

Ethan Herndon
CST 311

The image shows two terminal windows from an Oracle VM VirtualBox. The left window is a Mininet VM terminal with the prompt `mininet@mininet-vm:~`. It shows the user logging in as `mininet`, receiving a welcome message for Ubuntu 14.04.4 LTS, and then running `ls` to list files in the current directory. The files listed are `mininet`, `oftest`, `pox`, `UDPCliet.py`, `loxiogen`, `oflops`, `openflow`, `TCPServer.py`, and `UDPServer.py`. The user then runs `python UDPCliet.py`, which prompts for a lowercase sentence. The user enters `hello there`, and the program outputs `HELLO THERE`. The right window is the Oracle VM VirtualBox interface showing the Mininet-VM [Running] window. It displays the Python code for the UDP server. The code imports `socket`, sets `serverPort = 12000`, creates a `serverSocket` using `socket(AF_INET, SOCK_DGRAM)`, binds it to `('', serverPort)`, and prints `"The server is ready to recieve"`. It then enters a `while True:` loop where it receives a message from 2048 bytes, decodes it, converts it to uppercase, and sends it back to the client address. The output shows the server is ready to receive and then the message `HELLO THERE` is received. A status bar at the bottom indicates "[Wrote 9 lines]".

```
mininet@mininet-vm:~  
login as: mininet  
mininet@localhost's password:  
Welcome to Ubuntu 14.04.4 LTS (GNU/Linux 4.2.0-27-generic i686)  
  
 * Documentation:  https://help.ubuntu.com/  
New release '16.04.7 LTS' available.  
Run 'do-release-upgrade' to upgrade to it.  
  
Last login: Wed Feb 24 15:52:00 2021  
mininet@mininet-vm:~$ ls  
mininet  ofttest  pox      UDPCliet.py  
loxiogen oflops  openflow TCPServer.py UDPServer.py  
mininet@mininet-vm:~$ python UDPCliet.py  
Input lowercase sentence:hello there  
CTraceback (most recent call last):  
  File "UDPCliet.py", line 7, in <module>  
    modifiedMessage, serverAddress = clientSocket.recvfrom(2048)  
KeyboardInterrupt  
mininet@mininet-vm:~$ python UDPCliet.py  
Input lowercase sentence:hello there  
HELLO THERE  
mininet@mininet-vm:~$
```

```
Mininet-VM [Running] - Oracle VM VirtualBox  
File Machine View Input Devices Help  
  
from socket import *  
serverPort = 12000  
serverSocket = socket(AF_INET, SOCK_DGRAM)  
serverSocket.bind('', serverPort)  
print("The server is ready to recieve")  
while True:  
    message, clientaddress = serverSocket.recvfrom(2048)  
    modifiedMessage = message.decode().upper()  
    serverSocket.sendto(modifiedMessage.encode(), clientaddress)  
  
[ Wrote 9 lines ]  
  
mininet@mininet-vm:~$ python UDPServer.py  
The server is ready to recieve
```