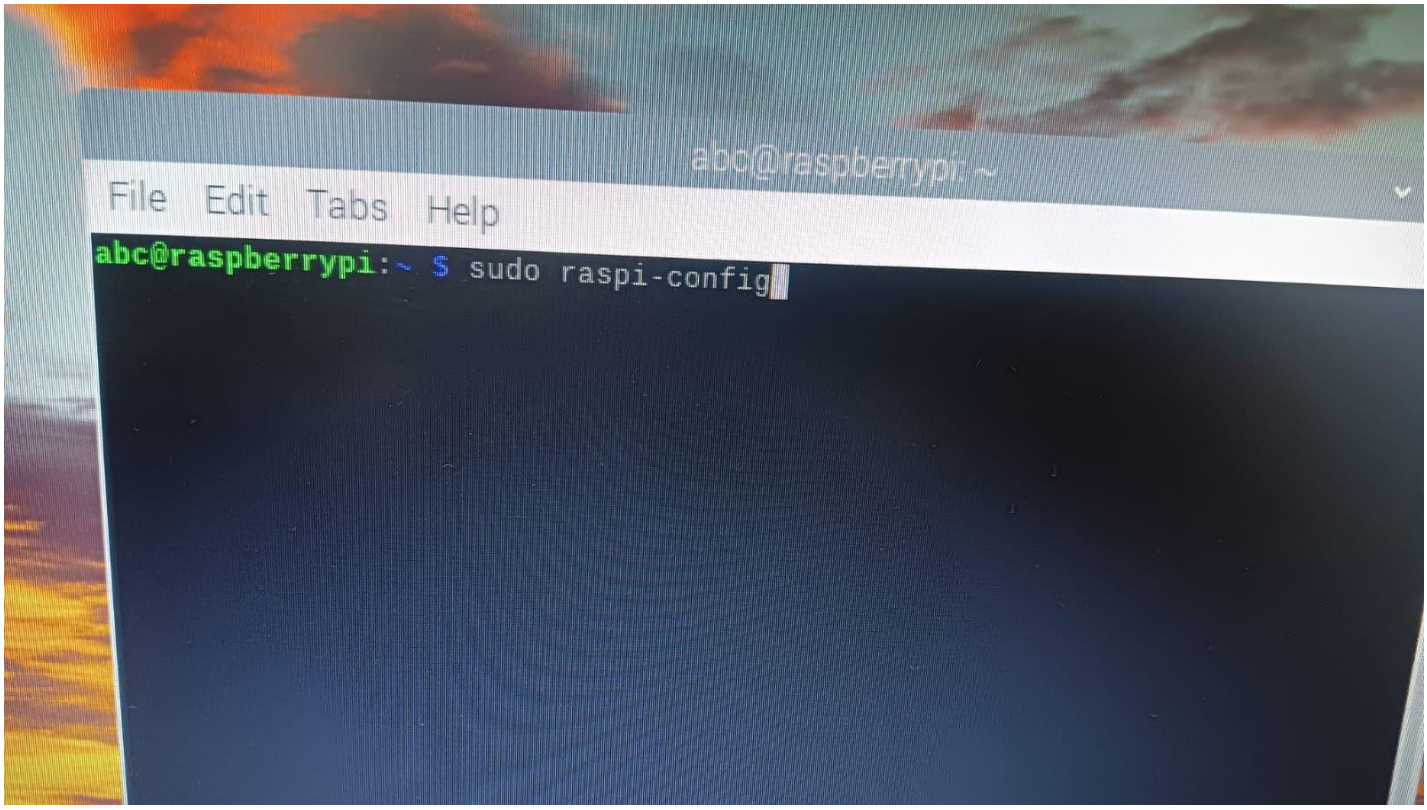
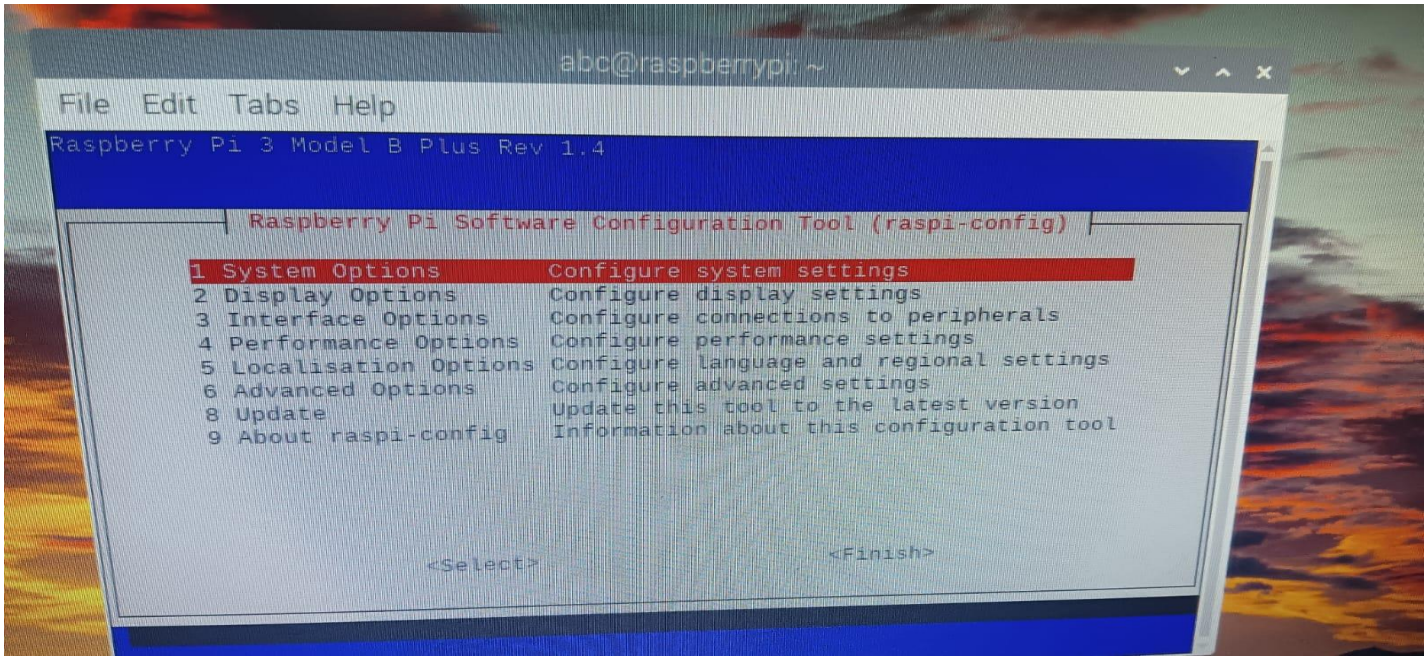
Name: Kaustubh Rane
Roll No.: CS23037

Practical No. 4

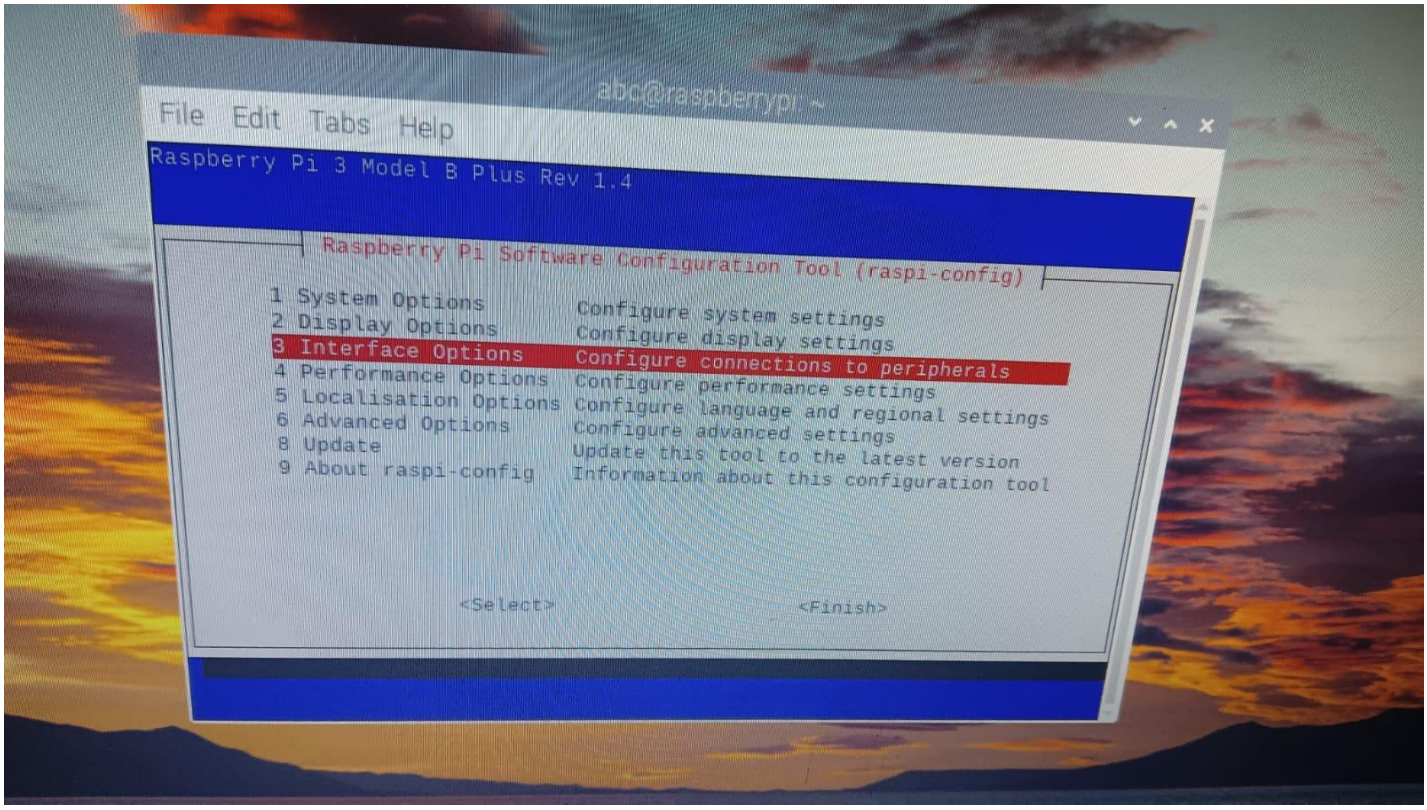
Aim: SPI: Camera Connection and capturing Images/Videos using SPI Code:
Step 1: Open the Terminal and Write: **sudo raspi-config**

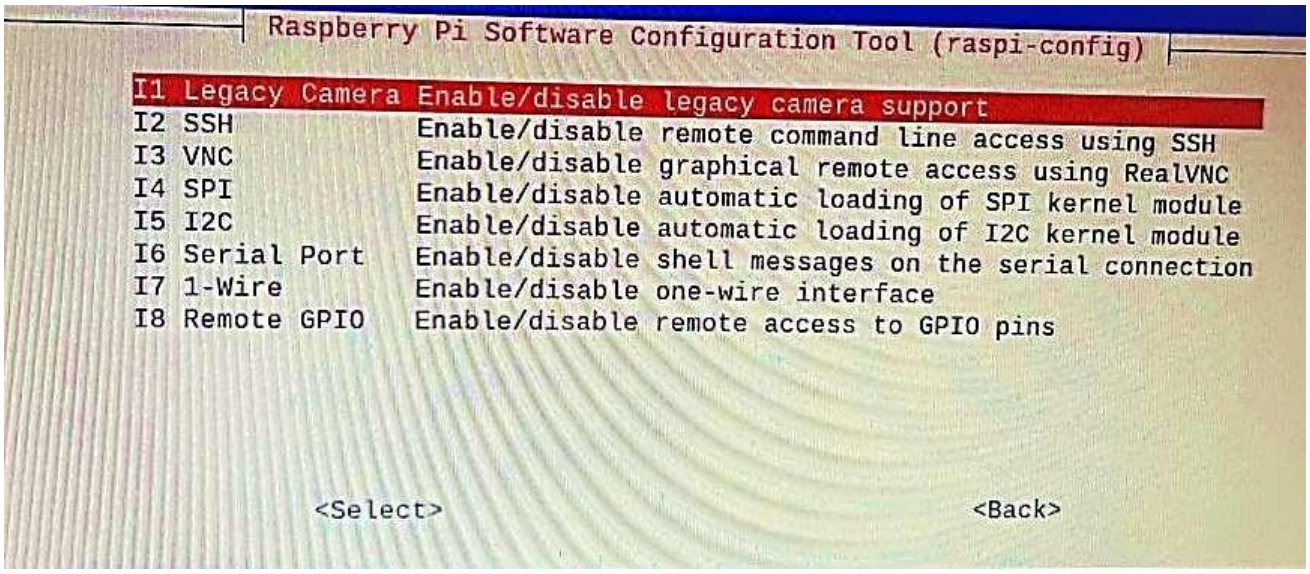


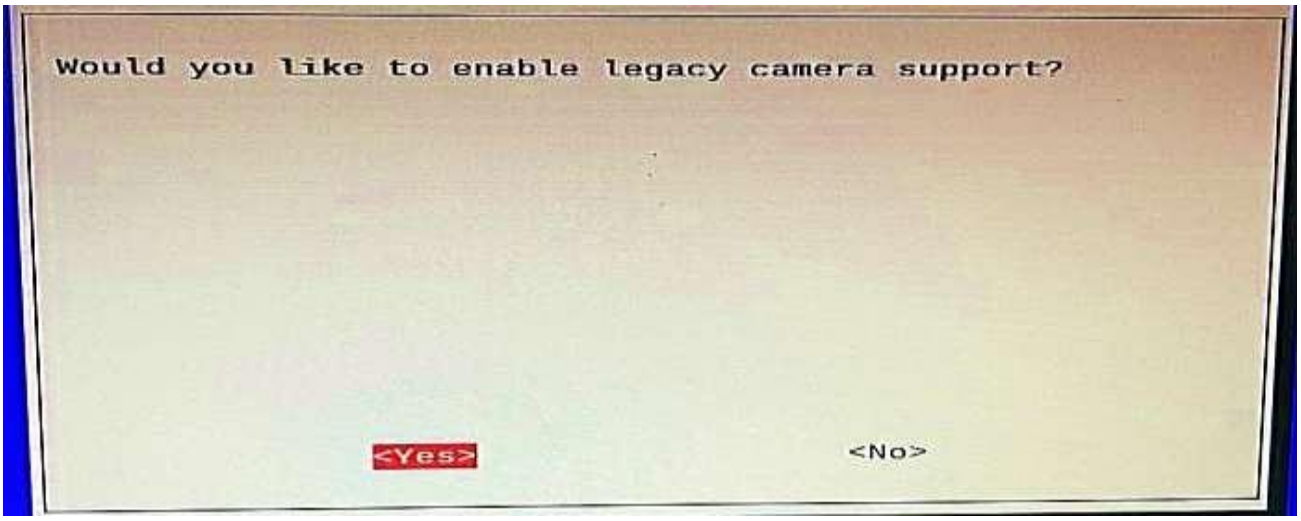
Step 2: RaspberryPi system configuration will be open.

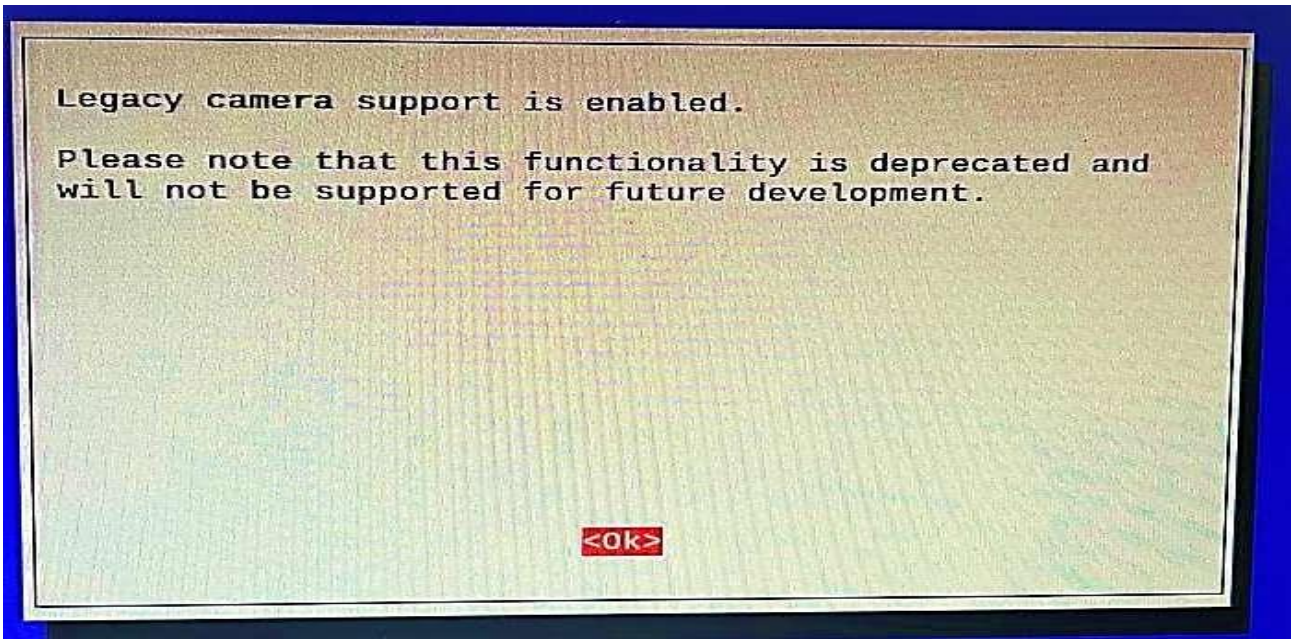


Step 3: Go to interface option and click on <finish>, now choose the option legacy camera and enable the camera.

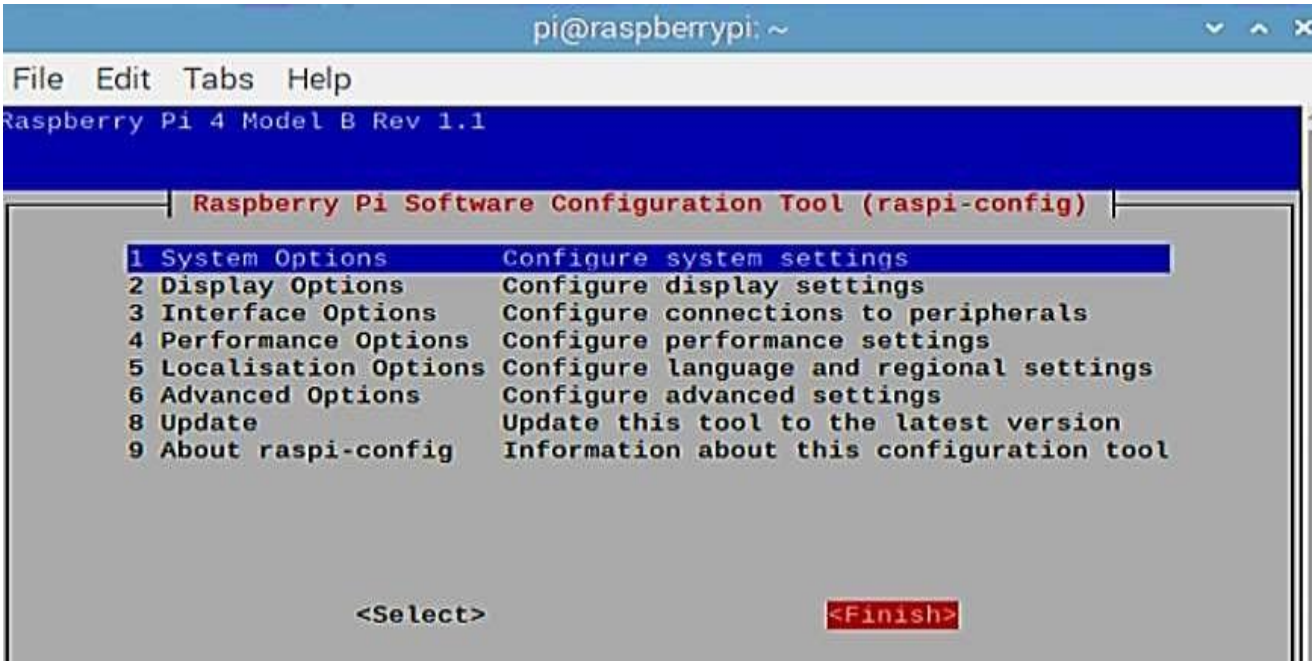




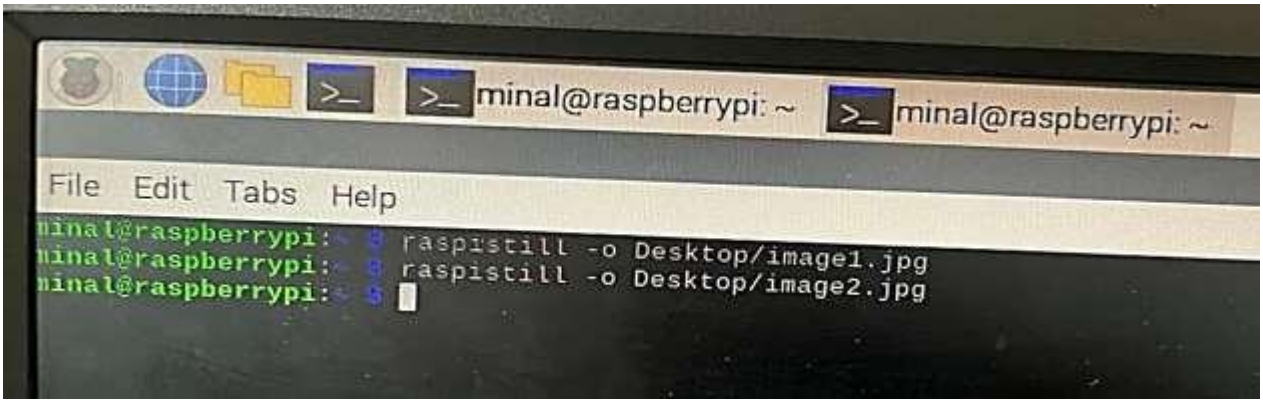

Would you like to enable legacy camera support?
<Yes>
<No>


Legacy camera support is enabled.
Please note that this functionality is deprecated and will not be supported for future development.
<Ok>

Step 5: Now reboot the system



Step 4: Now go to terminal and write: **raspistill-o Desktop/image.jpg**



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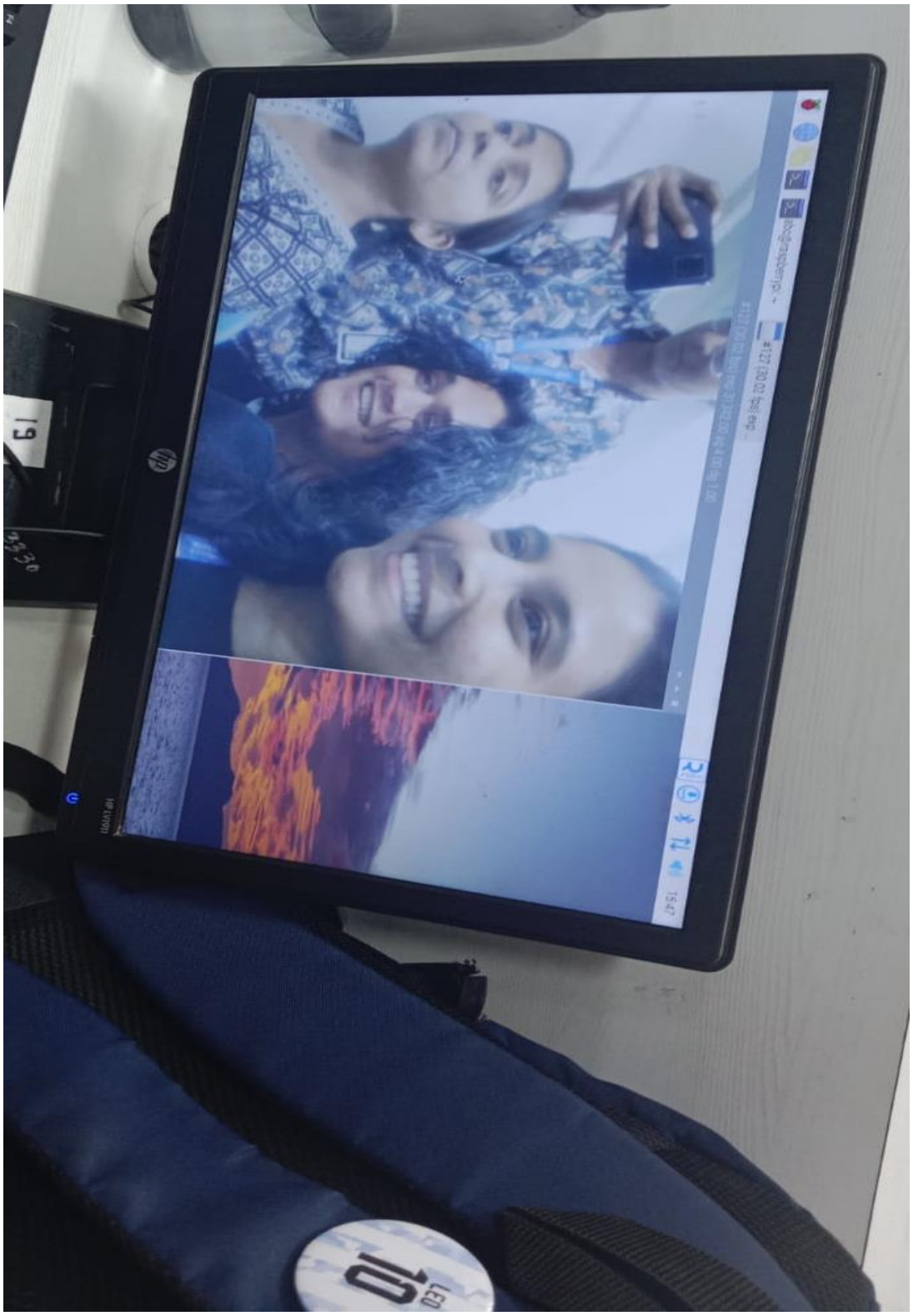
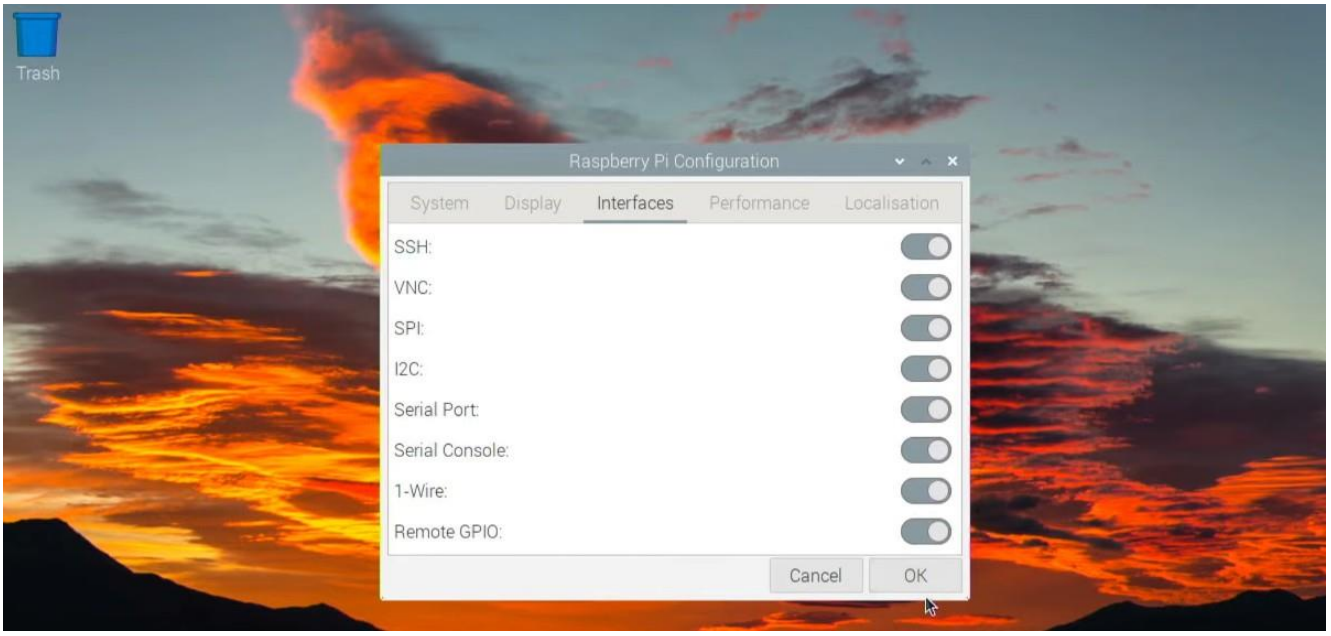
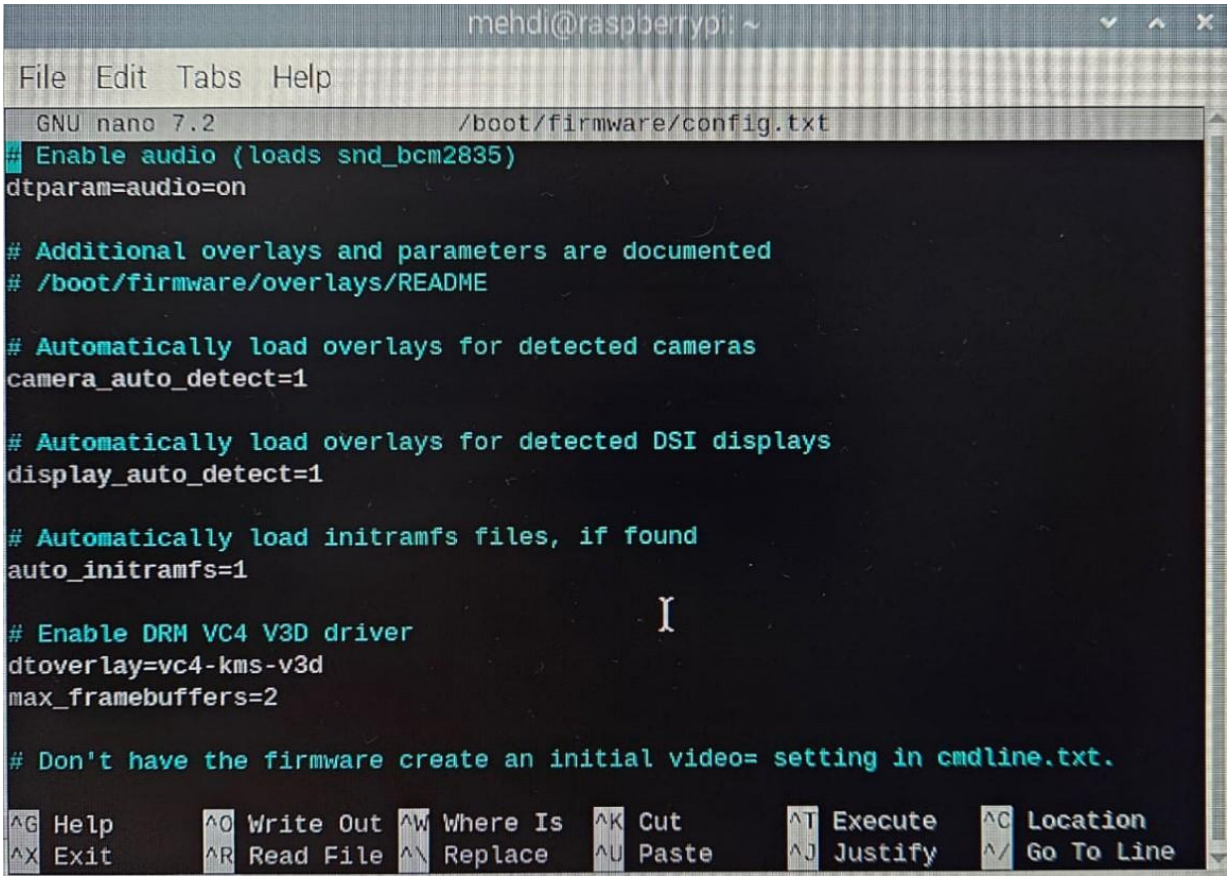
OUTPUT:

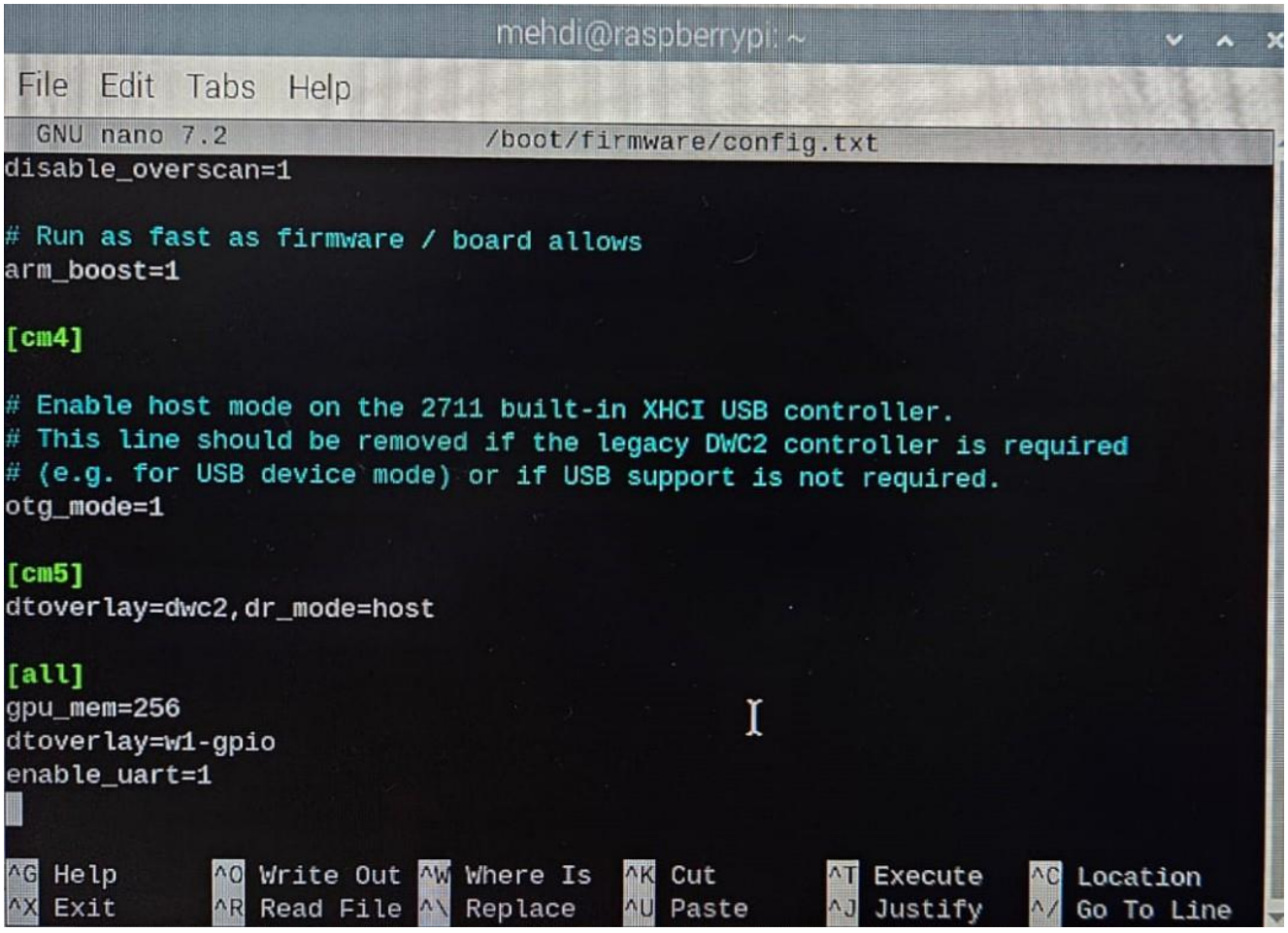


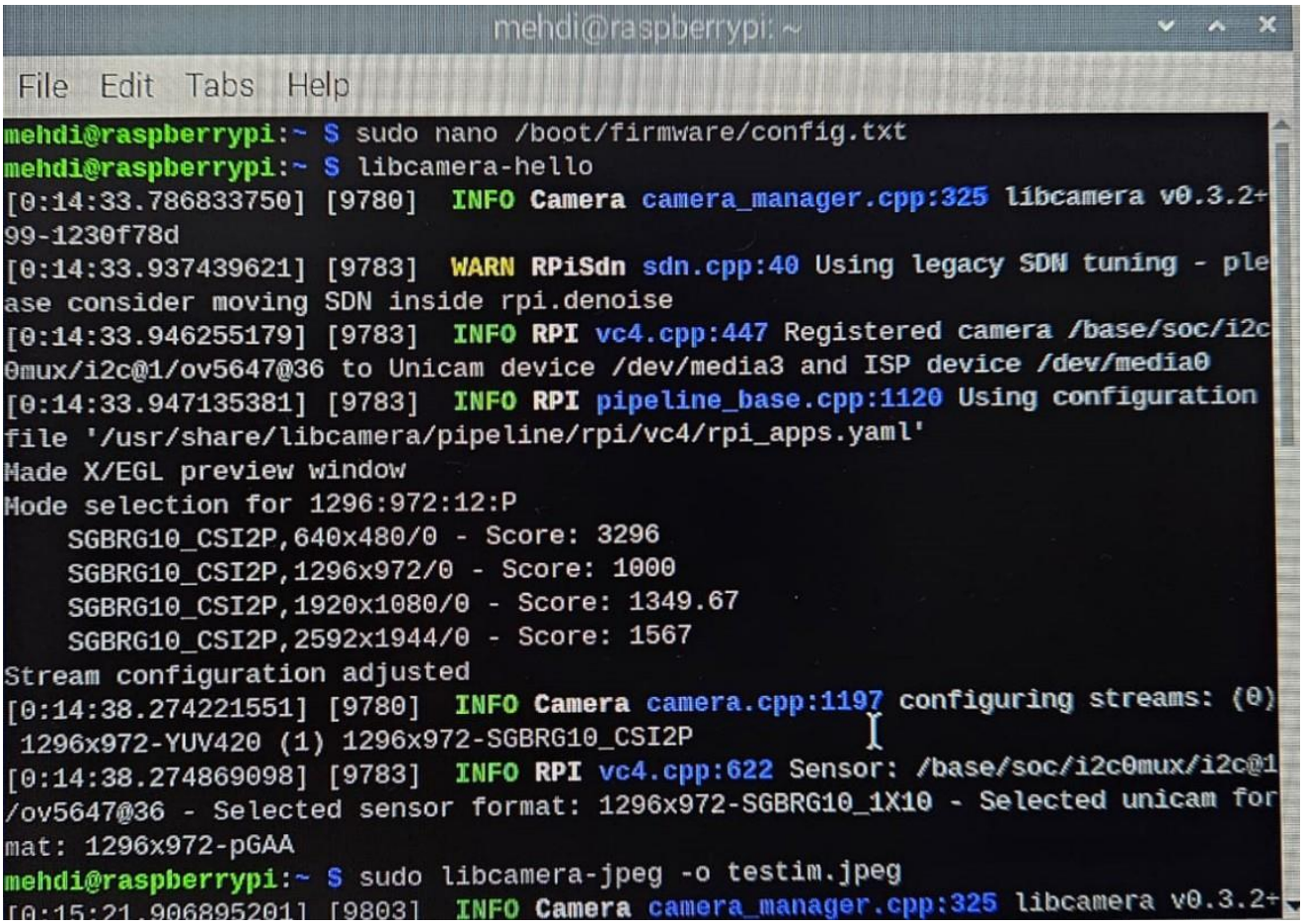
For Newer Upgraded Raspi OS and picamera2

```
sudo apt update && sudo apt full-upgrade -y
sudo rpi-update
sudo reboot
```






mehdi@raspberrypi: ~
File Edit Tabs Help
GNU nano 7.2 /boot/firmware/config.txt
disable_overscan=1
# Run as fast as firmware / board allows
arm_boost=1
[cm4]
# Enable host mode on the 2711 built-in XHCI USB controller.
# This line should be removed if the legacy DWC2 controller is required
# (e.g. for USB device mode) or if USB support is not required.
otg_mode=1
[cm5]
dtoverlay=dwc2,dr_mode=host
[all]
gpu_mem=256
dtoverlay=w1-gpio
enable_uart=1
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line


mehdi@raspberrypi: ~
File Edit Tabs Help
mehdi@raspberrypi:~ $ sudo nano /boot/firmware/config.txt
mehdi@raspberrypi:~ $ libcamera-hello
[0:14:33.786833750] [9780] INFO Camera camera_manager.cpp:325 libcamera v0.3.2+99-1230f78d
[0:14:33.937439621] [9783] WARN RPiSdn sdn.cpp:40 Using legacy SDN tuning - please consider moving SDN inside rpi.denoise
[0:14:33.946255179] [9783] INFO RPI vc4.cpp:447 Registered camera /base/soc/i2c0mux/i2c@1/ov5647@36 to Unicam device /dev/media3 and ISP device /dev/media0
[0:14:33.947135381] [9783] INFO RPI pipeline_base.cpp:1120 Using configuration file '/usr/share/libcamera/pipeline/rpi/vc4/rpi_apps.yaml'
Made X/EGL preview window
Mode selection for 1296:972:12:P
SGBRG10_CSI2P,640x480/0 - Score: 3296
SGBRG10_CSI2P,1296x972/0 - Score: 1000
SGBRG10_CSI2P,1920x1080/0 - Score: 1349.67
SGBRG10_CSI2P,2592x1944/0 - Score: 1567
Stream configuration adjusted
[0:14:38.274221551] [9780] INFO Camera camera.cpp:1197 configuring streams: (0) 1296x972-YUV420 (1) 1296x972-SGBRG10_CSI2P
[0:14:38.274869098] [9783] INFO RPI vc4.cpp:622 Sensor: /base/soc/i2c0mux/i2c@1/ov5647@36 - Selected sensor format: 1296x972-SGBRG10_1X10 - Selected unicam format: 1296x972-pGAA
mehdi@raspberrypi:~ $ sudo libcamera-jpeg -o testim.jpeg
[0:15:21.906895201] [9803] INFO Camera camera_manager.cpp:325 libcamera v0.3.2+

camera.py *

```
1  from picamera2 import Picamera2, Preview
2  import time
3
4  camera = Picamera2()
5
6  camera_config = camera.create_preview_configuration(main={
7  "size": (2048, 1536)}
8  )
9
10 camera.configure(camera_config)
11
12 camera.start_preview(Preview.QTGL)
13 camera.start()
14
15 print('Previewing')
16
17 time.sleep(5)
18 camera.capture_file("captured_image.jpg")
19
20 print('Picture Saved')
21
22 camera.stop_preview()
23 camera.stop()
```

Run the program and you will find the captured image after the program completes running

Conclusion: Hence, we have successfully completed the SPI: Camera Connection and capturing Images/Videos using SPI