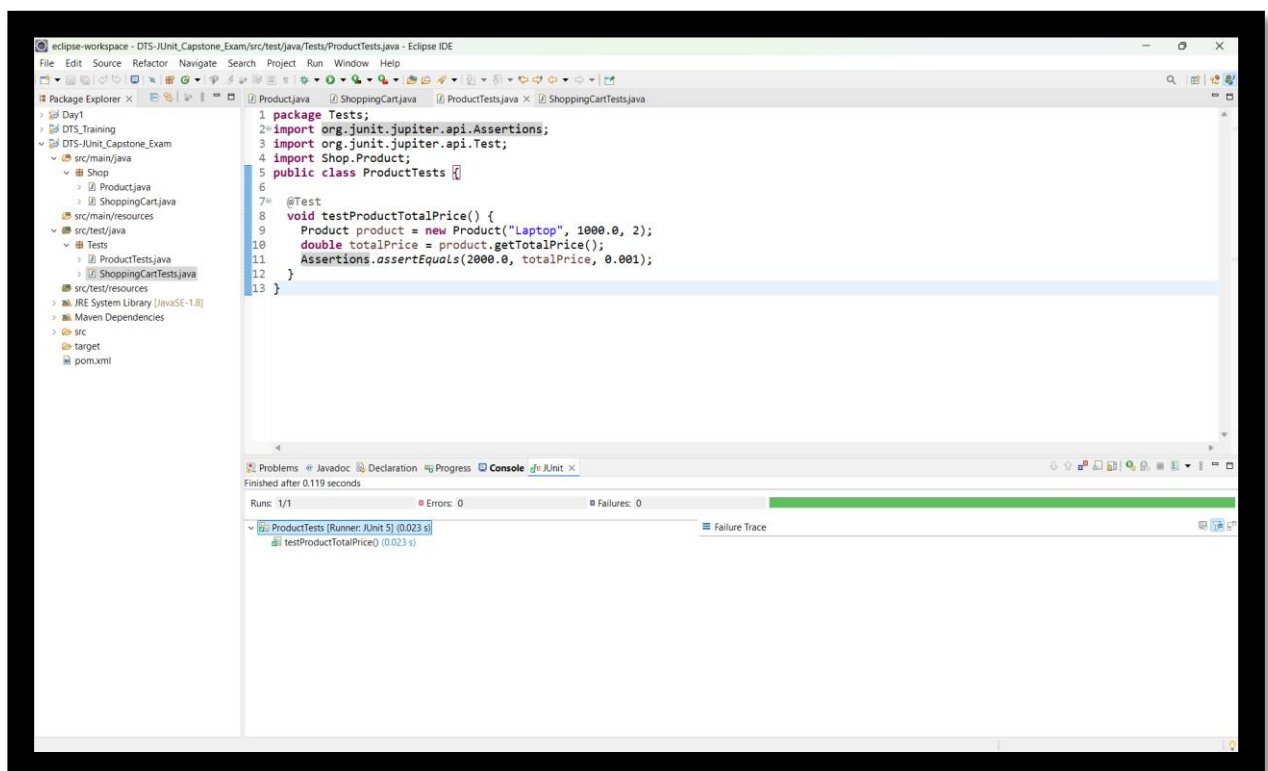
```

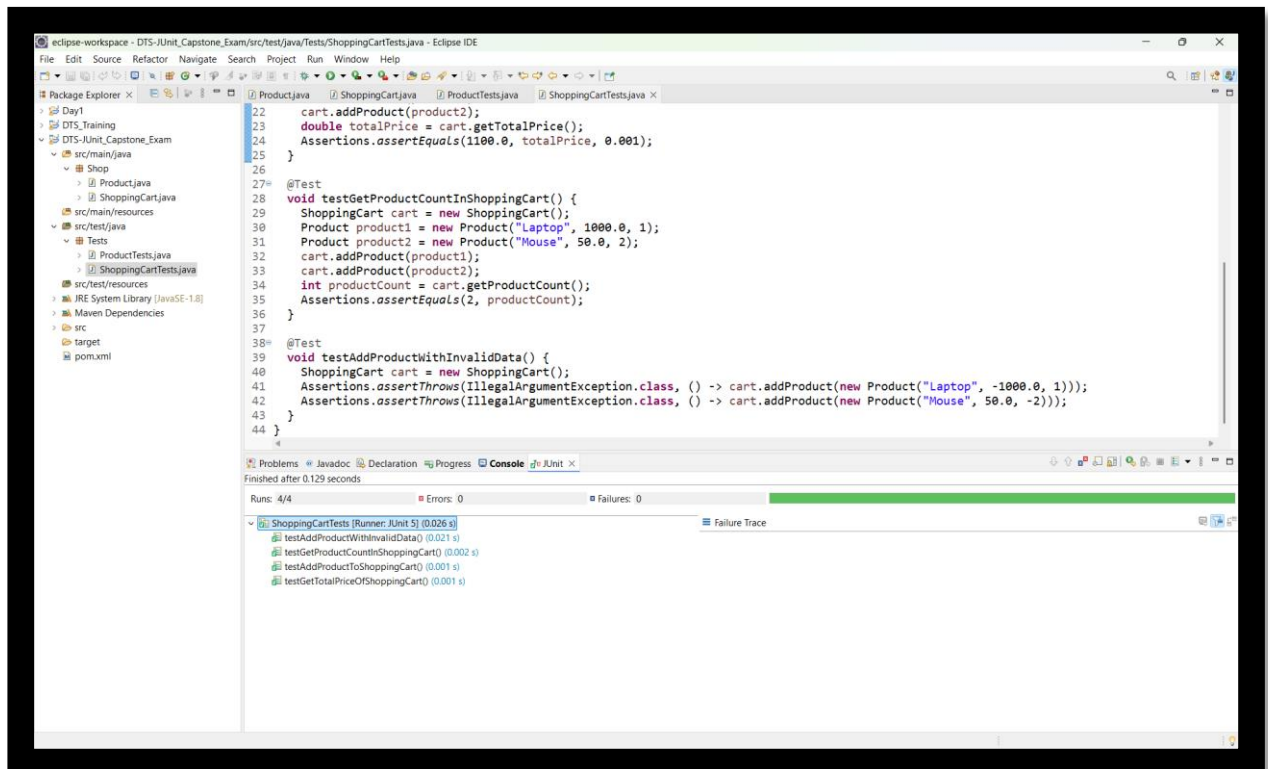
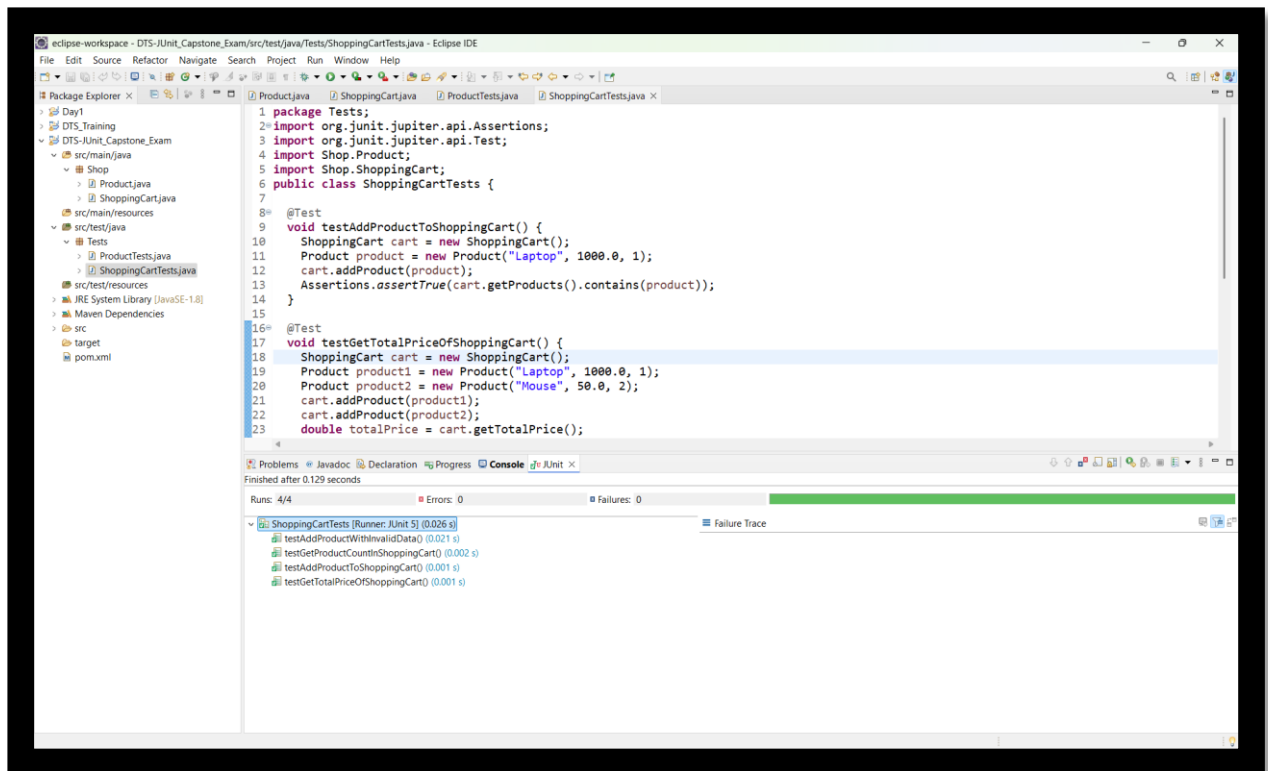
ShoppingCart cart = new ShoppingCart();
Product product1 = new Product("Laptop", 1000.0, 1);
Product product2 = new Product("Mouse", 50.0, 2);
cart.addProduct(product1);
cart.addProduct(product2);
int productCount = cart.getProductCount();
Assertions.assertEquals(2, productCount);
}

@Test
void testAddProductWithInvalidData() {
    ShoppingCart cart = new ShoppingCart();
    Assertions.assertThrows(IllegalArgumentException.class, () ->
    cart.addProduct(new Product("Laptop", -1000.0, 1)));
    Assertions.assertThrows(IllegalArgumentException.class, () ->
    cart.addProduct(new Product("Mouse", 50.0, -2)));
}
}

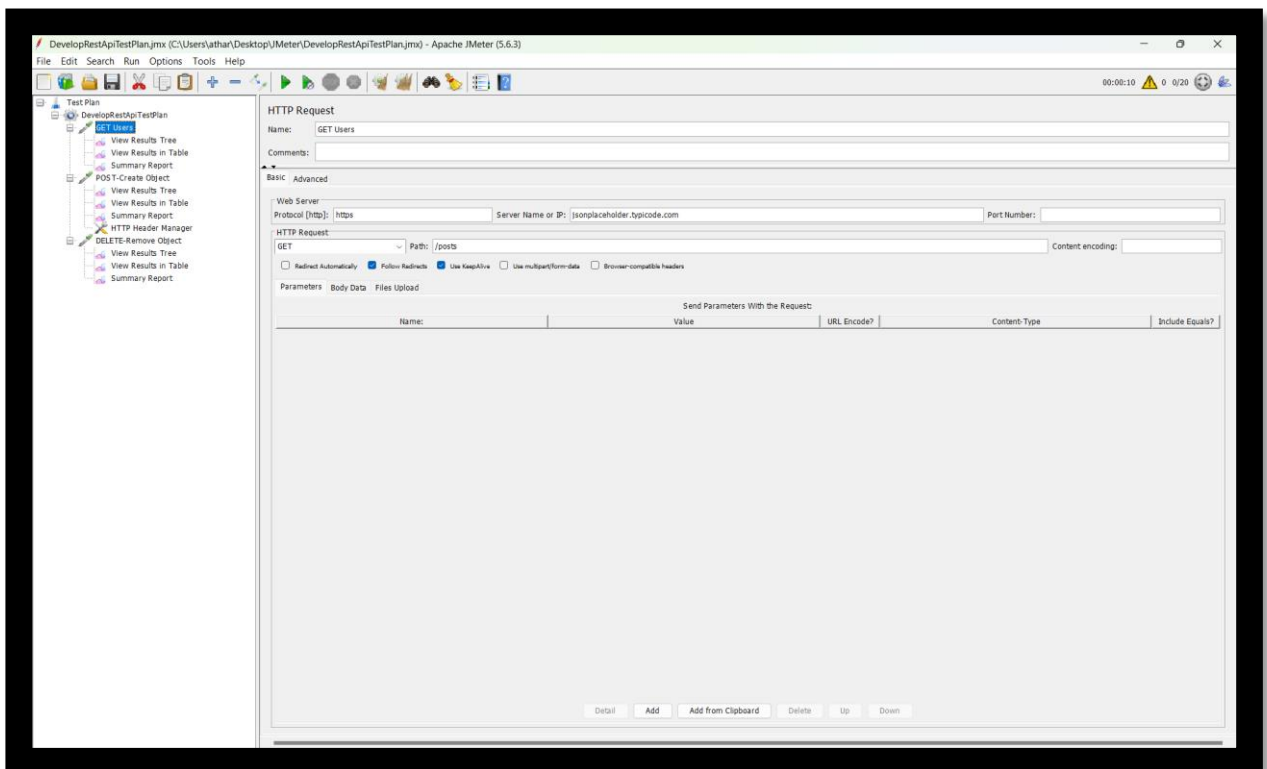
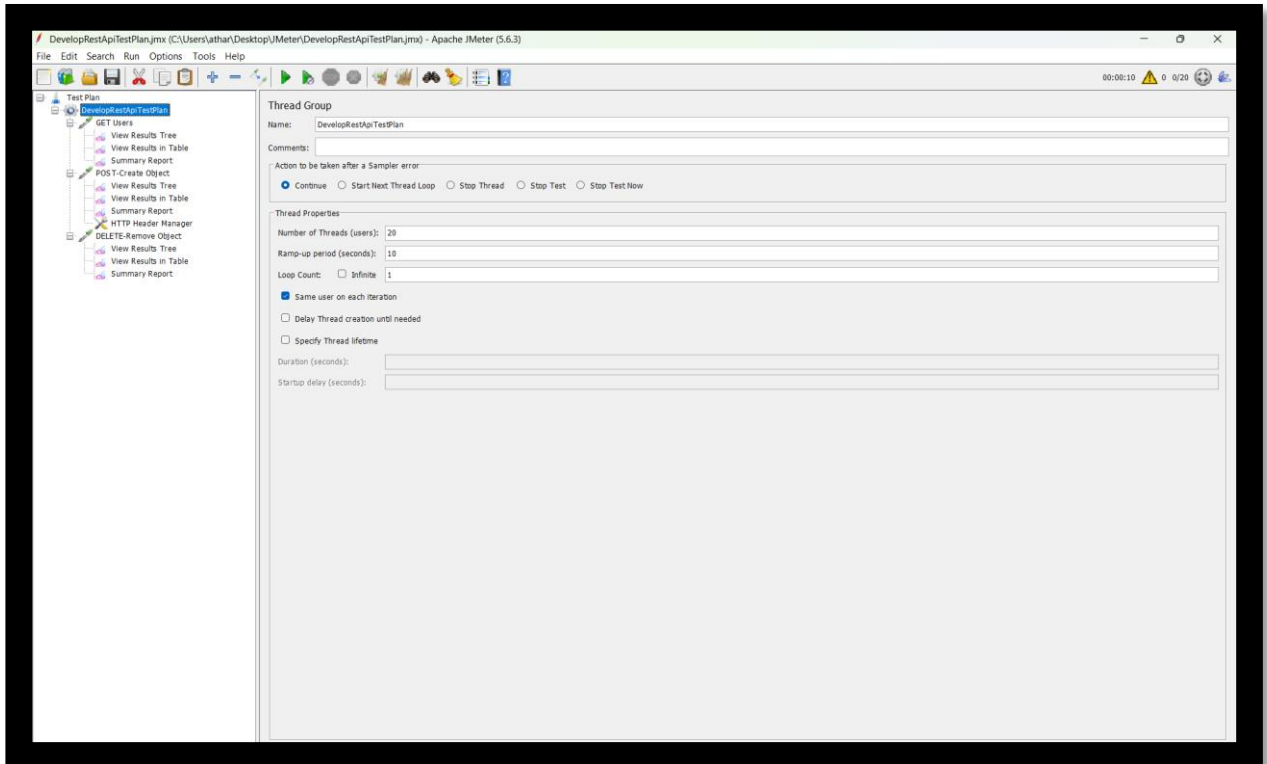
```

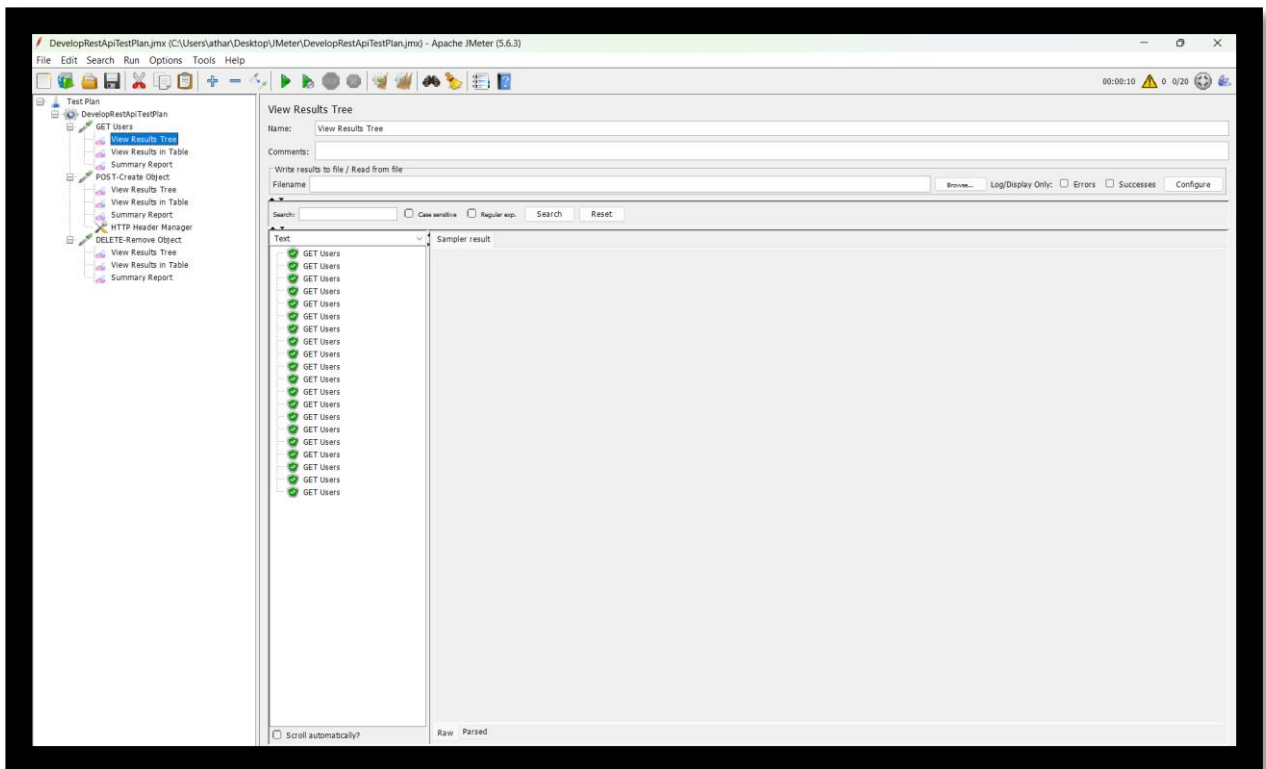
OUTPUT:





2. Create a Test Plan in JMeter for simulating traffic to the rest api use appropriate listeners and samplers:





DevelopRestApiTestPlan.jmx (C:\Users\athar\Desktop\JMeter\DevelopRestApiTestPlan.jmx) - Apache JMeter (5.6.3)

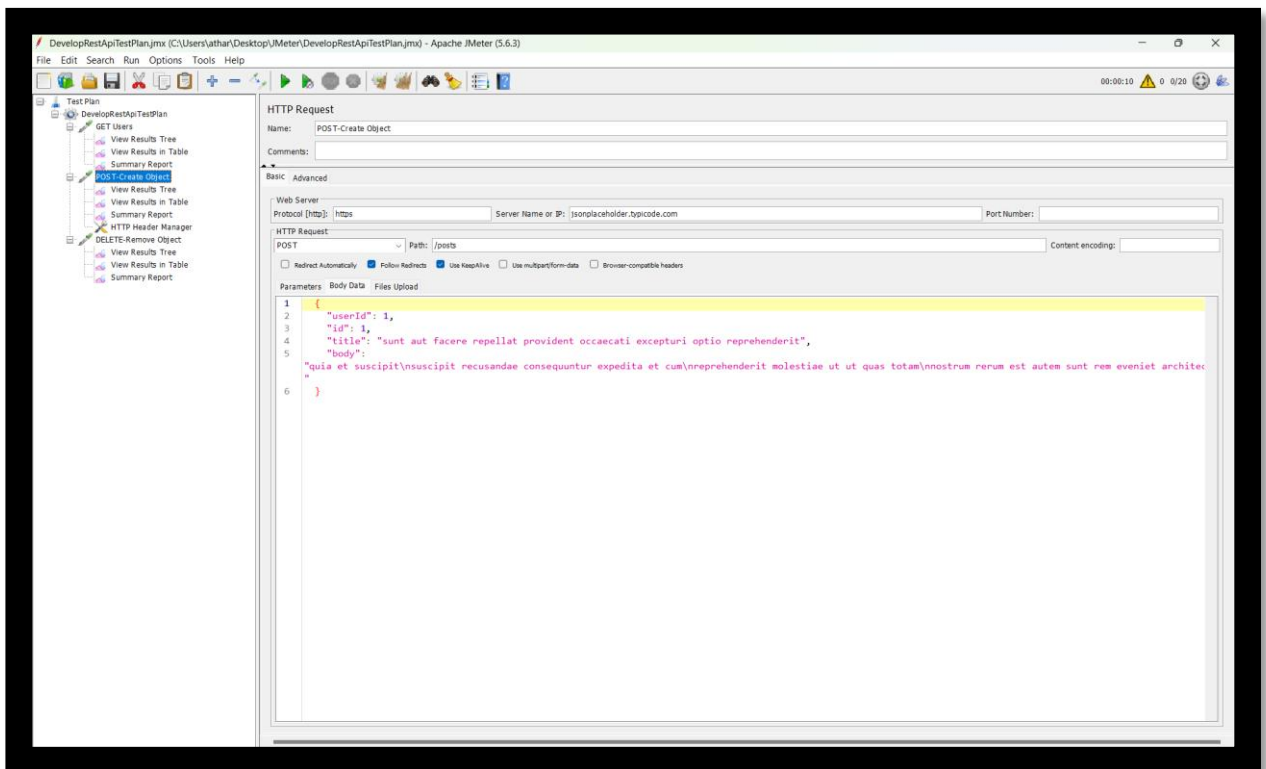
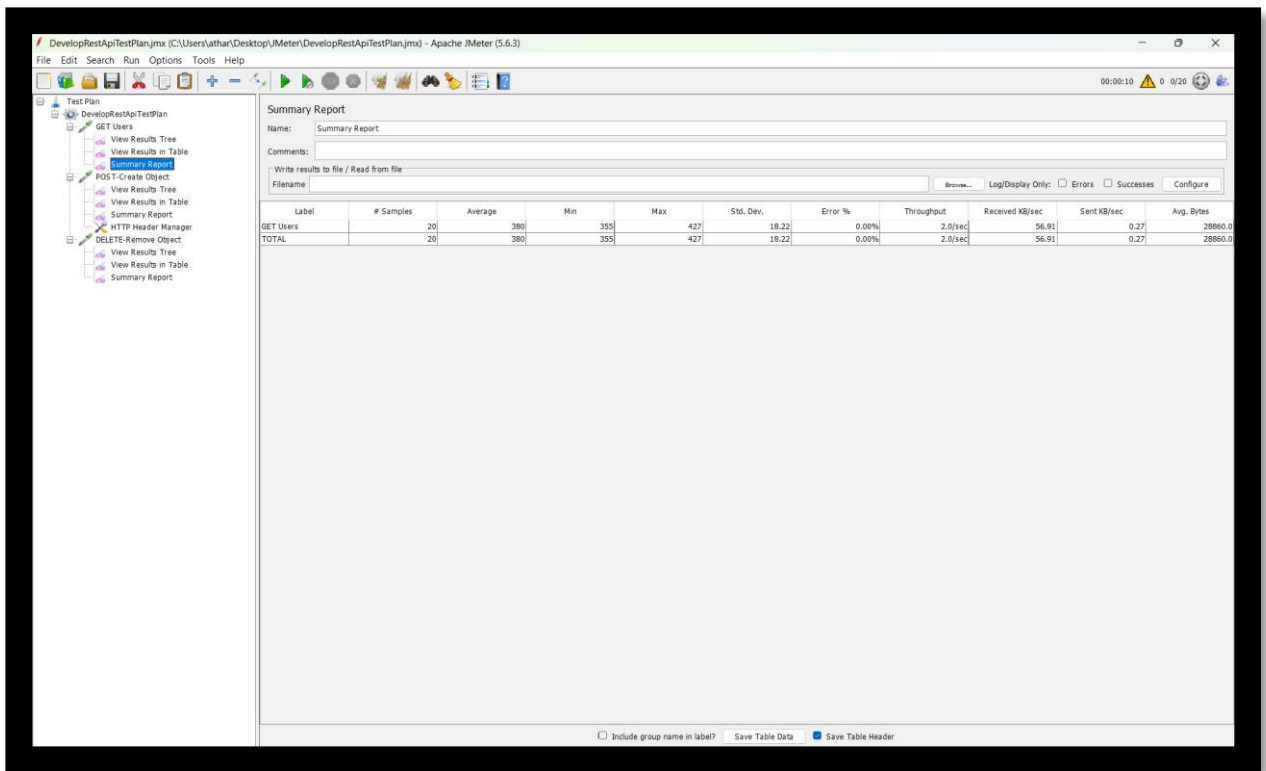
File Edit Search Run Options Tools Help

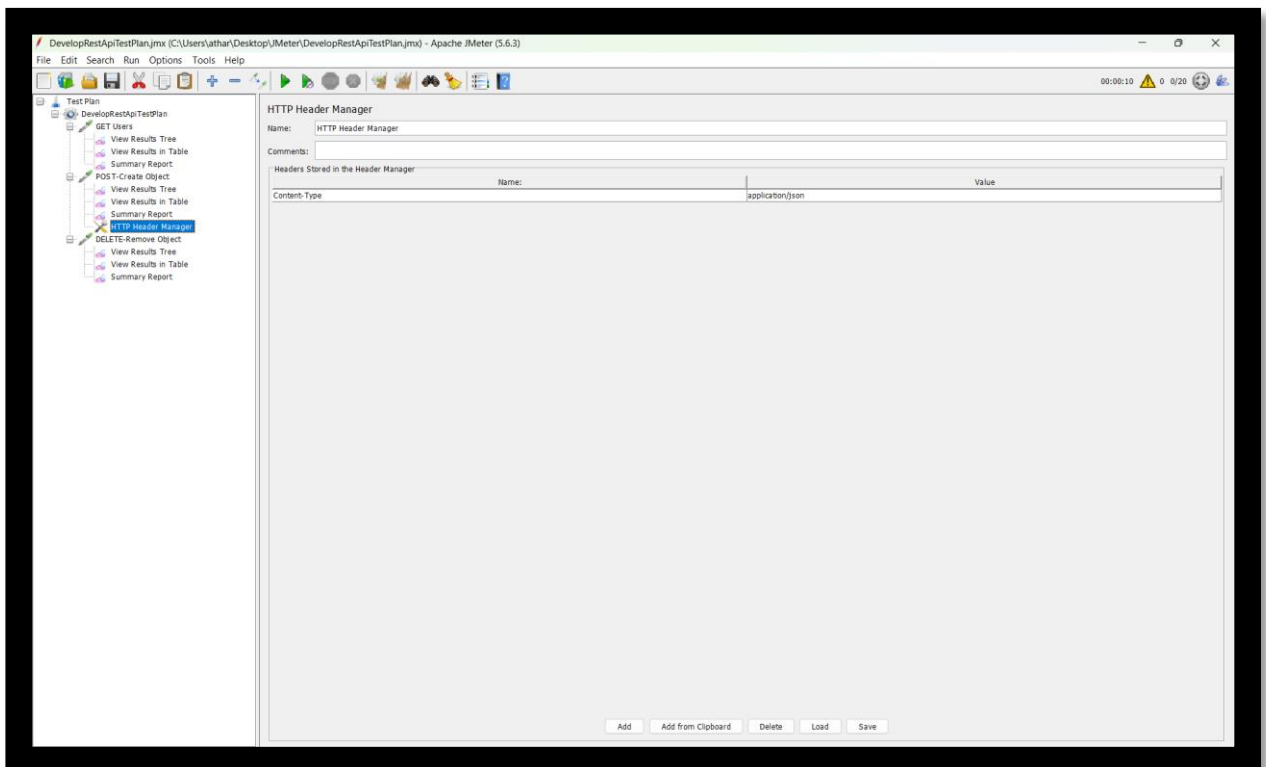
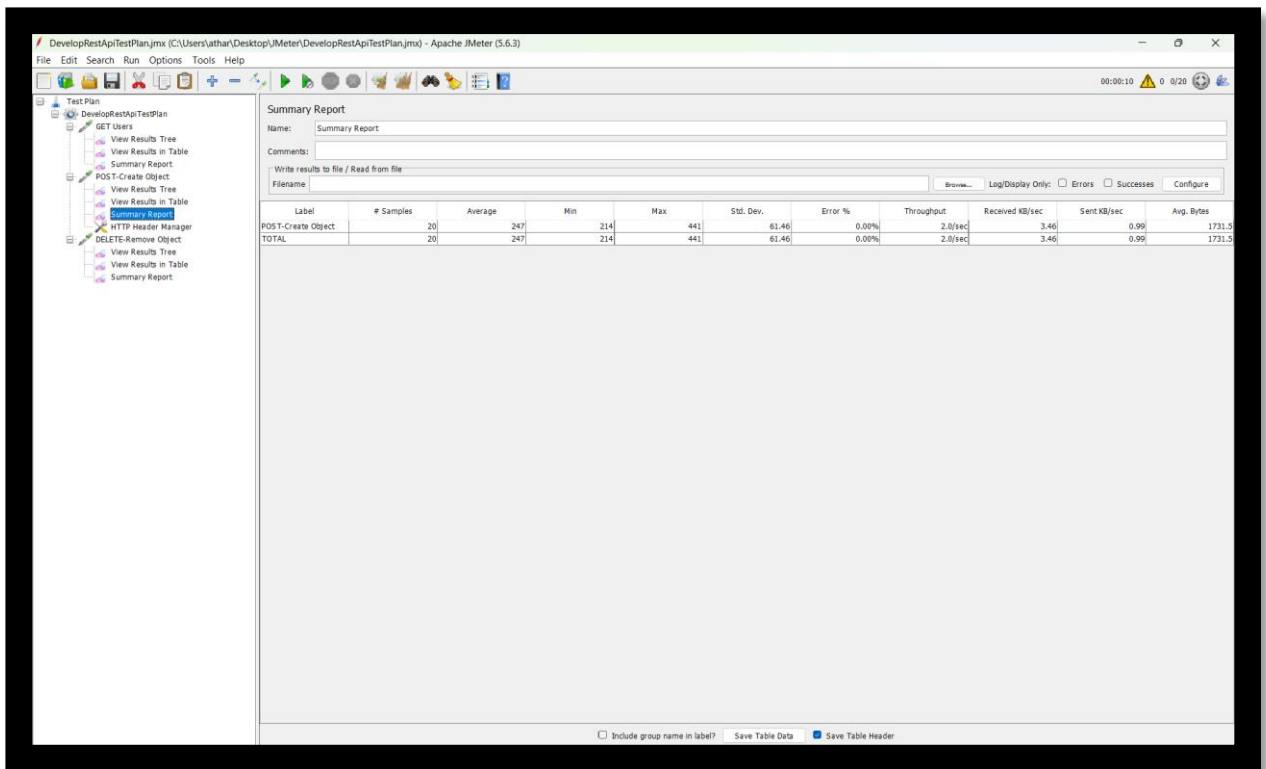
Test Plan
DevelopRestApiTestPlan
GET Users
View Results Tree
View Results in Table
Summary Report
POST-Create Object
View Results Tree
View Results in Table
Summary Report
HTTP Header Manager
DELETE-Remove Object
View Results Tree
View Results in Table
Summary Report

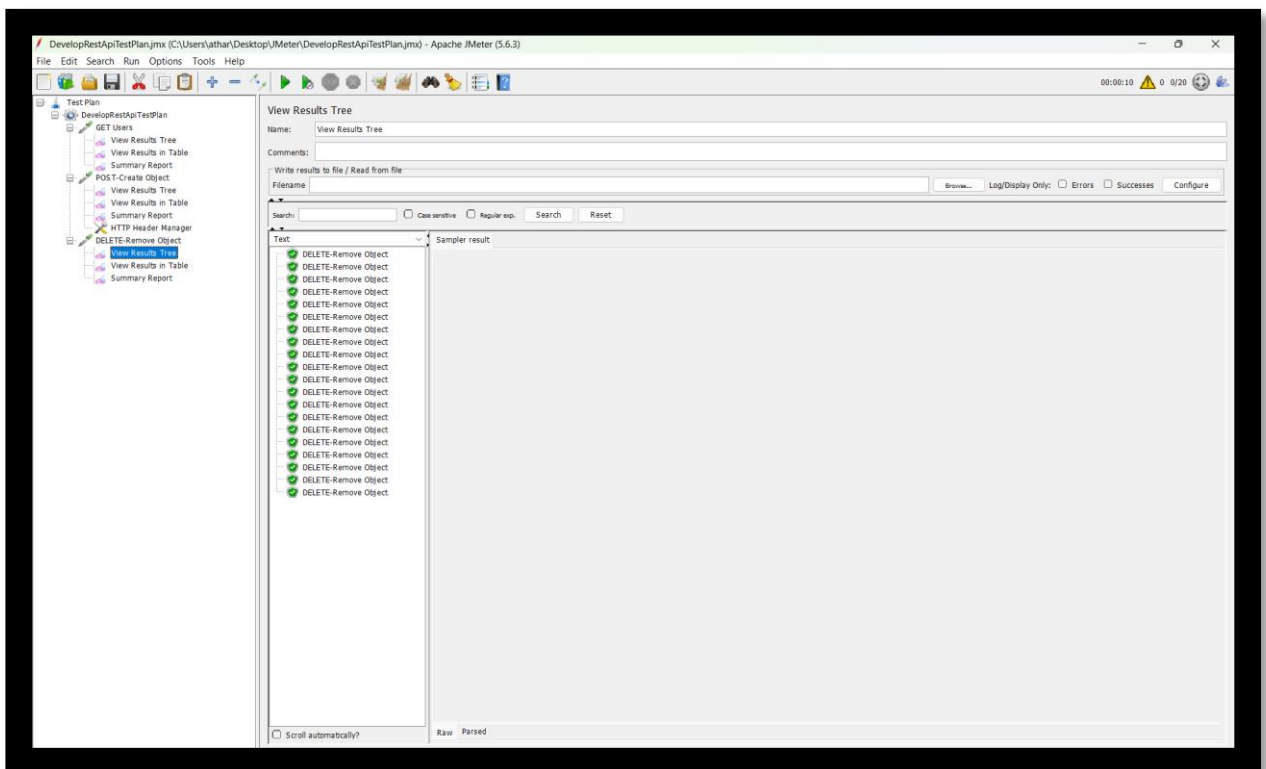
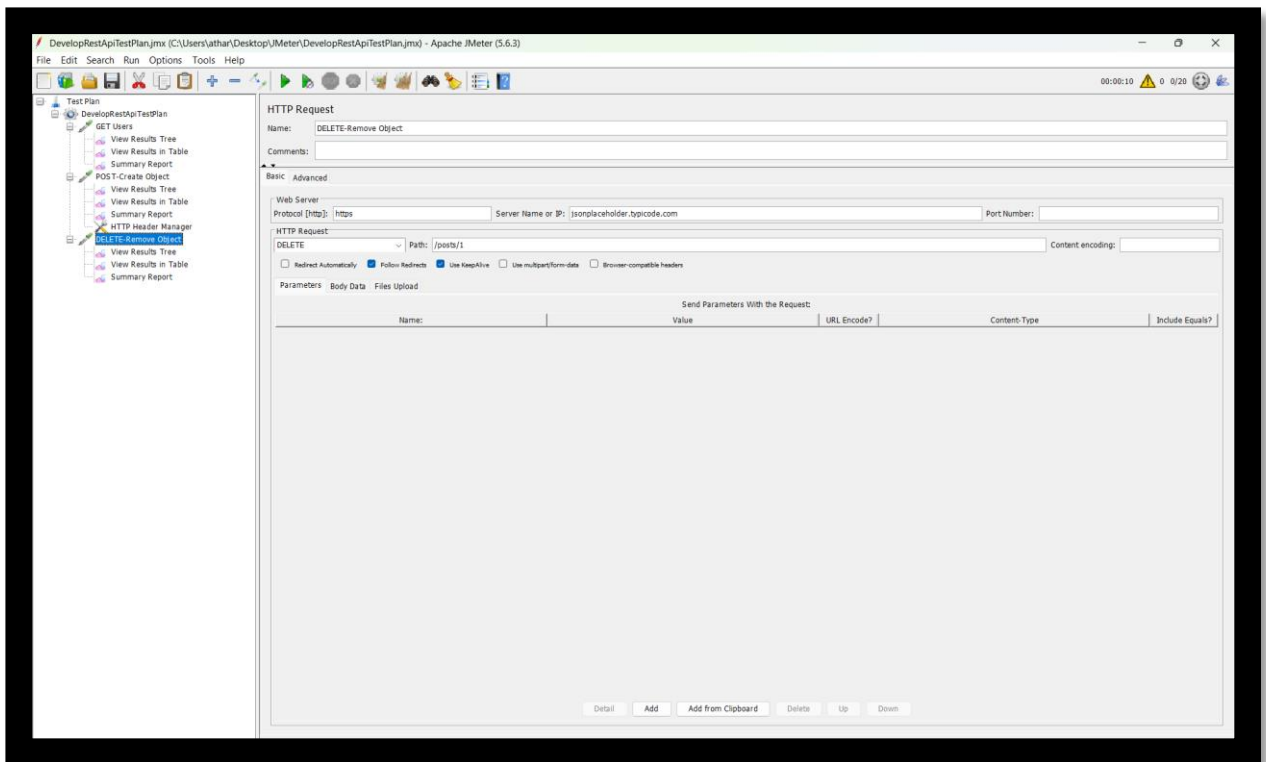
View Results in Table
Name: View Results in Table
Comments:
Write results to file / Read from file
Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes ☐ Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
1	15:43:34.474	DevelopRestApiTestPlan...	GET Users	335	✓	28860	135	355	227
2	15:43:34.980	DevelopRestApiTestPlan...	GET Users	385	✓	28860	135	384	249
3	15:43:35.478	DevelopRestApiTestPlan...	GET Users	390	✓	28860	135	392	257
4	15:43:35.976	DevelopRestApiTestPlan...	GET Users	380	✓	28860	135	380	245
5	15:43:36.479	DevelopRestApiTestPlan...	GET Users	368	✓	28860	135	366	236
6	15:43:36.982	DevelopRestApiTestPlan...	GET Users	427	✓	28860	135	426	248
7	15:43:37.482	DevelopRestApiTestPlan...	GET Users	378	✓	28860	135	378	246
8	15:43:37.981	DevelopRestApiTestPlan...	GET Users	265	✓	28860	135	365	236
9	15:43:38.482	DevelopRestApiTestPlan...	GET Users	370	✓	28860	135	370	236
10	15:43:38.981	DevelopRestApiTestPlan...	GET Users	355	✓	28860	135	355	229
11	15:43:39.483	DevelopRestApiTestPlan...	GET Users	374	✓	28860	135	373	236
12	15:43:39.979	DevelopRestApiTestPlan...	GET Users	365	✓	28860	135	365	236
13	15:43:40.482	DevelopRestApiTestPlan...	GET Users	371	✓	28860	135	371	244
14	15:43:40.980	DevelopRestApiTestPlan...	GET Users	402	✓	28860	135	402	259
15	15:43:41.478	DevelopRestApiTestPlan...	GET Users	411	✓	28860	135	410	261
16	15:43:41.979	DevelopRestApiTestPlan...	GET Users	388	✓	28860	135	387	251
17	15:43:42.479	DevelopRestApiTestPlan...	GET Users	377	✓	28860	135	377	244
18	15:43:42.978	DevelopRestApiTestPlan...	GET Users	379	✓	28860	135	379	237
19	15:43:43.478	DevelopRestApiTestPlan...	GET Users	364	✓	28860	135	364	233
20	15:43:43.979	DevelopRestApiTestPlan...	GET Users	400	✓	28860	135	399	261

Scroll automatically? ☐ Child samples? ☐ No of Samples 20 Latest Sample 400 Average 380 Deviation 18







DevelopRestApiTestPlan.jmx (C:\Users\athar\Desktop\Meter\DevelopRestApiTestPlan.jmx) - Apache JMeter (5.6.3)

File Edit Search Run Options Tools Help

00:00:10 0 0/20

Test Plan
DevelopRestApiTestPlan
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View Results Tree
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HTTP Header Manager
DELETE-Remove Object
View Results Tree
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Summary Report

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes ☐ Configuration

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
1	15:43:35.045	DevelopRestApiTestPlan...	DELETE-Remove Object	213	✓	1317	223	213	0
2	15:43:35.590	DevelopRestApiTestPlan...	DELETE-Remove Object	230	✓	1309	223	230	0
3	15:43:36.117	DevelopRestApiTestPlan...	DELETE-Remove Object	227	✓	1309	223	227	0
4	15:43:36.582	DevelopRestApiTestPlan...	DELETE-Remove Object	239	✓	1301	223	239	0
5	15:43:37.079	DevelopRestApiTestPlan...	DELETE-Remove Object	241	✓	1301	223	240	0
6	15:43:37.853	DevelopRestApiTestPlan...	DELETE-Remove Object	235	✓	1317	223	235	0
7	15:43:38.087	DevelopRestApiTestPlan...	DELETE-Remove Object	221	✓	1317	223	220	0
8	15:43:38.569	DevelopRestApiTestPlan...	DELETE-Remove Object	239	✓	1305	223	239	0
9	15:43:39.079	DevelopRestApiTestPlan...	DELETE-Remove Object	224	✓	1305	223	224	0
10	15:43:39.572	DevelopRestApiTestPlan...	DELETE-Remove Object	223	✓	1305	223	223	0
11	15:43:40.084	DevelopRestApiTestPlan...	DELETE-Remove Object	226	✓	1305	223	226	0
12	15:43:40.160	DevelopRestApiTestPlan...	DELETE-Remove Object	240	✓	1301	223	240	0
13	15:43:41.087	DevelopRestApiTestPlan...	DELETE-Remove Object	224	✓	1301	223	224	0
14	15:43:41.615	DevelopRestApiTestPlan...	DELETE-Remove Object	232	✓	1305	223	232	0
15	15:43:42.135	DevelopRestApiTestPlan...	DELETE-Remove Object	234	✓	1305	223	233	0
16	15:43:42.594	DevelopRestApiTestPlan...	DELETE-Remove Object	225	✓	1309	223	225	0
17	15:43:43.080	DevelopRestApiTestPlan...	DELETE-Remove Object	225	✓	1309	223	225	0
18	15:43:43.585	DevelopRestApiTestPlan...	DELETE-Remove Object	221	✓	1305	223	221	0
19	15:43:44.067	DevelopRestApiTestPlan...	DELETE-Remove Object	220	✓	1305	223	220	0
20	15:43:44.609	DevelopRestApiTestPlan...	DELETE-Remove Object	233	✓	1301	223	233	0

☐ Scroll automatically? ☐ Child samples? No of Samples 20 Latest Sample 233 Average 228 Deviation 7

DevelopRestApiTestPlan.jmx (C:\Users\athar\Desktop\Meter\DevelopRestApiTestPlan.jmx) - Apache JMeter (5.6.3)

File Edit Search Run Options Tools Help

00:00:10 0 0/20

Test Plan
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Summary Report

Name: Summary Report

Comments:

Write results to file / Read from file

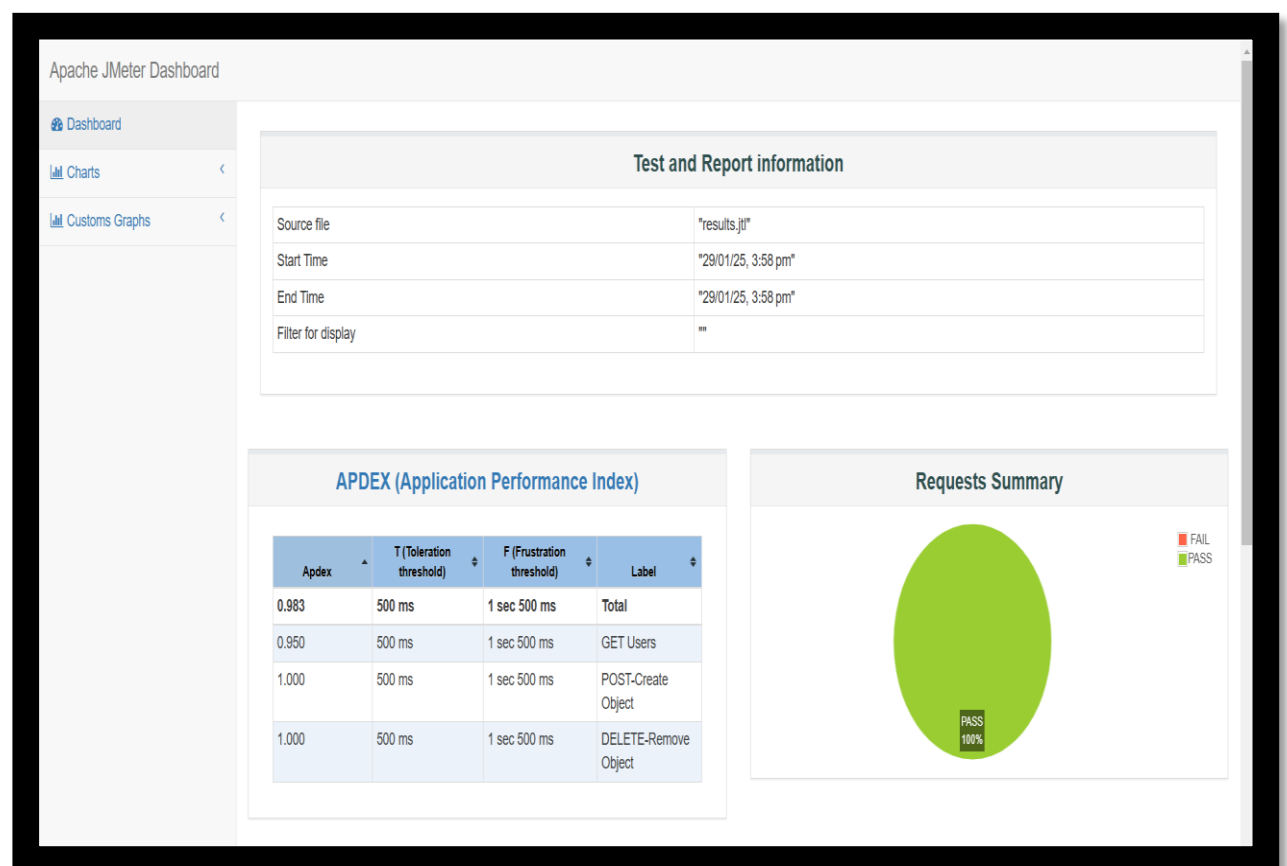
Filename: Browse... Log/Display Only: ☐ Errors ☐ Successes ☐ Configuration

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/sec	Sent KB/sec	Avg. Bytes
DELETE-Remove Object	20	228	213	241	7.57	0.00%	2.0/sec	2.60	0.44	1306.6
TOTAL	20	228	213	241	7.57	0.00%	2.0/sec	2.60	0.44	1306.6

☐ Include group name in label?

```
Command Prompt
C:\Users\athar\Desktop\JMeter>jmeter -n -t "C:\Users\athar\Desktop\JMeter\DevelopRestApiTestPlan.jmx" -l "C:\Users\athar\Desktop\JMeter\results.jtl" -e -o "
C:\Users\athar\Desktop\JMeter\output-folder"
WARN StatusConsoleListener The use of package scanning to locate plugins is deprecated and will be removed in a future release
WARN StatusConsoleListener The use of package scanning to locate plugins is deprecated and will be removed in a future release
WARN StatusConsoleListener The use of package scanning to locate plugins is deprecated and will be removed in a future release
WARN StatusConsoleListener The use of package scanning to locate plugins is deprecated and will be removed in a future release
Creating summariser <summary>
Created the tree successfully using C:\Users\athar\Desktop\JMeter\DevelopRestApiTestPlan.jmx
Starting standalone test @ 2025 Jan 29 15:58:11 GMT+05:30 (1738146491419)
Waiting for possible Shutdown/StopTestNow/HeapDump/ThreadDump message on port 4445
summary =      60 in 00:00:11 =      5.7/s Avg: 317 Min: 213 Max: 970 Err:  0 (0.00%)
Tidying up ...    @ 2025 Jan 29 15:58:22 GMT+05:30 (1738146502338)
... end of run

C:\Users\athar\Desktop\JMeter>
```



[illegible]

