**Lab Report Day 1**

**Laboratory Environment Setup**

**Objective**

In this lab day with my lab companions, I have tried to set up a virtual environment that enables me to work with GNS3 and Kali Linux on my Window 11 environment. The lab day involves installing and configuring various tools including VirtualBox, GNS3, and Kali Linux, as well as understanding different network modes in virtual machines environment.

These are some of the steps I followed on lab day 1 (I have tried to summarize the topics as much as possible):

**Step 1: Installing GNS3 and VirtualBox**

I began by downloading and installing VirtualBox on my Windows 11 host machine, accepting all the default installation settings. After VirtualBox was installed, I downloaded GNS3 from its official website and installed it, following the default installation prompts.

**Step 2: importing GNS3 VM Appliance into VirtualBox**

The next step was to download the GNS3 VM, which is a pre-configured Ubuntu Linux virtual machine, from the GNS3 website. I extracted the downloaded file and imported the .ova file into VirtualBox as an appliance. The default name "GNS3 VM" was used for easy identification later.

**Step 3: Installing Kali Linux in VirtualBox**

I downloaded the Kali Linux image for VirtualBox from the official Kali website. Using the "Add" option in VirtualBox, we added Kali Linux as a virtual machine within the VirtualBox environment.

**Step 4: Configuring Network Modes in Virtual Machines**

I explored different network modes available in virtual machines some of them are:

**NAT (Network Address Translation):** Provides a virtual router in the host, allowing virtual machines to communicate with each other and access the internet.

**Host-Only Network:** Enables communication between the host and virtual machines but does not allow internet access.

**Bridged Network:** Assigns an IP address in the same domain as the host, making the virtual machine appear as a separate machine on the same network.

**Issues I Have encountered while configuring GNS3**

During the setup, I encountered an issue where the KVM support was shown as false on our processor. Despite trying various solutions, the issue persisted. The problem was resolved by enabling Intel VT-x on the virtual machine. Once this setting was turned on, the KVM support became true, allowing me to proceed with the setup.

**Step 7: Importing and Setting Up Router Appliances**

I imported Cisco router appliances (c3725 or c7200) from the software gallery into GNS3. Additionally, I set up an EtherSwitch router using the appropriate router image and configured it to function as both a switch and a router.

**Conclusion**

On my first day lab I successfully established a virtual environment using GNS3, VirtualBox, and Kali Linux on my Windows 11 host machine. By configuring different network modes and setting up essential tools, I have laid the groundwork for more advanced network simulations and security testing in future labs. The knowledge and skills acquired from this setup are crucial for understanding the interactions between virtual machines and networks in a simulated environment.