Cairo University

Distributed app Development

Lab Assignment #2
VM Client Server
Socket programming

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My socket program consists of 1 Server VM and two client VMs, it allows you to send and receive messages customized by the user from each client to the server and vice versa

messages sent and received appear as a simple chat app between the client and the server.

The code is attached in two files server.py and client.py.

Table of Contents:

VM Setup Steps

1

? ✕

← Create Virtual Machine

Name and operating system

Please choose a descriptive name and destination folder for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine.

Name: `AbdelrahmanKamal-4210202-VM1`

Machine Folder: `C:\Users\Abdelrhman Kamal\VirtualBox VMs`

Type: `Linux`

Version: `Ubuntu (64-bit)`

[Expert Mode] [Next] [Cancel]

2

? ✕

← Create Virtual Machine

Memory size

Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine.

The recommended memory size is **1024** MB.

`4242` MB

4 MB   16384 MB

[Next] [Cancel]

3

? ✕

← Create Virtual Machine

Hard disk

If you wish you can add a virtual hard disk to the new machine. You can either create a new hard disk file or select one from the list or from another location using the folder icon.

If you need a more complex storage set-up you can skip this step and make the changes to the machine settings once the machine is created.

The recommended size of the hard disk is **10.00 GB**.

○ Do not add a virtual hard disk

● Create a virtual hard disk now

○ Use an existing virtual hard disk file

`Empty`

[Create] [Cancel]

4

← Create Virtual Hard Disk

File location and size

Please type the name of the new virtual hard disk file into the box below or click on the folder icon to select a different folder to create the file in.

`VMs\AbdelrahmanKamal-4210202-VM1\AbdelrahmanKamal-4210202-VM1.vdi`

Select the size of the virtual hard disk in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard disk.

`25.00 GB`

4.00 MB   2.00 TB

[Create] [Cancel]

5

Oracle VM VirtualBox Manager

File   Machine   Help

Tools

New   Settings   Discard   Start

AbdelrahmanKamal-4210202-VM1
⏻ Powered Off

AbdelrahmanKamal-4210202-VM2
⏻ Powered Off

General
Name: AbdelrahmanKamal-4210202-VM1
Operating System: Ubuntu (64-bit)

System
Base Memory: 4242 MB
Boot Order: Floppy, Optical, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging, KVM Paravirtualization

Display
Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled

Storage
Controller: IDE
  IDE Secondary Device 0: [Optical Drive] Empty
Controller: SATA
  SATA Port 0:   AbdelrahmanKamal-4210202-VM1.vdi (Normal, 25.00 GB)

Audio
Host Driver: Windows DirectSound
Controller: ICH AC97

Network
Adapter 1: Intel PRO/1000 MT Desktop (NAT)
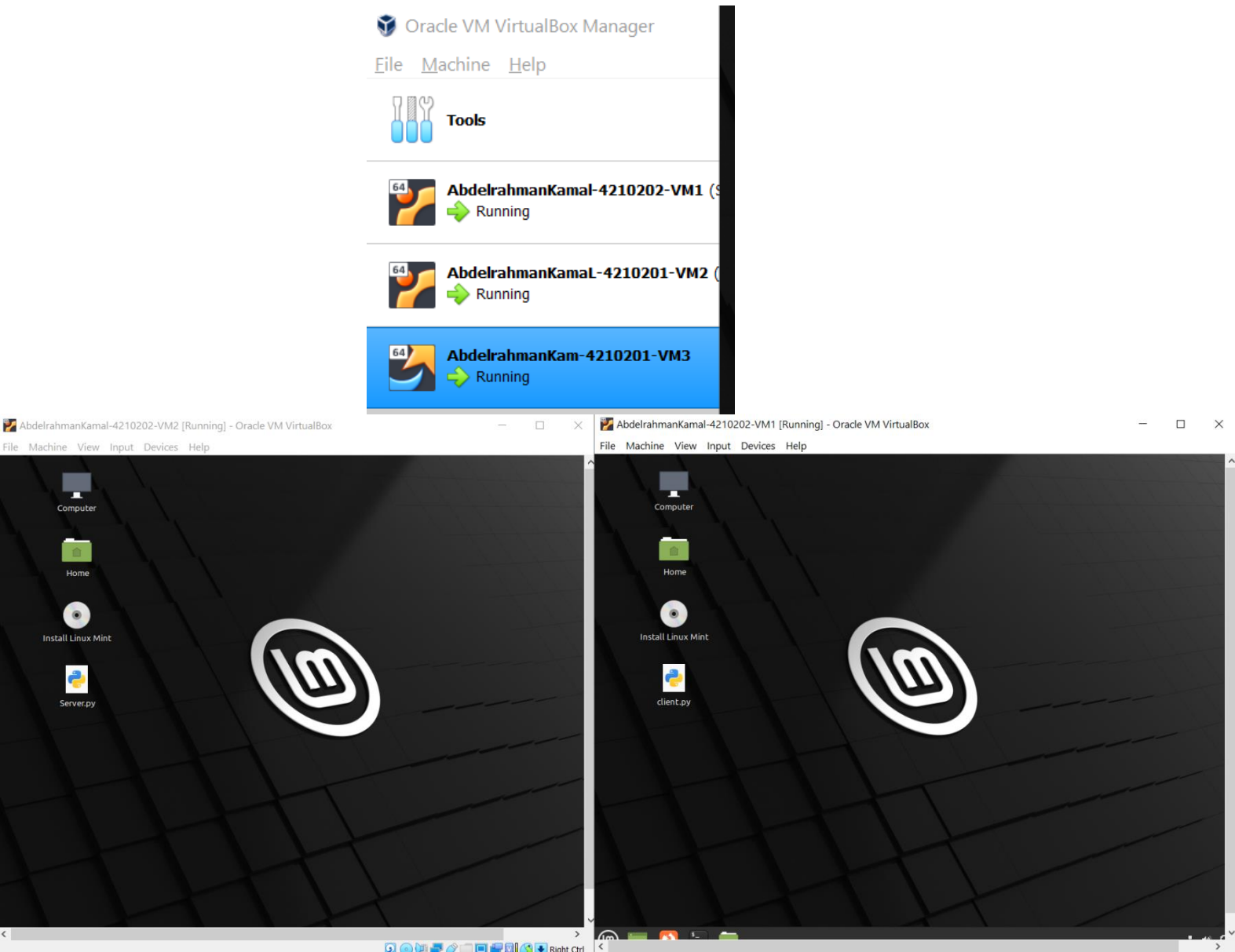
USB
USB Controller: OHCI, EHCI
Device Filters: 0 (0 active)

Preview

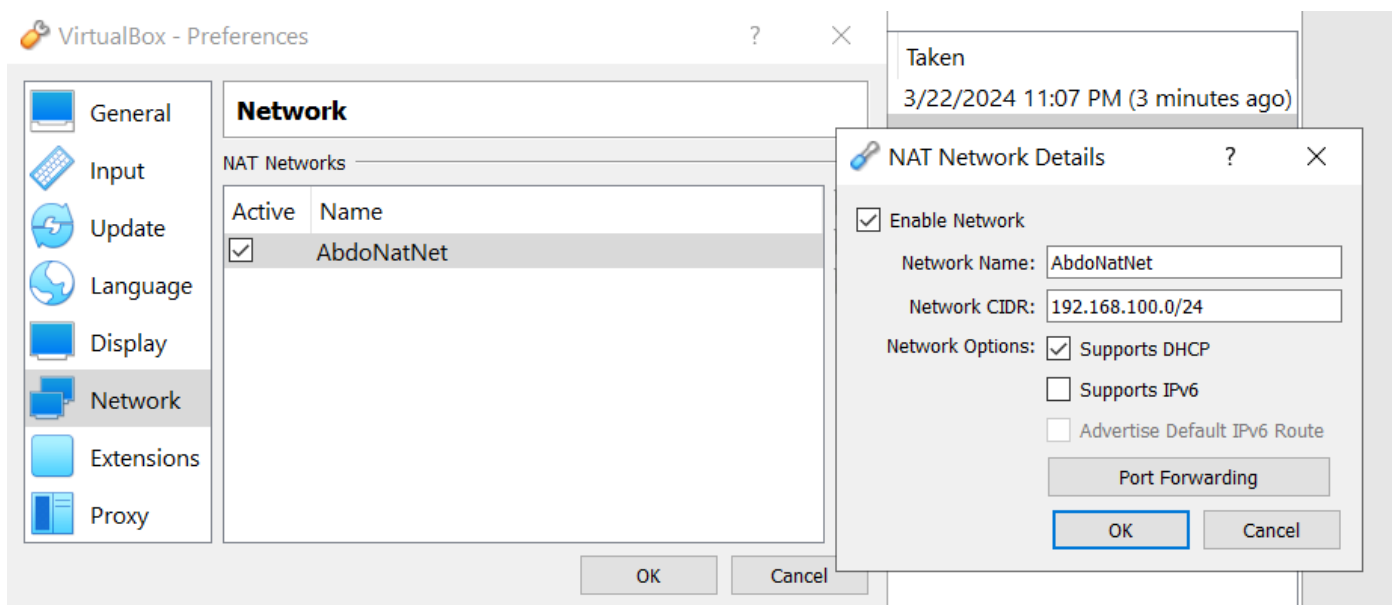AbdelrahmanKamal-4210202-VM1
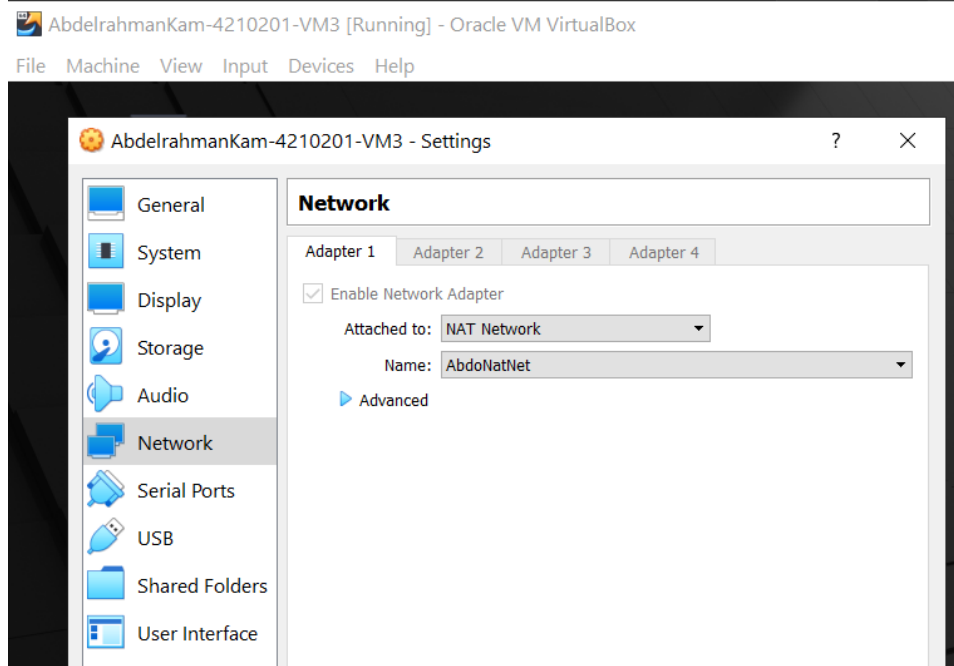
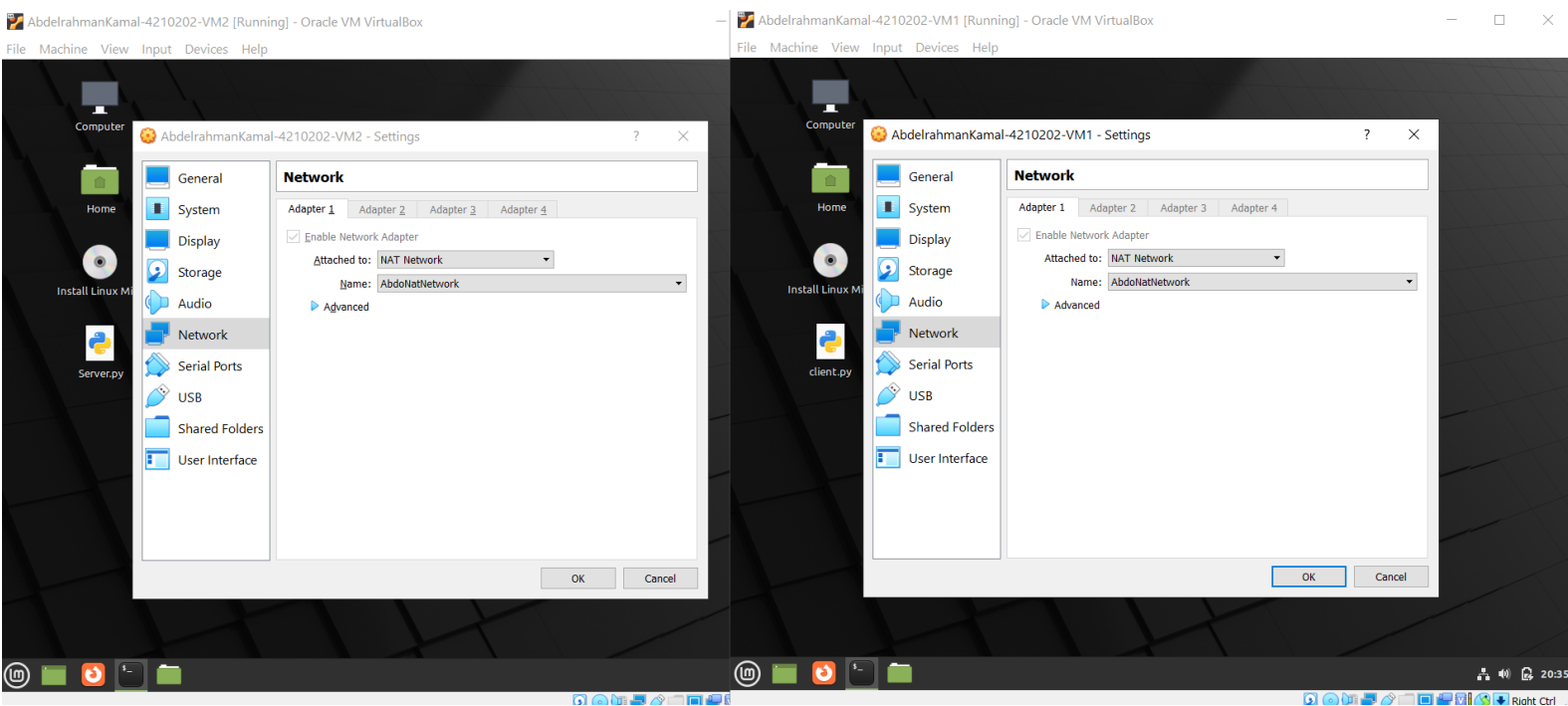**6** Making 3 Virtual Machines 1 Server 2 clients

7 Creating a NAT Network from host preferences

8 | Connecting the Virtual Machines to the NAT Network

9 VM 1 is a Server with ip:192.168.100.4

AbdelrahmanKamal-4210202-VM1 (Snapshot 11) [Running] - Oracle VM VirtualBox

File   Machine   View   Input   Devices   Help

Computer

Home

Install Linux Mint

mint@mint: ~

File   Edit   View   Search   Terminal   Help

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

mint@mint:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.100.4  netmask 255.255.255.0  broadcast 192.168.100.255
        inet6 fe80::ee5f:56ed:6ac:3e77  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:30:8e:74  txqueuelen 1000  (Ethernet)
        RX packets 32  bytes 5686 (5.6 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 97  bytes 12133 (12.1 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 216  bytes 17118 (17.1 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 216  bytes 17118 (17.1 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

mint@mint:~$
```

21:11

AbdelrahmanKamaL-4210201-VM2 (Snapshot 1) [Running] - Oracle VM VirtualBox — ☐

File Machine View Input Devices Help

Computer

Home

Install Linux Mint

```
                              mint@mint: ~              _  □  ✕
File  Edit  View  Search  Terminal  Help
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

mint@mint:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.100.5  netmask 255.255.255.0  broadcast 192.168.100.255
        inet6 fe80::f4d3:8ad1:5dc:1edd  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:e1:f0:03  txqueuelen 1000  (Ethernet)
        RX packets 49  bytes 9597 (9.5 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 91  bytes 11367 (11.3 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 113  bytes 9444 (9.4 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 113  bytes 9444 (9.4 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

mint@mint:~$ █
```

AbdelrahmanKam-4210201-VM3 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Computer

Home

Install Linux Mint

```
                              mint@mint: ~              _  □  ✕
File  Edit  View  Search  Terminal  Help
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

mint@mint:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.100.6  netmask 255.255.255.0  broadcast 192.168.100.255
        inet6 fe80::40b0:83e2:976d:5724  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:24:23:e0  txqueuelen 1000  (Ethernet)
        RX packets 46  bytes 9923 (9.9 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 93  bytes 12719 (12.7 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 120  bytes 11305 (11.3 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 120  bytes 11305 (11.3 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

mint@mint:~$ █
```

The Result Demonstration :