

Sri Lanka Institute of Information Technology



**Lab Submission
<Worksheet 7>**

<IT24102555>

<Weerathunga B.A>

Fundamentals of Computing | IT1140

B.Sc. (Hons) in Information Technology

Activity 01

The screenshot shows the Wokwi simulation environment. On the left is the code editor with the following sketch:

```
9 }
10 void loop() {
11     // put your main code here, to run repeatedly:
12     int potentiometerValue = analogRead(A0);
13     if((potentiometerValue >=0) && (potentiometerValue < 50)){
14         digitalWrite(13, HIGH);
15         digitalWrite(12, LOW);
16         digitalWrite(11, LOW);
17         digitalWrite(10, LOW);
18         digitalWrite(9, LOW);
19     }
20     if((potentiometerValue >50) && (potentiometerValue < 200)){
21         digitalWrite(13, HIGH);
22         digitalWrite(12, HIGH);
23         digitalWrite(11, LOW);
24         digitalWrite(10, LOW);
25         digitalWrite(9, LOW);
26     }
27     if((potentiometerValue >200) && (potentiometerValue < 400)){
28         digitalWrite(13, HIGH);
29         digitalWrite(12, HIGH);
30         digitalWrite(11, HIGH);
31         digitalWrite(10, LOW);
32         digitalWrite(9, LOW);
33     }
34     if((potentiometerValue >400) && (potentiometerValue < 800)){
35         digitalWrite(13, HIGH);
36         digitalWrite(12, HIGH);
37         digitalWrite(11, HIGH);
38         digitalWrite(10, HIGH);
39         digitalWrite(9, LOW);
40     }
41     if((potentiometerValue >800) && (potentiometerValue < 1000)){
42         digitalWrite(13, HIGH);
43         digitalWrite(12, HIGH);
44         digitalWrite(11, HIGH);
45         digitalWrite(10, HIGH);
46         digitalWrite(9, HIGH);
47     }
48 }
49
50
51
52 }
```

The simulation window shows a breadboard with a potentiometer connected to pin A0. The Arduino Uno is connected with digital pins 9, 10, 11, 12, and 13. The simulation status bar indicates 01:41.284 and 10%.

The second screenshot shows the same setup but with a different state. The digital pins 9, 10, 11, 12, and 13 are now all set to HIGH. The simulation status bar indicates 01:54.984 and 8%.

Course: Fundamentals of Computer Science | FC Worksheet 07.pdf | New Arduino Uno Project - Wokwi | Lab 07 - OneDrive

WOKWI SAVE SHARE Docs SIGN IN

sketch.ino • diagram.json • Library Manager

```

9 }
10 void loop() {
11     // put your main code here, to run repeatedly:
12     int potentiometerValue = analogRead(A0);
13     if((potentiometerValue >=0) && (potentiometerValue < 50)){
14         digitalWrite(13, HIGH);
15         digitalWrite(12, LOW);
16         digitalWrite(11, LOW);
17         digitalWrite(10, LOW);
18         digitalWrite(9, LOW);
19     }
20     if((potentiometerValue >=50) && (potentiometerValue < 200)){
21         digitalWrite(13, HIGH);
22         digitalWrite(12, HIGH);
23         digitalWrite(11, LOW);
24         digitalWrite(10, LOW);
25         digitalWrite(9, LOW);
26     }
27     if((potentiometerValue >=200) && (potentiometerValue < 400)){
28         digitalWrite(13, HIGH);
29         digitalWrite(12, HIGH);
30         digitalWrite(11, HIGH);
31         digitalWrite(10, LOW);
32         digitalWrite(9, LOW);
33     }
34     if((potentiometerValue >=400) && (potentiometerValue < 800)){
35         digitalWrite(13, HIGH);
36         digitalWrite(12, HIGH);
37         digitalWrite(11, HIGH);
38         digitalWrite(10, HIGH);
39         digitalWrite(9, LOW);
40     }
41     if((potentiometerValue >=800) && (potentiometerValue < 1000)){
42         digitalWrite(13, HIGH);
43         digitalWrite(12, HIGH);
44         digitalWrite(11, HIGH);
45         digitalWrite(10, HIGH);
46         digitalWrite(9, HIGH);
47     }
48 }
49
50
51
52
53

```

Simulation

Course: Fundamentals of Computer Science | FC Worksheet 07.pdf | New Arduino Uno Project - Wokwi | Lab 07 - OneDrive

WOKWI SAVE SHARE Docs SIGN UP

sketch.ino • diagram.json • Library Manager

```

9 }
10 void loop() {
11     // put your main code here, to run repeatedly:
12     int potentiometerValue = analogRead(A0);
13     if((potentiometerValue >=0) && (potentiometerValue < 50)){
14         digitalWrite(13, HIGH);
15         digitalWrite(12, LOW);
16         digitalWrite(11, LOW);
17         digitalWrite(10, LOW);
18         digitalWrite(9, LOW);
19     }
20     if((potentiometerValue >=50) && (potentiometerValue < 200)){
21         digitalWrite(13, HIGH);
22         digitalWrite(12, HIGH);
23         digitalWrite(11, LOW);
24         digitalWrite(10, LOW);
25         digitalWrite(9, LOW);
26     }
27     if((potentiometerValue >=200) && (potentiometerValue < 400)){
28         digitalWrite(13, HIGH);
29         digitalWrite(12, HIGH);
30         digitalWrite(11, HIGH);
31         digitalWrite(10, LOW);
32         digitalWrite(9, LOW);
33     }
34     if((potentiometerValue >=400) && (potentiometerValue < 800)){
35         digitalWrite(13, HIGH);
36         digitalWrite(12, HIGH);
37         digitalWrite(11, HIGH);
38         digitalWrite(10, LOW);
39         digitalWrite(9, LOW);
40     }
41     if((potentiometerValue >=800) && (potentiometerValue < 1000)){
42         digitalWrite(13, HIGH);
43         digitalWrite(12, HIGH);
44         digitalWrite(11, HIGH);
45         digitalWrite(10, HIGH);
46         digitalWrite(9, HIGH);
47     }
48 }
49
50
51
52
53

```

Simulation

Course: Fundamentals of Computer Science I

FC Worksheet 07.pdf

New Arduino Uno Project - Wokwi

arduino greater than or equal to

edge/newtab

WOKWI

SAVE SHARE

sketch.ino • diagram.json • Library Manager

Simulation

01:17.751 100%

```

9 }
10 void loop() {
11     // put your main code here, to run repeatedly:
12     int potentiometerValue = analogRead(A0);
13     if((potentiometerValue >=0) && (potentiometerValue < 50)){
14         digitalWrite(13, HIGH);
15         digitalWrite(12, LOW);
16         digitalWrite(11, LOW);
17         digitalWrite(10, LOW);
18         digitalWrite(9, LOW);
19     }
20 }
21 if((potentiometerValue >=50) && (potentiometerValue < 200)){
22     digitalWrite(13, HIGH);
23     digitalWrite(12, HIGH);
24     digitalWrite(11, LOW);
25     digitalWrite(10, LOW);
26     digitalWrite(9, LOW);
27 }
28 if((potentiometerValue >=200) && (potentiometerValue < 400)){
29     digitalWrite(13, HIGH);
30     digitalWrite(12, HIGH);
31     digitalWrite(11, HIGH);
32     digitalWrite(10, LOW);
33     digitalWrite(9, LOW);
34 }
35 if((potentiometerValue >=400) && (potentiometerValue < 800)){
36     digitalWrite(13, HIGH);
37     digitalWrite(12, HIGH);
38     digitalWrite(11, HIGH);
39     digitalWrite(10, HIGH);
40     digitalWrite(9, LOW);
41 }
42 if((potentiometerValue >=800) && (potentiometerValue < 1000)){
43     digitalWrite(13, HIGH);
44     digitalWrite(12, HIGH);
45     digitalWrite(11, HIGH);
46     digitalWrite(10, HIGH);
47     digitalWrite(9, HIGH);
48 }
49
50
51
52 }
53 
```

Activity 02

The screenshot shows the Wokwi simulation environment. On the left, the code for sketch.ino is displayed:

```
1 #define LED_PIN 11
2 #define POTENTIOMETER_PIN 11
3
4 void setup() {
5     // put your setup code here, to run once:
6     pinMode(LED_PIN, OUTPUT);
7     Serial.begin(9600);
8 }
9
10 void loop() {
11     // put your main code here, to run repeatedly:
12     int potentiometerValue = analogRead(A0);
13     int brightness = map(potentiometerValue,0,1023,0,255);
14     Serial.println(brightness);
15     analogWrite(LED_PIN,brightness);
16 }
```

The central part of the interface shows a breadboard simulation. A blue Arduino Uno board is connected to the breadboard. A red LED is connected to digital pin 11 through a resistor. A potentiometer is connected to analog pin A0. The serial monitor at the bottom shows the value 235.

The screenshot shows the Wokwi simulation environment. On the left, the code for sketch.ino is displayed:

```
1 #define LED_PIN 11
2 #define POTENTIOMETER_PIN 11
3
4 void setup() {
5     // put your setup code here, to run once:
6     pinMode(LED_PIN, OUTPUT);
7     Serial.begin(9600);
8 }
9
10 void loop() {
11     // put your main code here, to run repeatedly:
12     int potentiometerValue = analogRead(A0);
13     int brightness = map(potentiometerValue,0,1023,0,255);
14     Serial.println(brightness);
15     analogWrite(LED_PIN,brightness);
16 }
```

The central part of the interface shows a breadboard simulation. A blue Arduino Uno board is connected to the breadboard. A red LED is connected to digital pin 11 through a resistor. A potentiometer is connected to analog pin A0. The serial monitor at the bottom shows the value 63.

d.

brown – 1

black – 0

yellow – 4

100000Ω +- 5%

100kΩ +- 5%