1) Install Azure CLI.
2) Install Open SSH Client

3) Type the command to get the SSH keys.

4) Login to azure:

5) Change Permissions:

```
OpenSSH_for_Windows_8.1p1, LibreSSL 3.0.2
Bad owner or permissions on C:\\Users\\Malyka Awais/.ssh/config
PS C:\WINDOWS\system32> icacls "C:\Users\malyka awais\.ssh\config" /inheritance:r /grant:r "malyka awais:(R)"
processed file: C:\Users\malyka awais\.ssh\config
Successfully processed 1 files; Failed processing 0 files
```

6) **`az ssh vm --ip csctcloud.uwe.ac.uk`**

```
PS C:\WINDOWS\system32>  az ssh vm --ip csctcloud.uwe.ac.uk
OpenSSH_for_Windows_8.1p1, LibreSSL 3.0.2
The authenticity of host 'csctcloud.uwe.ac.uk (51.141.74.169)' can't be established.
ECDSA key fingerprint is SHA256:iNbchN5cwS5ZjS6rBCya9iWA8OWr9satVi0fVeaeC8M.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'csctcloud.uwe.ac.uk,51.141.74.169' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 20.04.5 LTS (GNU/Linux 5.15.0-1034-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Sat Mar 18 17:23:55 GMT 2023

  System load:    0.01                Processes:             302
  Usage of /home: 99.6% of 599.99GB   Users logged in:       0
  Memory usage:   8%                   IPv4 address for eth0: 10.0.90.5
  Swap usage:     0%

  => /home is using 99.6% of 599.99GB

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

     https://ubuntu.com/azure/pro

Expanded Security Maintenance for Applications is not enabled.

9 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

14 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

New release '22.04.2 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


Last login: Thu Feb  2 17:04:52 2023 from 164.11.203.52
abdulla2.al-khayat@live.uwe.ac.uk@csctcloud: $
```

7)

8) SSH Key saved:

```
abdulla2.al-khayat@live.uwe.ac.uk@csctcloud: $ nano .ssh/authorized_keys
```

9) Whenever it gives bad owner or permission denied:
   Run this command:
   icacls "C:\Users\malyka awais\.ssh\config" /inheritance:r /grant:r "malyka awais:(R)"

```
PS C:\WINDOWS\system32> icacls "C:\Users\malyka awais\.ssh\config" /inheritance:r /grant:r "malyka awais:(R)"
processed file: C:\Users\malyka awais\.ssh\config
Successfully processed 1 files; Failed processing 0 files
PS C:\WINDOWS\system32>
```

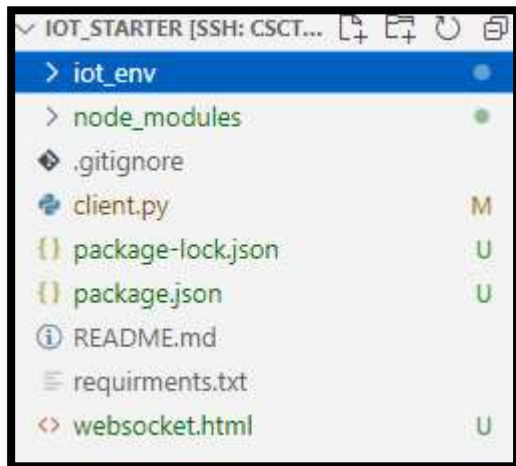10) ssh abdulla2.al-khayat@live.uwe.ac.uk@csctcloud.uwe.ac.uk

All TASKS Screen shots

Text to Morse

Text to Encode:

Encoded Message:

IOT_STARTER [SSH: CSCT...
> iot_env
> node_modules
◆ .gitignore
🐍 client.py   M
{} package-lock.json   U
{} package.json   U
ⓘ README.md
☰ requirments.txt
<> websocket.html   U

	Port	Local Address	Running Process	Origin
○	5612	localhost:5612		User Forwarded
○	6789	localhost:6789		User Forwarded
○	10105	localhost:10105		User Forwarded

```
[32] print(encode_morse("Abdullah"))
```
.- -... -.. ..- .-.. .-.. .- ....

```
[80] print(decode_morse(".... . .-.. .-.. --- / .... --- .-- / .- .-. . / -.-- --- ..-"))
```
HELLO HOW ARE YOU

```
!python /content/drive/MyDrive/morse_unit.py
```

```
..
----------------------------------------------------------------
Ran 2 tests in 0.000s

OK
```

```
[20] !python /content/drive/MyDrive/morse_unit2.py
```

```
......
----------------------------------------------------------------
Ran 6 tests in 0.000s

OK
```

```
[30] decode_bt(".--")
```

```
'W'
```

```
[57] encoded_message = encode_ham('sender', 'receiver', 'abdullahalkhayat')
     print(encoded_message)
```

```
.-. . -.-. . .. ...- . .-.   -.. .   ... . -. -.. . .-.   -...-   .- -... -.. ..- .-..
```
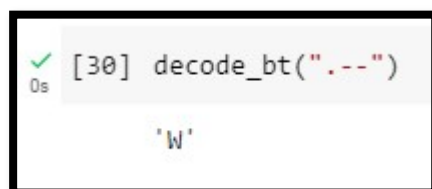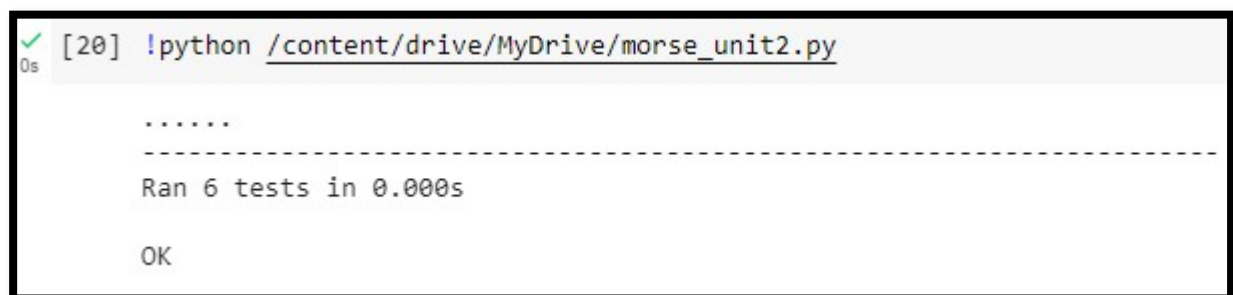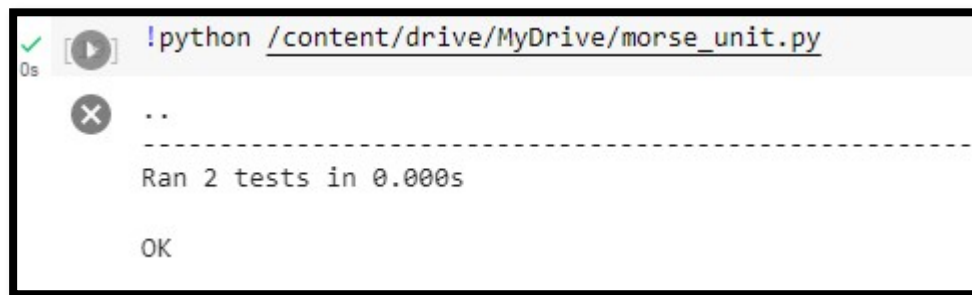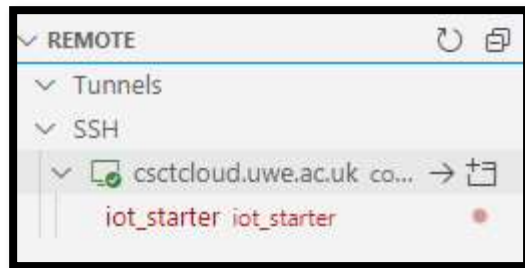
```
[58]  sender, receiver, message = decode_ham(encoded_message)
      print(sender, receiver, message)

      decoded_msg: receiver  de  sender  *  abdullahalkhayat  *
      receiver    sender       abdullahalkhayat  *
```

```
COMMAND     PID                                USER    FD   TYPE  DEVICE SIZE/OFF NODE NAME
node     1300943 abdulla2.al-khayat@live.uwe.ac.u   30u  IPv6 2820519      0t0  TCP *:5162
 (LISTEN)
```

```
● abdulla2.al-khayat@live.uwe.ac.uk@csctcloud:~/webdevelopment/iot_starter$ source /home/ab
  dulla2.al-khayat/webdevelopment/iot_starter/iot_env/bin/activate
○ (iot_env) abdulla2.al-khayat@live.uwe.ac.uk@csctcloud:~/webdevelopment/iot_starter$ node
  /home/abdulla2.al-khayat/webdevelopment/iot_starter/iot_env/client.js
  WebSocket connection opened
  Message from server: <Buffer 48 65 6c 6c 6f 20 57 65 62 53 6f 63 6b 65 74 20 63 6c 69 65
  6e 74 21>
  python task1worksheet3.py
  ▌
```

```
● (iot_env) abdulla2.al-khayat@live.uwe.ac.uk@csctcloud:~/webdevelopment/iot_starter$ pytho
  n /home/abdulla2.al-khayat/webdevelopment/iot_starter/iot_env/bin/task1worksheet3.py
  Base64: b'CgAqACEAyztXZWxjb21lIHRvIElvVCBVRFAgU2VydmVy'
  Server Sent: b'\n\x00*\x00!\x00\xcb;Welcome to IoT UDP Server'
  Decoded Packet:
  Source Port: 10
  Dest Port: 42
  Data Length: 33
  Checksum: 15307
  Payload: Welcome to IoT UDP Server
```

11)