EXPERIMENT 1 - GENERAL PURPOSE INPUT & OUTPUT PROGRAMMING USING RASPBERRYPI WITH SENSEHAT

1. Hello World Display on SenseHat
2. Single Character Display followed by Rotation and Flip
3. Single Pixel activation in SenseHat
4. Custom Character Creation using LED Matrix (Print the letter 'S')
5. Position and Action Display of Joystick
6. Character Display based on the Position and Action of the Joystick
7. SenseHat Led Matrix Control based on Position and Action of Joystick using Functions
8. Assignment: To implement a counter which displays the count on the led matrix. The count needs to be incremented on pressing the joystick's right key, it should get decremented on pressing the joystick's left key and should get cleared to zero when the joystick's middle key is pressed.

EXPERIMENT 2 - SENSOR INTERFACING AND DATA LOGGING USING RASPBERRY PI WITH SENSEHAT

1. Humidity Sensor Programming
2. Pressure Sensor Programming
3. Temperature Sensor Programming
4. Print Local Time
5. Temperature Controller using SenseHat
6. Accelerometer Sensor Programming
7. Acceleration Detector using Accelerometer
8. Acceleration Detector along with Direction Detection using an Accelerometer
9. Datalogger for Weather Station using SenseHat
10. Assignment: To implement a multiparameter display device which will display the current temperature, humidity and pressure on the LED matrix in SenseHat when the middle button of the joystick is pressed.

EXPERIMENT 3 - WEB SERVER IMPLEMENTATION USING RASPBERRY PI

1. Scene Control using Flask
2. Weather Station
3. Remote Device Control

EXPERIMENT 4 - RASPBERRY PI AND IOT CLOUD SERVER INTERFACE USING MQTT PROTOCOL 97

1. Data Transmission from Raspberry Pi to ThingSpeak IoT Cloud Server
2. Sensor Data Transmission from Raspberry Pi with SenseHat to ThingSpeak IoT Cloud Server
3. Sensor Data Transmission from Raspberry Pi with SenseHat to Adafruit IoT Cloud Server

4. Remote Device Control using Adafruit IoT Cloud Server on Raspberry Pi

EXPERIMENT 5 - MACHINE LEARNING USING IRIS DATASET

1. Univariate and Multivariate Data Plots using IRIS Dataset
2. Analysis of Machine Learning using the IRIS Dataset
3. Analysis of Machine Learning Models using Box and Whisker Diagrams

EXPERIMENT 6 - IMAGE PROCESSING USING RASPBERRY PI

1. Display the Image and its Properties
2. Splitting and Merging Image Channels
3. Image Mode Conversion
4. Image Resizing
5. Image Rotation
6. Image Transpose
7. Image Crop and Paste
8. Image Copy and Save
9. Image Filter Blur
10. Image Gaussian Blur
11. Assignment: To implement Gaussian blur, emboss and image rotation while having their sliders in the left, right and down positions respectively concerning the image.

EXPERIMENT 7 - PI CAMERA INTERFACING WITH RASPBERRY PI

1. Test Raspberry Pi Camera
2. Capture an Image
3. Display Text
4. Brightness Control
5. Web Streaming
6. Assignment: To capture a photo using Raspberry Pi and modify the angle, blur and emboss the captured image using sliders.

EXPERIMENT 8 – GPIO AND ASSOCIATED PERIPHERALS

1. LED Blinking using Raspberry Pi
2. LED Control using Switch
3. LED fade in and fade out using PWM
4. Direction Control of Servo Motor using PWM
5. Assignment: Capture and save the image when the button is pressed.

EXPERIMENT 9 - LCD INTERFACING USING RASPBERRY PI

1. Hello World Display as LCD (GPIO)
2. Display Scrolling Text on LCD
3. Assignment: There is a digital board installed in a smart restaurant. Read 'n' numbers of today's special food items as input through the keyboard. Scroll through the read foods one-by-one on LCD for the customer's view.