

Practical 1

Aim: Starting Raspbian OS, familiarizing with raspberry pi components and Interface to Ethernet, monitor, USB.

Required Components: Raspberry pi, Power supply, USB keyboard, USB Mouse, Micro SD card, Monitor that support HDMI, Ethernet cable

Procedure:

Switch off the power supply.

Remove your CPU connection from monitor.

Remove mouse and keyboard connection from CPU.

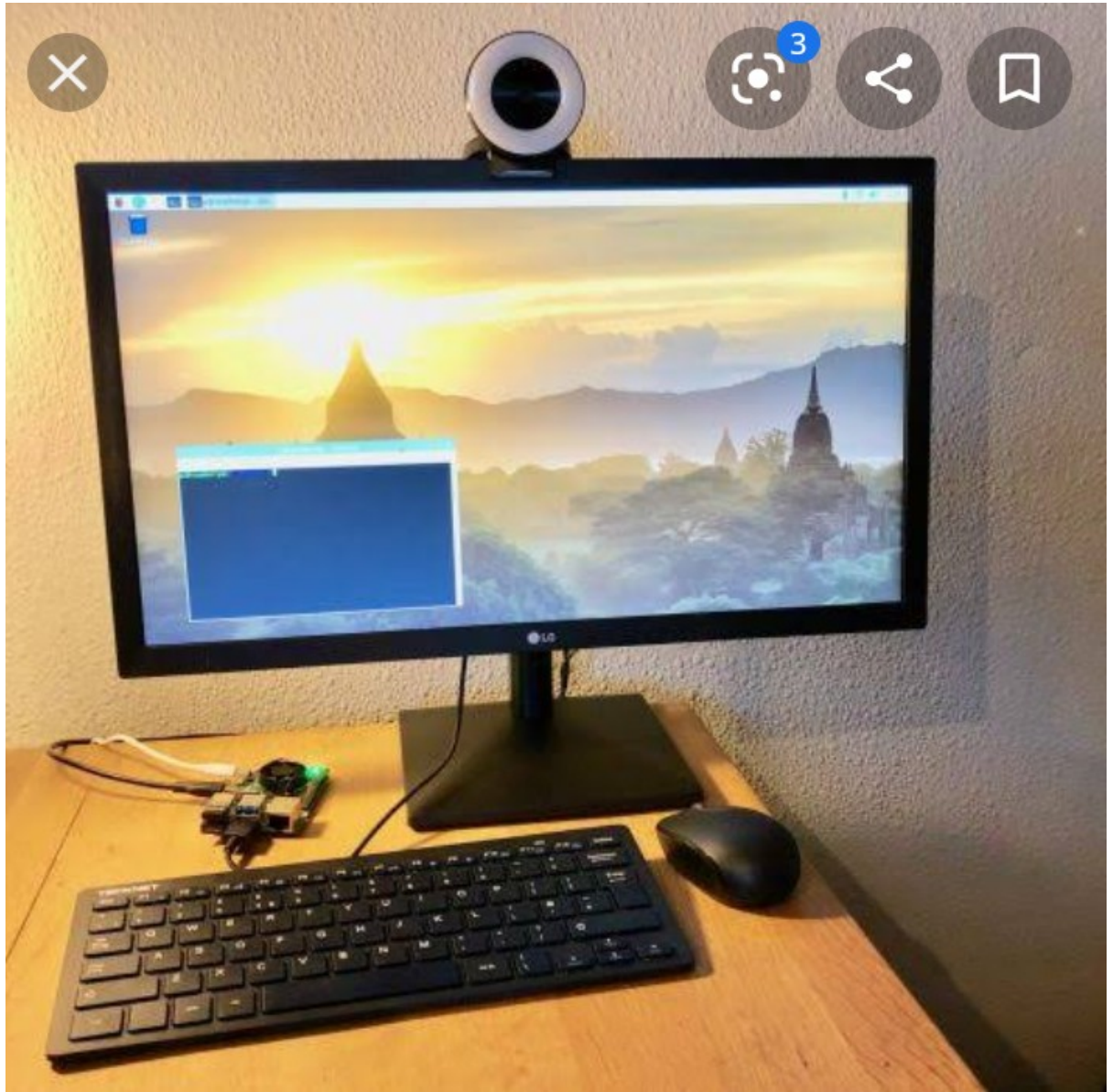
Connect USB port of Keyboard and mouse to Raspberry pi.

Connect Ethernet cable to Raspberry pi.

Connect monitor to connect wire and then connect to Raspberry pi.

Switch on power supply.





Practical-2

Aim: Displaying different LED pattern with Raspberrypi.

Components Required: Raspberry pi, Power supply, USB keyboard and mouse, SD card, LED pattern module.

Procedure:

Connect all Basic connections.

Open program of LED pattern in monitor written in Python language.

Connect GND (ground) connection of Raspberry pi kit to GND of LED pattern module.

Connect pin no: 06, 14, 20, 30, 34, 25, 09, 39 of Raspberry pi to LED pattern module.

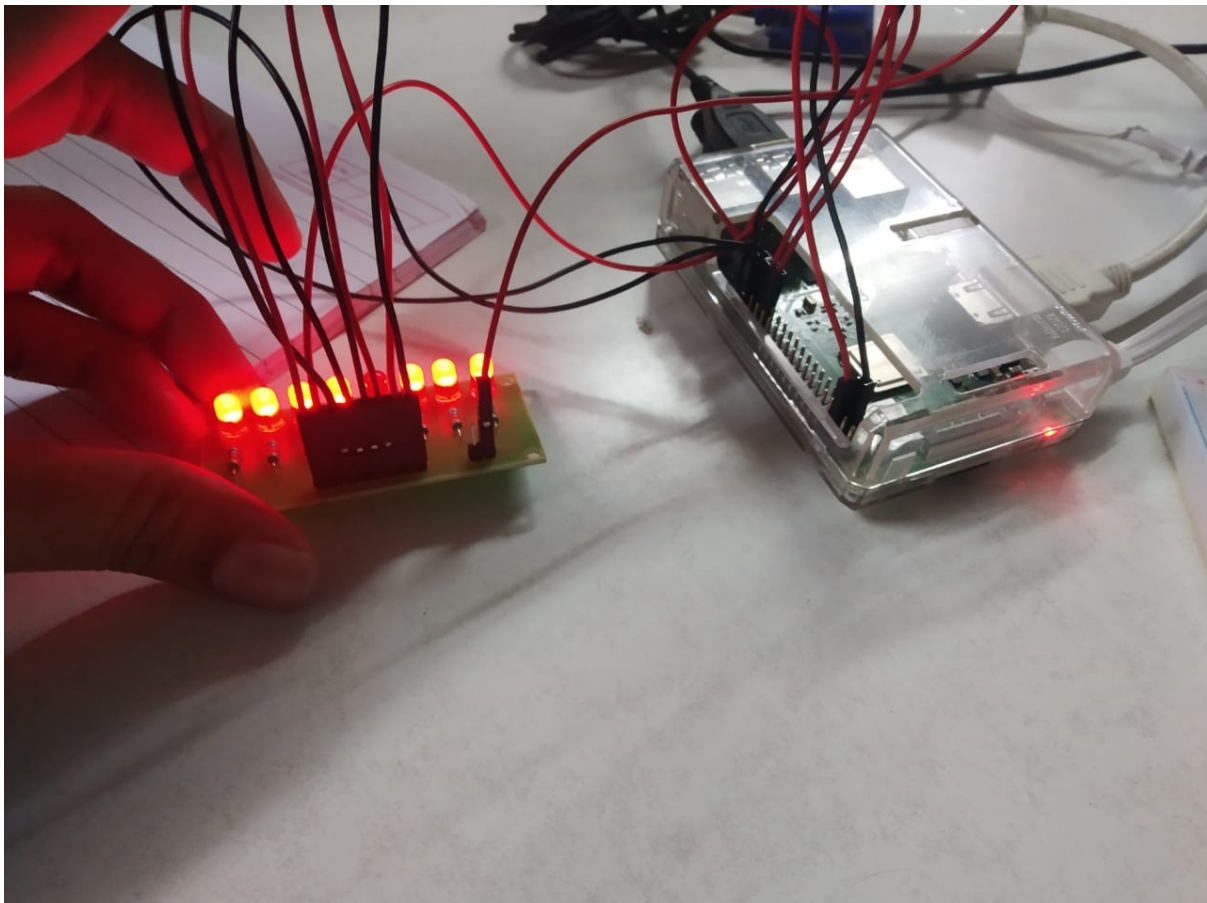
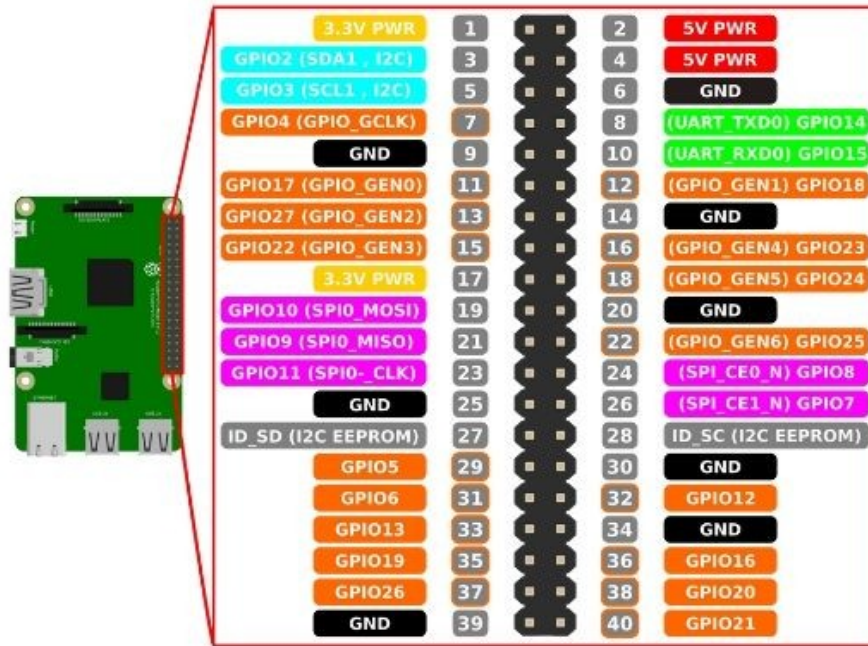
Run your program and output will be display.





HOME / ELECTRONIC COMPONENTS AND
MODULES

Female to Female (F-F) 40 Pin
Jumper Wire



Practical 3

Aim: Capturing images and videos with Raspberry pi and pi camera.

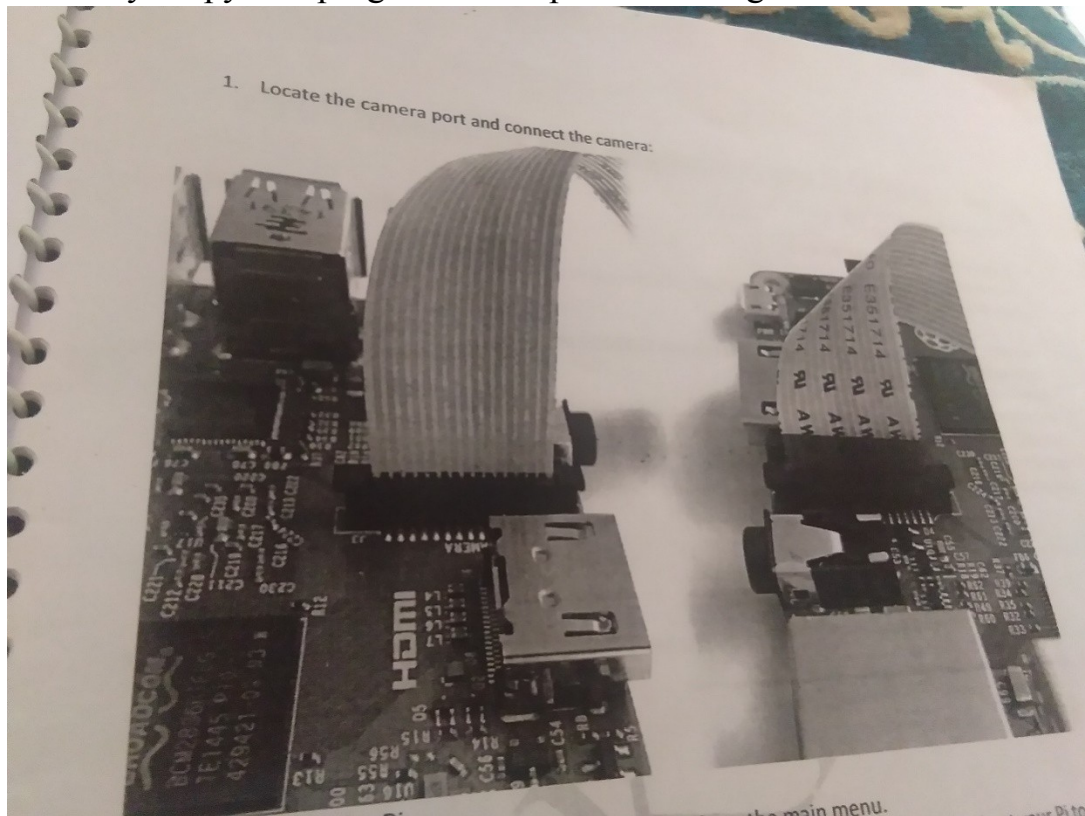
Components required: Raspberry pi, Power supply, USB keyboard and mouse, SD card, Camera Module along with your initial Raspberry pi Set up.

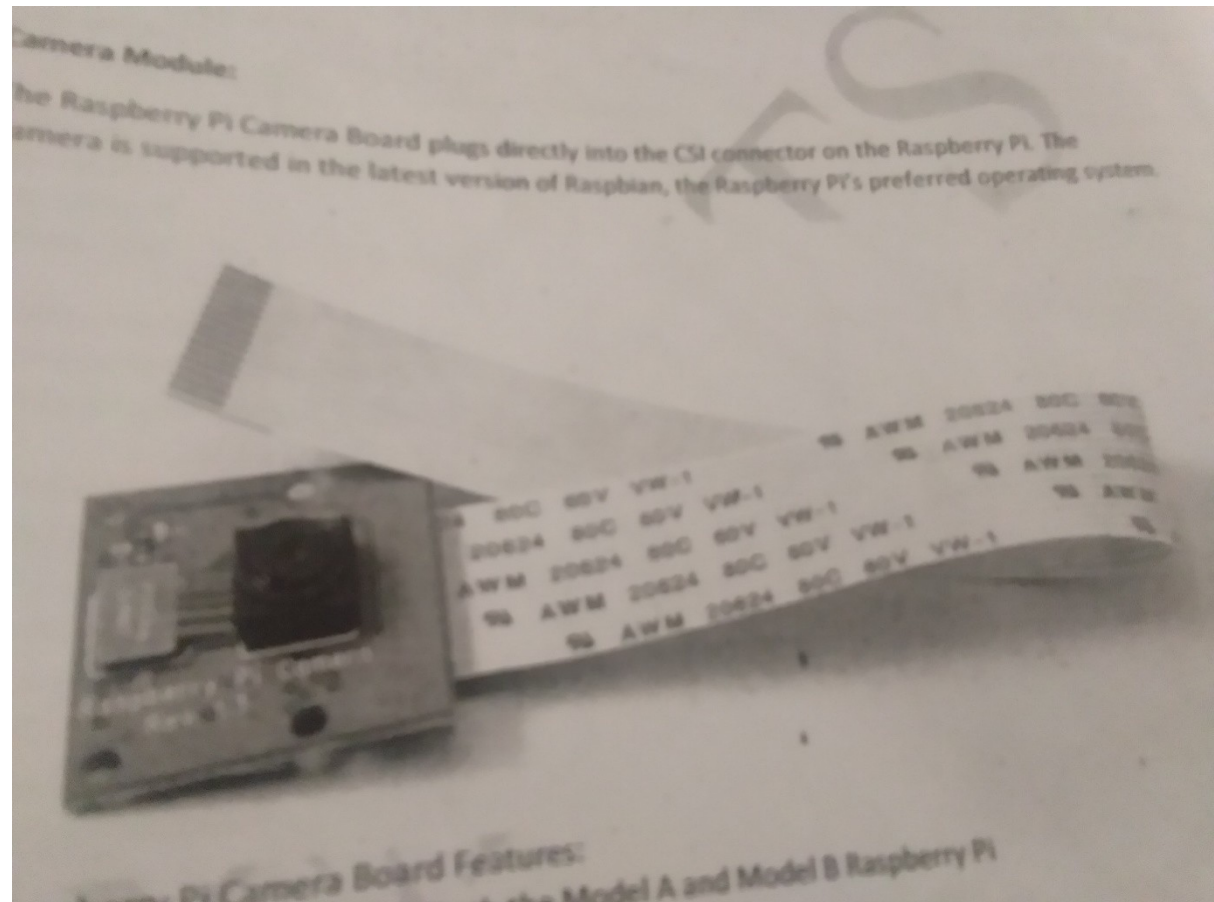
Procedure:

Connect all basic connection.

Connect Raspberry pi module in the slot of Raspberry.

Run your python program and capture the image and video.





Practical -4

Aim: Displaying Time over 4 Digit 7 Segment Display using Raspberry Pi.

Required Components: Raspberry pi, Power supply, USB Keyboard and mouse, SD card, Digit 7 segment display module.

Procedure:

Connect all basic connections.

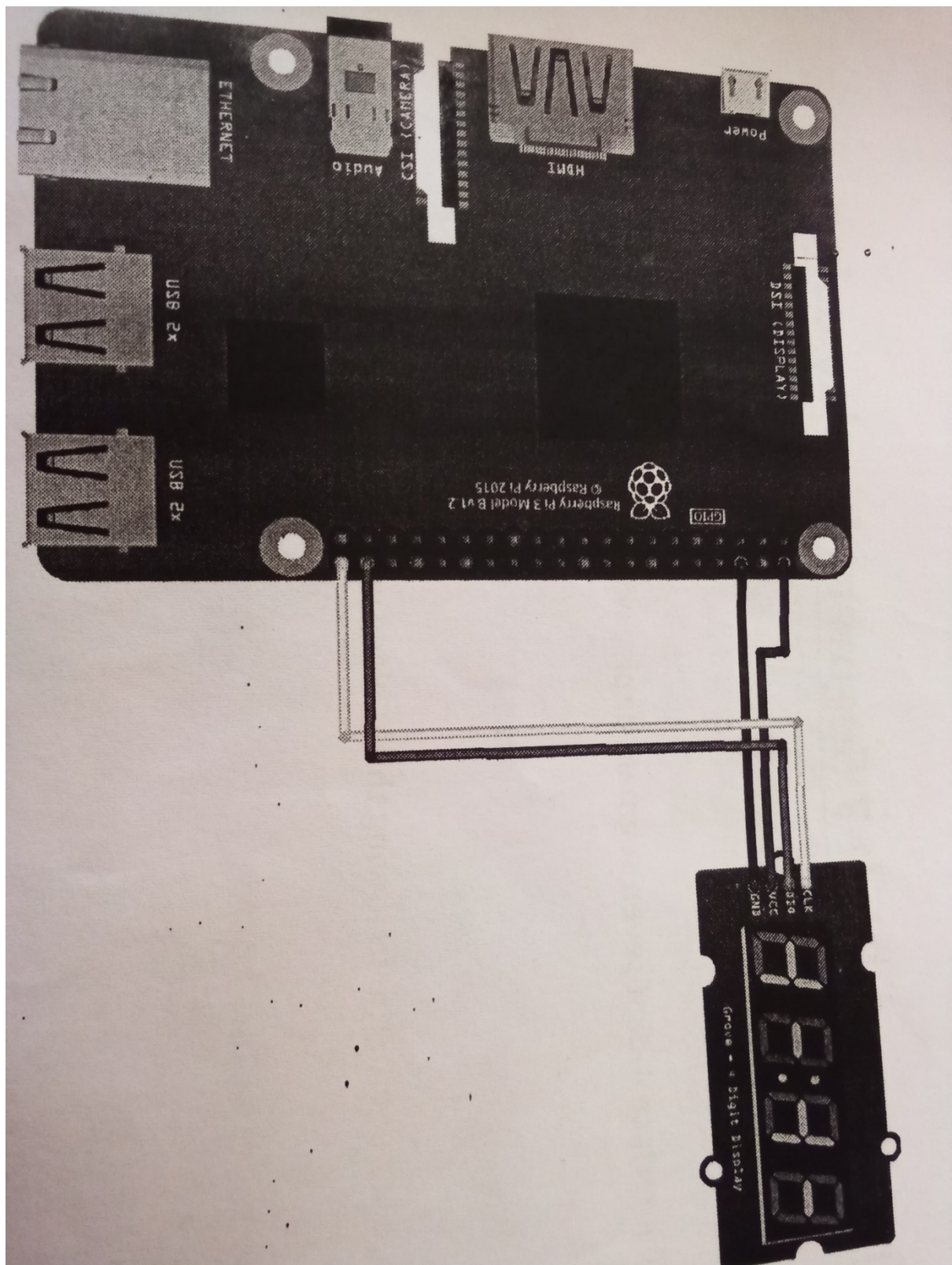
Connect Pin 2 of Raspberry pi to Vcc pin of module (4 digit 7 segment)

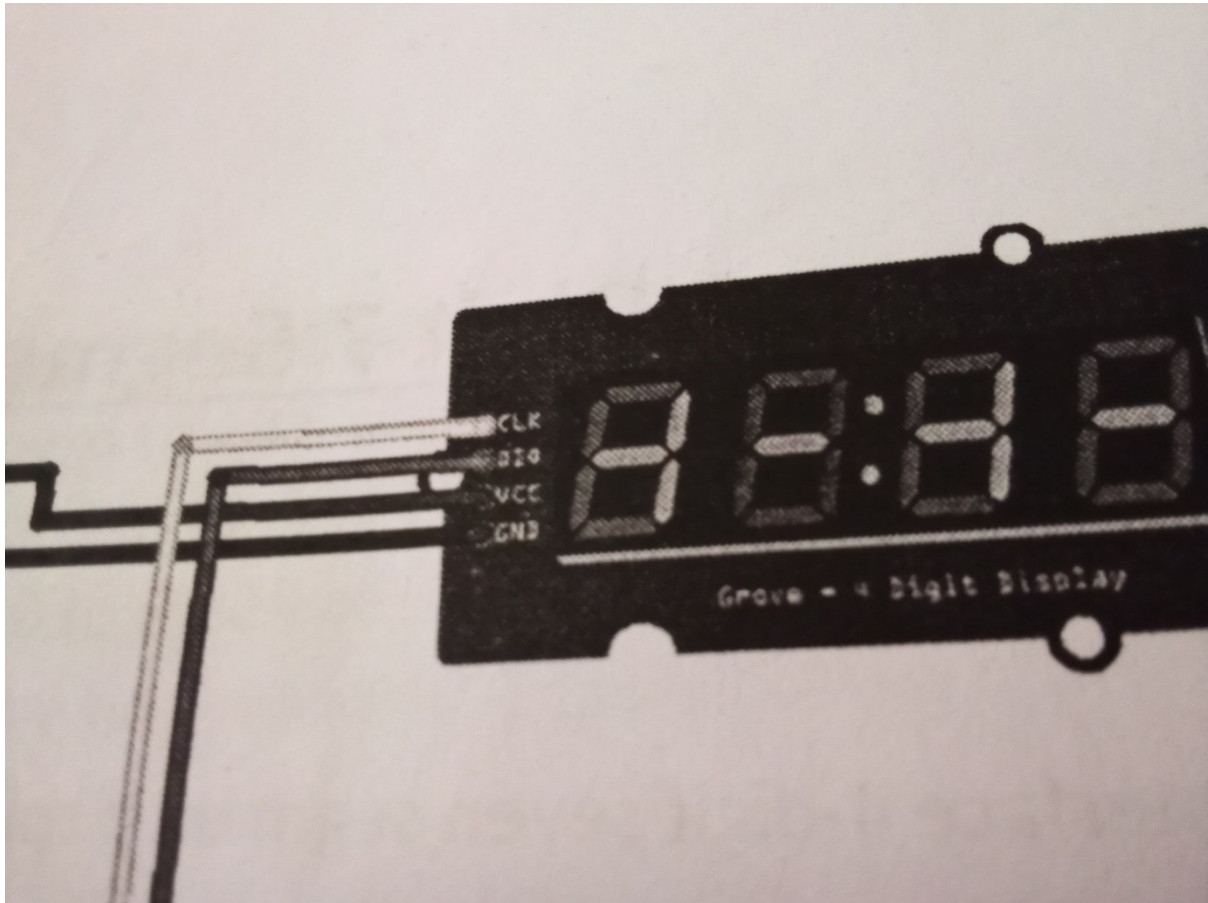
Connect pin 6 of Raspberry pi to GND of module.

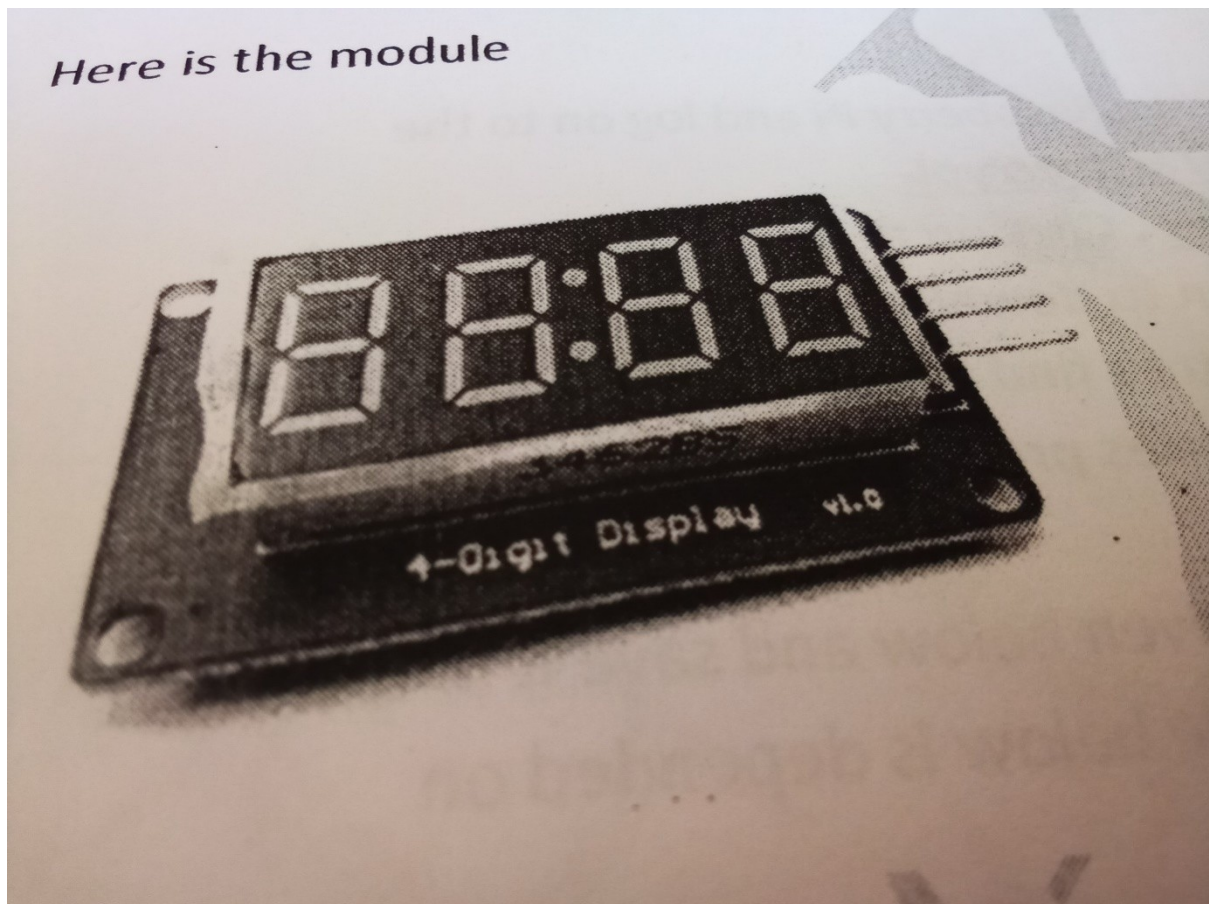
Connect pin 38 of Raspberry pi to DIO of module.

Connect pin 40 of Raspberry pi to CLK of module.

Open your program and run your program in python shell in order to get output.







Practical -5

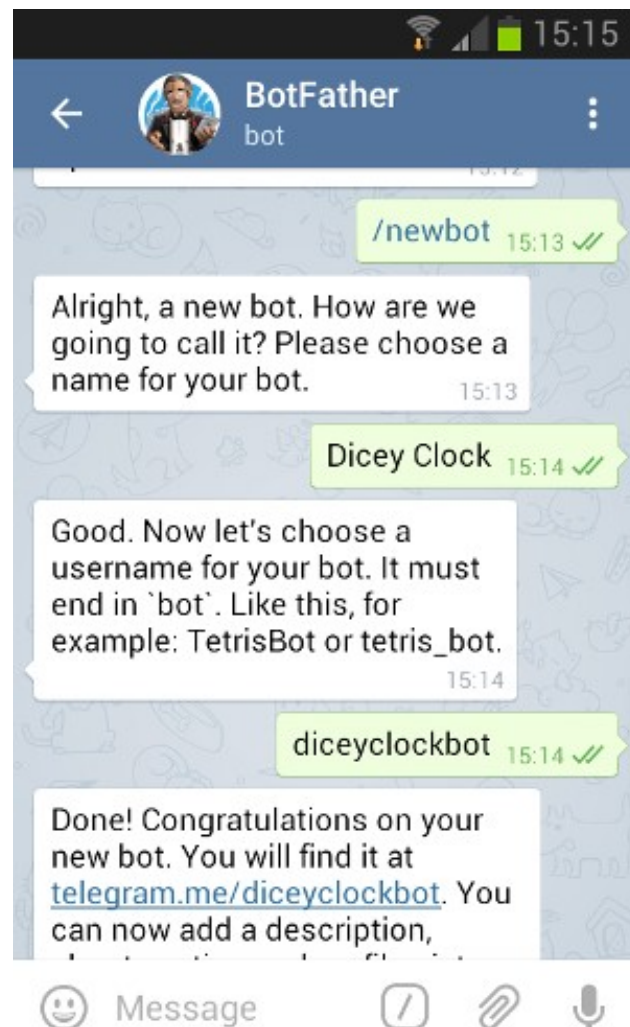
Aim: Telegram communication

Require component: Raspberry pi, Power supply, USB Keyboard and mouse, SD card

Procedure:

On telegram search @botfather
Click start /newbot
Give name Choose username (unique)
Copy API token in your telegram program.

Run your program and start communication.



```
pi@opencv-3-1-0: ~/telepot/examples
GNU nano 2.2.6 File: diceyclock.py

import sys
import time
import random
import datetime
import telepot

def handle(msg):
    chat_id = msg['chat']['id']
    command = msg['text']

    print 'Got command: %s' % command

    if command == '/roll':
        bot.sendMessage(chat_id, random.randint(1,6))
    elif command == '/time':
        bot.sendMessage(chat_id, str(datetime.datetime.now()))

bot = telepot.Bot('*** INSERT TOKEN **')
bot.message_loop(handle)
print 'I am listening ...'

while 1:
    time.sleep(10)

[ Wrote 23 lines ]
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell
```

```
pi@raspberrypi: ~
pi@raspberrypi ~$
pi@raspberrypi ~$
pi@raspberrypi ~$
pi@raspberrypi ~$ python
Python 2.7.3 (default, Mar 18 2014, 05:13:23)
[GCC 4.6.3] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> import telepot
>>> bot = telepot.Bot('')
>>> bot.getMe()
{'username': u'diceyclockbot', u'first_name': u'Dicey Clock', u'id': }
>>>
```

```
pi@raspberrypi: ~  
pi@raspberrypi ~$ python diceyclock.py  
I am listening ...  
Got message: /roll  
Got message: /roll  
Got message: /roll  
Got message: /time  
Got message: /time
```



Practical -6

Aim: RFID Module interfacing with Raspberry Pi

Required Components: Raspberry Pi., Power supply and extra +5V adaptor, USB keyboard and Mouse, Micro SD card, Connecting Wires, RFID (Radio Frequency identification) Module, USB Serial Convertor.

Procedure:

Connect all basic Connections.

Open program and save your program with any name with extension.py in python shell.

Connect Red connecting wire to Red wire of adaptor. Connect Black connecting wire to Black wire of adaptor. Both connecting wire is Female to female connecting wire.

Connect adaptor to your module.

Connect Tx of module to pin of RX of UEB serial convertor.

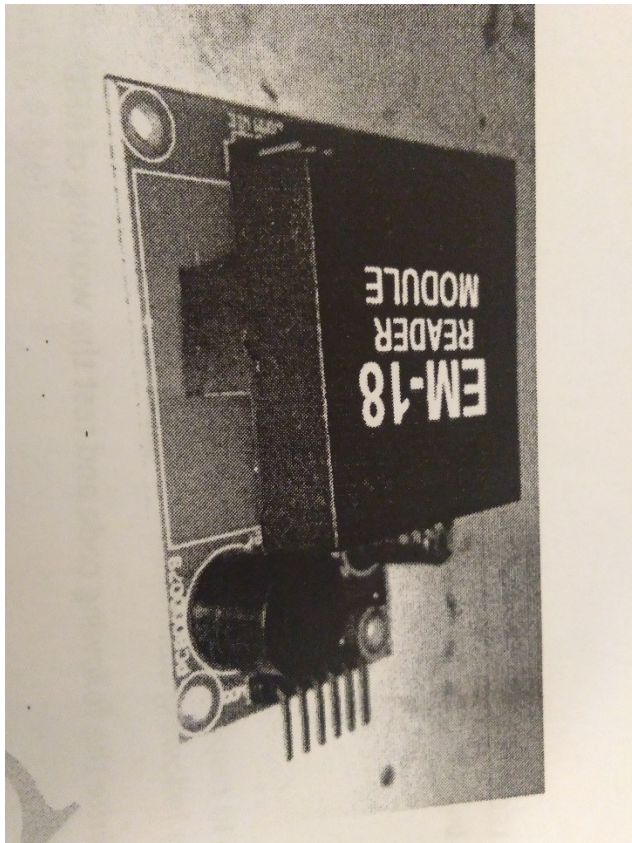
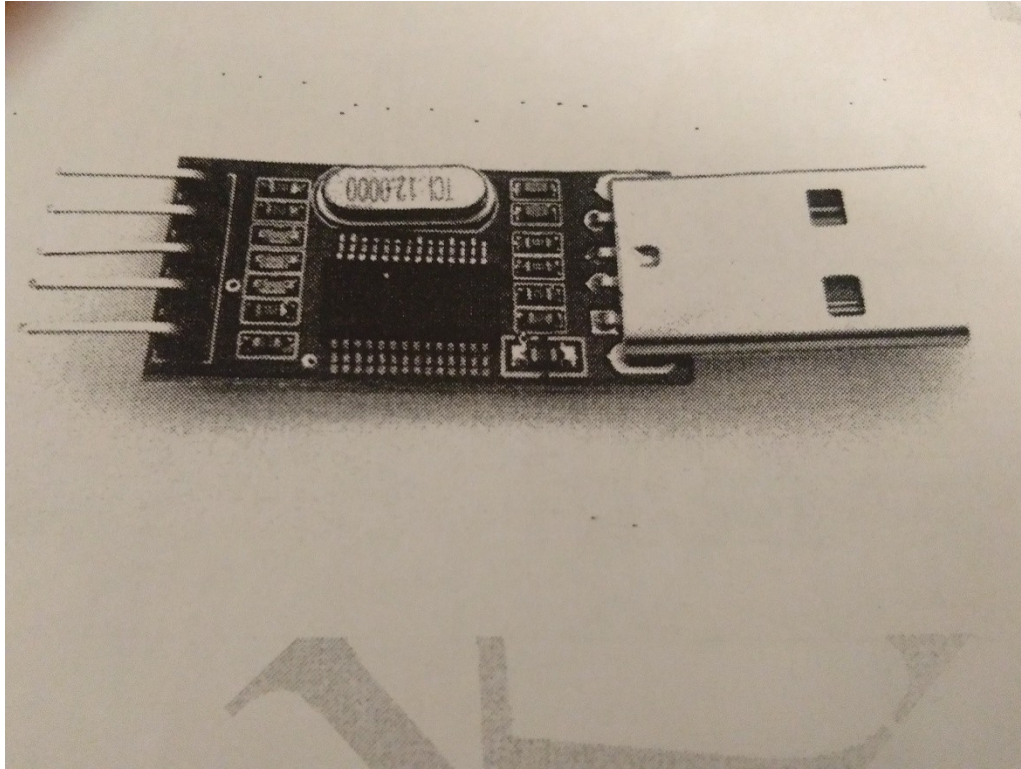
Connect GND pin of module to GND pin of USB serial convertor.

Connect Black wire of adaptor to GND of RFID module.

Connect Red wire of adaptor to +5V of RFID module

Connect USB serial convertor to Raspberry pi.

Run your program and check whether Card is read by your RFID module.



Practical -7

Aim: GPS module interfacing with Raspberry pi.

Required Components: Raspberry pi, Connecting wires, SD card, USB keyboard and mouse, USB serial converter, GPS module(Global positioning systems)

Procedure:

Connect all Basic Connections.

Connect VCC pin of GPS module to 3.3 v pin of USB serial converter.

Connect GND pin of GPS module to GND pin of USB serial converter.

Connect TX pin of GPS module to RX pin of USB serial converter.

Connect RX pin of GPS module to TX pin of USB serial converter.

Connect USB converter to Raspberry pi.

Run your program.

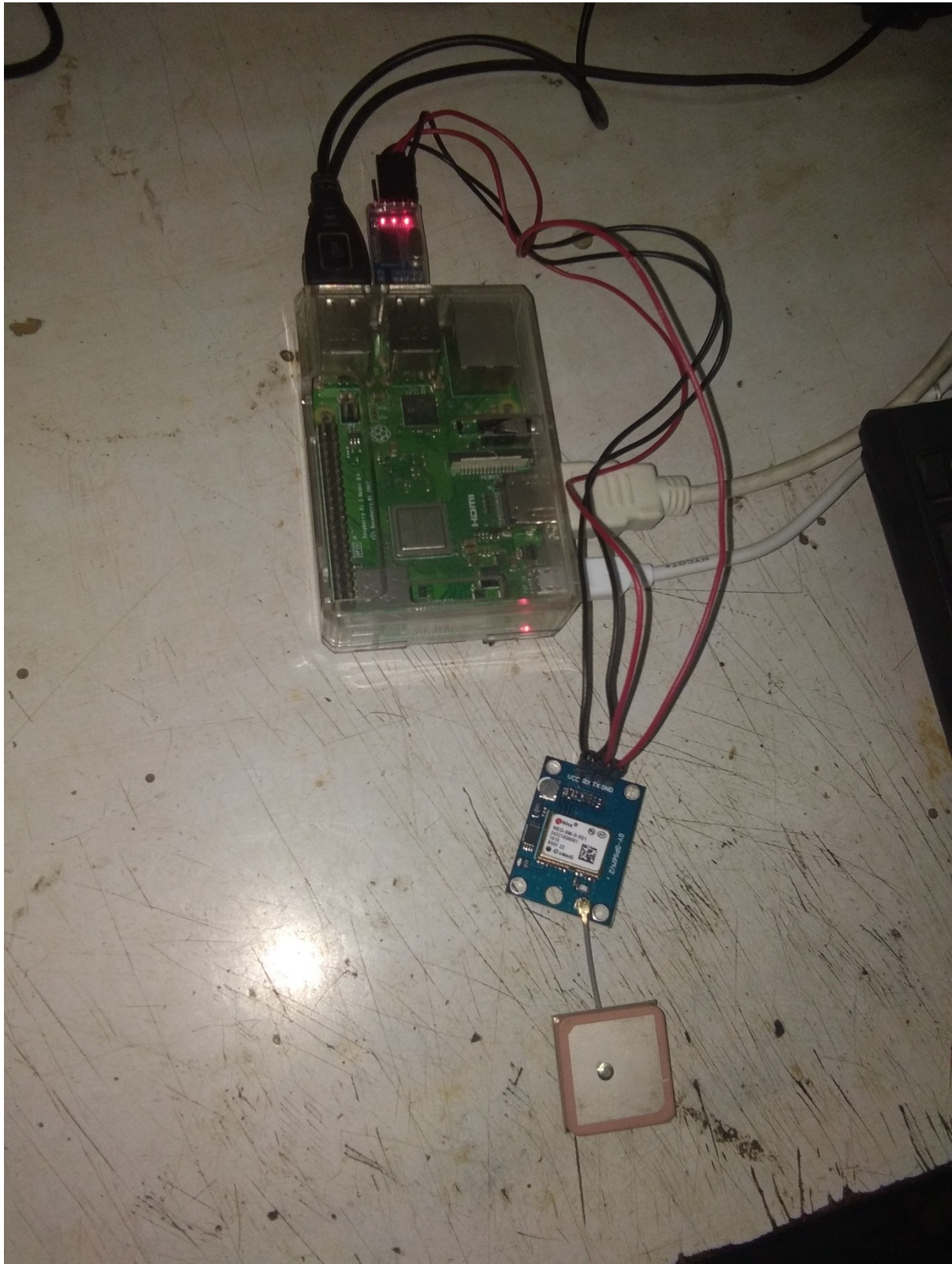
Run your following commands:

Sudo apt-get update

Sudo apt-get install gpsd gpsd-clients python-gps.

Sudogpsd/dev/ttyUSB0-F/var/run /gpsd-sock

Cgps-S



Practical-8

Aim: Fingerprint sensor interfacing with Raspberry pi.

Required Components: Raspberry pi, USB keyboard and Mouse, Connecting wires, SD card, Power supply, Fingerprint module, Discover Board, 16x2 LCD, USB serial converter.

Procedure:

Connect all Basic connections.

Use Red, Black, yellow and white wire of your fingerprint module.

Connect Red wire of module to VCC of USB serial converter.

Connect Black wire of module to GND of USB serial Converter.

Connect Yellow wire of module to TX of USB serial converter.

Connect White wire of module to RX of USB serial converter.

Connect USB serial converter to Raspberry pi.

Run your program and execute following commands.

Sudobash

Wget-O-http//apt.pm-codeworks-de/pm-codeworks

De.gpg/apt-keyadd

