**Question 1>**

Number Generator Project:

Project is developed with below software versions.

Java version 1.8 or prior.

Spring Boot version 2.3.1

Gradle version 6.5.1

Swagger version 2.9.2 for REST Documentation

Junit version 5

To run the project, unzip the NumberGenerator folder,

Navigate to path <system absolute path>\NumberGenerator and use the below commands to perform build and run

1. gradle clean build

2. gradle clean bootrun

To trigger the end points we can use Swagger UI / postman.

Below are the sample end point details and its corresponding payload structure.

Swagger UI URL:

http://localhost:8080/swagger-ui.html#/

1. to generate number

URL :

http://localhost:8080/api/generate?version=1.0

Payload:

Request:

|  |
| --- |
| {  "goal":"10",  "step":"2"  } |

Response:

|  |
| --- |
| {  "taskId": "c549bb90-ea52-49cc-890a-187c00c55274"  } |

2. to check the status of the task

URL:

http://localhost:8080/api/tasks/{taskId}/status?version=1.0

Response payload:

|  |
| --- |
| {  "status": "SUCCESS"  } |

3. to get the generated numbers

URL:

http://localhost:8080/api/tasks/{taskId}?action=get\_numlist&version=1.0

Response payload:

|  |
| --- |
| {  "result": [  10,  8,  6,  4,  2,  0  ]  } |

The output file will generate under project root directory.

Path is: <system absolute path>\NumberGenerator\temp\

**Question 2>**

**Explain the concepts of Default Gateway in IP?**

Default gateway in a network is a computer / router which is used to forward traffic to other network/internet.

As the name suggests default implies that this gateway is used by default unless some other gateway is specified for a particular destination.

When a computer wants to send traffic to a destination that is not a part of its own network, it has to use a gateway. For example if a system has an IP address 192.168.100.10 with netmask 255.255.255.0 it is a part of the network having hosts from 192.168.100.1 to 192.168.100.254. It does not need any gateway to communicate with any of the hosts in this network. But if it wants to communicate with a host in a different network like 172.16.100.100, it needs to send the traffic to a gateway which can send traffic to the other network.

**Explain the concepts of SNAT and DNAT?**

NAT - Network Address Translation

SNAT - Source Network Address Translation

DNAT - Destination Network Address Translation

When a source system / device wants to communicate with destination system.

So here in the source system network side the SNAT will happen.

But when a destination system will try to communicate with the source system the DNAT will happen.

Basically the NAT will be part of Layer 3 (Network Layer) and Layer 4 (Transport Layer) of the OSI model.

**Explain ARP?**

The acronym stands for Address Resolution Protocol.

Most of the computer applications use the logical address which is IP address to send/receive messages/payloads, however the actual communication happen over the physical address which is MAC address i.e from layer 2 of OSI model. Here the ARP will come into picture to convert the IP address to MAC address.