A picture containing logo

Description automatically generated

EMBEDDED SYSTEM DESIGN USING ARDUINO LAB

**Subject Code: (18EC0108J)**

**B.Tech CSE-I - 3rd Year / 5th Semester**

**NAME-ANANYA GUPTA**

**REG NO. – RA1911003030265**

A picture containing text

Description automatically generated

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

FACULTY OF ENGINEERING & TECHNOLOGY

SRM INSTITUTE OF SCIENCE & TECHNOLOGY,

Delhi NCR CAMPUS, MODINAGAR

SIKRI KALAN, DELHI MEERUT ROAD, DIST. – GHAZIABAD - 201204

[**www.srmup.**](http://www.srmup./)**in**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Odd Semester (July-2021)

**BONAFIDE CERTIFICATE**

**Registration no.-RA1911003030265**

*Certified to be the bonafide record of work done by Sneha Negi Of 5th semester 3rd year B.TECH degree course in SRM INSTITUTE OF SCIENCE & TECHNOLOGY, DELHI-NCR Campus for the Department of* ***Computer Science &Engineering,*** *in Embedded System Design Using ARDUINO Laboratory during the academic year* ***2020-21.***

**INDEX**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.N.** | **Name of Experiment** | **Date of Exp.** | **Date of Submission** | **Signature** |
| **1** | **LED Blinking using Arduino** | **20-07-2021** | **28-10-2021** |  |
| **2** | **7 Segment Display program using Arduino** | **26-07-2021** | **28-10-2021** |  |
| **3** | **LCD 16x2 program using Arduino** | **17-08-2021** | **28-10-2021** |  |
| **4** | **Temperature Sensor using Arduino** | **31-08-2021** | **28-10-2021** |  |
| **5** | **Servo motor rotation using Arduino** | **14-09-2021** | **28-10-2021** |  |
| **6** | **DC Motor interfacing using Arduino** | **21-09-2021** | **28-10-2021** |  |
| **7** | **Stepper motor interfacing with Arduino** | **12-10-2021** | **28-10-2021** |  |
| **8** | **Establish Serial Communication using Arduino** | **26-10-2021** | **28-10-2021** |  |
|  |  |  |  |  |

**Lab In charge Head of the department**

*Submitted for end semester examination held on \_\_/\_\_\_\_/\_\_\_ at SRM INSTITUTE OF SCIENCE & TECHNOLOGY, DELHI-NCR Campus.*

***Internal Examiner-I Internal Examiner-II***



**SRM INSTITUTE OF SCIENCE & TECHNOLOGY**

**DELHI-NCR CAMPUS MODINAGAR**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**18EC0108J-Embedded System Design Using ARDUINO Laboratory**

|  |
| --- |
| Title of Experiment: LED Blinking program using Arduino. |
| Name of the candidate: Ananya Gupta  Registration Number: RA1911003030265  Date of Experiment: 20-07-2021  Date of submission: 28-10-2021 |

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Marks split up** | **Max. Marks (10)** | **Marks Obtained** |
| 1 | Preparation of Record | 03 |  |
| 2 | Execution of Experiment | 02 |  |
| 3 | Observations and Result | 02 |  |
| 4 | Viva questions | 03 |  |
| **Total** | | |  |

**Signature of Examiner**

**EXPERIMENT – 1**

**Date: - 20-07-2021**

**AIM: - LED Blinking program using Arduino.**

**SOFTWARE USED: - Arduino, Proteus 8 Professional.**

**CODE: -**

**FOR 1 LED-**

// the setup function runs once when you press reset or power the board

void setup() {

// initialize digital pin LED\_BUILTIN as an output.

pinMode(11 OUTPUT);

}

// the loop function runs over and over again forever

void loop() {

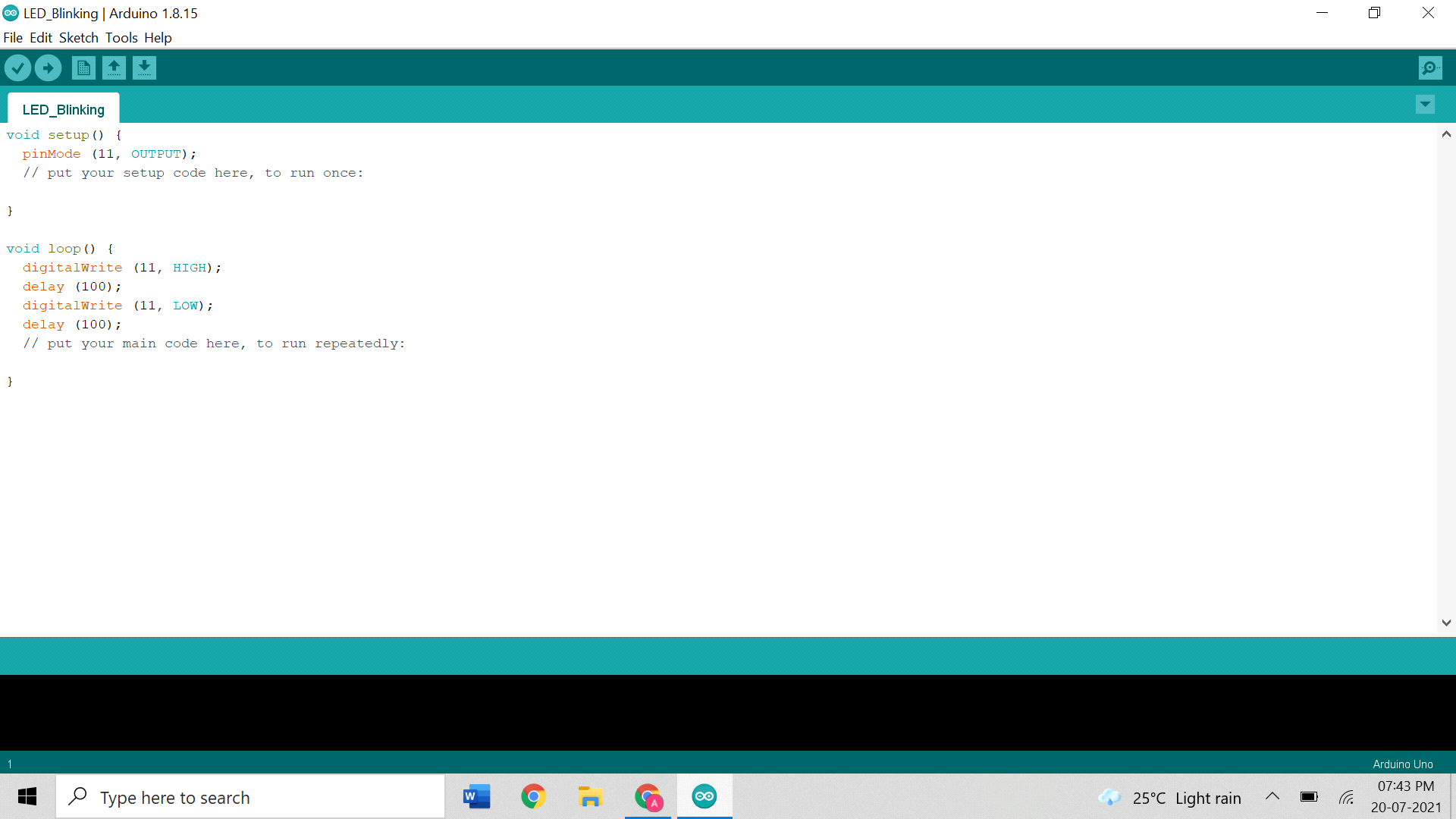
digitalWrite(11 HIGH); // turn the LED on (HIGH is the voltage level)

delay(100); // wait for a second

digitalWrite(11 LOW); // turn the LED off by making the voltage LOW

delay(100); // wait for a second

}



**FOR 2 LED-**

Graphical user interface, text, application

Description automatically generated

**FOR 3 LED-**

int a=13;

int b=12;

int c=11;

void setup() {

pinMode (a, OUTPUT);

pinMode (b, OUTPUT);

pinMode (c, OUTPUT);

// put your setup code here, to run once:

}

void loop() {

digitalWrite (a, HIGH);

delay (200);

digitalWrite (b, HIGH);

delay (200);

digitalWrite (c, HIGH);

delay (200);

digitalWrite (a, LOW);

delay (200);

digitalWrite (b, LOW);

delay (200);

digitalWrite (c, LOW);

delay (200);

// put your main code here, to run repeatedly:

}

Graphical user interface, text, application

Description automatically generated

**OUTPUT: -**

**FOR 1 LED-**

Chart

Description automatically generated with medium confidence

Chart

Description automatically generated

**FOR 2 LED-**

Chart

Description automatically generated with medium confidence

Chart

Description automatically generated

**FOR 3 LED-**

Chart

Description automatically generated

Chart

Description automatically generated

**RESULT: -**

**The EXPERIMENT-1 has been performed successfully.**

A picture containing logo

Description automatically generated

**SRM INSTITUTE OF SCIENCE & TECHNOLOGY**

**DELHI-NCR CAMPUS MODINAGAR**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**18EC0108J-Embedded System Design Using ARDUINO Laboratory**

|  |
| --- |
| Title of Experiment: Seven Segment Display program using Arduino. |
| Name of the candidate: Ananya Gupta  Registration Number: RA1911003030265  Date of Experiment: 26-07-2021  Date of submission: 28-10-2021 |

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Marks split up** | **Max. Marks (10)** | **Marks Obtained** |
| 1 | Preparation of Record | 03 |  |
| 2 | Execution of Experiment | 02 |  |
| 3 | Observations and Result | 02 |  |
| 4 | Viva questions | 03 |  |
| **Total** | | |  |

**Signature of Examiner**

**EXPERIMENT – 2**

**Date: - 26-07-2021**

**AIM: - Seven Segment Display program using Arduino.**

**SOFTWARE USED: - Arduino , Proteus 8 Professional.**

**CODE: -**

int a=13;

int b=12;

int c=11;

int d=10;

int e=9;

int f=8;

int g=7;

void setup() {

pinMode(a,OUTPUT);

pinMode(b,OUTPUT);

pinMode(c,OUTPUT);

pinMode(d,OUTPUT);

pinMode(e,OUTPUT);

pinMode(f,OUTPUT);

pinMode(g,OUTPUT);

// put your setup code here, to run once:

}

void loop() {

//0

digitalWrite (a,1);

digitalWrite (b,1);

digitalWrite (c,1);

digitalWrite (d,1);

digitalWrite (e,1);

digitalWrite (f,1);

digitalWrite (g,0);

delay (500);

//1

digitalWrite (a,0);

digitalWrite (b,1);

digitalWrite (c,1);

digitalWrite (d,0);

digitalWrite (e,0);

digitalWrite (f,0);

digitalWrite (g,0);

delay (500);

//2

digitalWrite (a,1);

digitalWrite (b,1);

digitalWrite (c,0);

digitalWrite (d,1);

digitalWrite (e,1);

digitalWrite (f,0);

digitalWrite (g,1);

delay (500);

//3

digitalWrite (a,1);

digitalWrite (b,1);

digitalWrite (c,1);

digitalWrite (d,1);

digitalWrite (e,0);

digitalWrite (f,0);

digitalWrite (g,1);

delay (500);

//4

digitalWrite (a,0);

digitalWrite (b,1);

digitalWrite (c,1);

digitalWrite (d,0);

digitalWrite (e,0);

digitalWrite (f,1);

digitalWrite (g,1);

delay (500);

//5

digitalWrite (a,1);

digitalWrite (b,0);

digitalWrite (c,1);

digitalWrite (d,1);

digitalWrite (e,0);

digitalWrite (f,1);

digitalWrite (g,1);

delay (500);

//6

digitalWrite (a,1);

digitalWrite (b,0);

digitalWrite (c,1);

digitalWrite (d,1);

digitalWrite (e,1);

digitalWrite (f,1);

digitalWrite (g,1);

delay (500);

//7

digitalWrite (a,1);

digitalWrite (b,1);

digitalWrite (c,1);

digitalWrite (d,0);

digitalWrite (e,0);

digitalWrite (f,0);

digitalWrite (g,0);

delay (500);

//8

digitalWrite (a,1);

digitalWrite (b,1);

digitalWrite (c,1);

digitalWrite (d,1);

digitalWrite (e,1);

digitalWrite (f,1);

digitalWrite (g,1);

delay (500);

//9

digitalWrite (a,1);

digitalWrite (b,1);

digitalWrite (c,1);

digitalWrite (d,1);

digitalWrite (e,0);

digitalWrite (f,1);

digitalWrite (g,1);

delay (500);

// put your main code here, to run repeatedly:

}

**OUTPUT: -**

Chart

Description automatically generated with medium confidence

A picture containing chart

Description automatically generated

Chart

Description automatically generated with low confidence

Chart

Description automatically generated with low confidence

Chart

Description automatically generated with low confidence

Chart

Description automatically generated with low confidence

Chart

Description automatically generated with low confidence

Chart

Description automatically generated with low confidence

Chart

Description automatically generated with low confidence

Chart

Description automatically generated with low confidence

A picture containing chart

Description automatically generated

**RESULT: -**

**The EXPERIMENT - 2 has been performed successfully.**

A picture containing logo

Description automatically generated

**SRM INSTITUTE OF SCIENCE & TECHNOLOGY**

**DELHI-NCR CAMPUS MODINAGAR**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**18EC0108J-Embedded System Design Using ARDUINO Laboratory**

|  |
| --- |
| Title of Experiment: LCD 16X2 program using Arduino. |
| Name of the candidate: Ananya Gupta  Registration Number: RA1911003030265  Date of Experiment: 17-08-2021  Date of submission: 28-10-2021 |

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Marks split up** | **Max. Marks (10)** | **Marks Obtained** |
| 1 | Preparation of Record | 03 |  |
| 2 | Execution of Experiment | 02 |  |
| 3 | Observations and Result | 02 |  |
| 4 | Viva questions | 03 |  |
| **Total** | | |  |

**Signature of Examiner**

**EXPERIMENT – 3**

**Date: -17-08-2021**

**AIM: -LCD 16X2 program using Arduino.**

**SOFTWARE USED: -Arduino, Proteus 8 Professional.**

**CODE: -**

#include <LiquidCrystal.h>

const int rs=12, en=11, d4=5, d5=4, d6=3, d7=2;

LiquidCrystal lcd (rs,en,d4,d5,d6,d7);

void setup() {

// put your setup code here, to run once:

lcd.begin (16, 2);

lcd.setCursor(0,0);

lcd.print ("ANANYA GUPTA");

lcd.setCursor(0,1);

lcd.print (" RA1911003030265");

}

void loop() {

// put your main code here, to run repeatedly:

}

Text

Description automatically generated with medium confidence

**OUTPUT: -**

Diagram

Description automatically generated with low confidence

**RESULT: -**

**The EXPERIMENT-3 has been performed successfully.**



**SRM INSTITUTE OF SCIENCE & TECHNOLOGY**

**DELHI-NCR CAMPUS MODINAGAR**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**18EC0108J-Embedded System Design Using ARDUINO Laboratory**

|  |
| --- |
| Title of Experiment: Temperature Sensor program using Arduino. |
| Name of the candidate: Ananya Gupta  Registration Number: RA1911003030265  Date of Experiment: 31-08-2021  Date of submission: 28-10-2021 |

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Marks split up** | **Max. Marks (10)** | **Marks Obtained** |
| 1 | Preparation of Record | 03 |  |
| 2 | Execution of Experiment | 02 |  |
| 3 | Observations and Result | 02 |  |
| 4 | Viva questions | 03 |  |
| **Total** | | |  |

**Signature of Examiner**

**EXPERIMENT – 4**

**Date: - 31-08-2021**

**AIM: - Temperature Sensor program using Arduino.**

**SOFTWARE USED: - Arduino, Proteus 8 Professional.**

**CODE: -**

float temp;

void setup() {

pinMode (13, OUTPUT);

Serial.begin (9600);

}

void loop() {

temp= analogRead (A0);

temp= (temp\*500)/1024;

Serial.println (temp);

if (temp>99)

digitalWrite (13, HIGH);

else

digitalWrite (13, LOW);

delay (1000);

}

Text

Description automatically generated

**OUTPUT: -**

Chart, box and whisker chart

Description automatically generated

A picture containing text, indoor

Description automatically generated

**RESULT: -**

**The EXPERIMENT-4 has been performed successfully.**

A picture containing logo

Description automatically generated

**SRM INSTITUTE OF SCIENCE & TECHNOLOGY**

**DELHI-NCR CAMPUS MODINAGAR**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**18EC0108J-Embedded System Design Using ARDUINO Laboratory**

|  |
| --- |
| Title of Experiment: Servo Motor program using Arduino. |
| Name of the candidate: Ananya Gupta  Registration Number: RA1911003030265  Date of Experiment: 14-09-2021  Date of submission: 28-10-2021 |

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Marks split up** | **Max. Marks (10)** | **Marks Obtained** |
| 1 | Preparation of Record | 03 |  |
| 2 | Execution of Experiment | 02 |  |
| 3 | Observations and Result | 02 |  |
| 4 | Viva questions | 03 |  |
| **Total** | | |  |

**EXPERIMENT – 5**

**Date: - 14-09-2021**

**AIM: - Servo Motor program using Arduino.**

**SOFTWARE USED: - Arduino, Proteus 8 Professional.**

**CODE: -**

#include <Servo.h>;

Servo myservo;

int pos = 0;

void setup() {

myservo.attach(9);

}

void loop() {

for (pos = 0; pos <= 180; pos += 1) {

myservo.write(pos);

delay(15);

}

for (pos = 180; pos >= 0; pos -= 1) {

myservo.write(pos);

delay(15);

}

}

Text

Description automatically generated

**OUTPUT: -**

Chart

Description automatically generated

Chart

Description automatically generated

Chart

Description automatically generated

**RESULT: -**

**The EXPERIMENT-5 has been performed successfully.**

A picture containing logo

Description automatically generated

**SRM INSTITUTE OF SCIENCE & TECHNOLOGY**

**DELHI-NCR CAMPUS MODINAGAR**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**18EC0108J-Embedded System Design Using ARDUINO Laboratory**

|  |
| --- |
| Title of Experiment: DC motor interfacing with Arduino. |
| Name of the candidate: Ananya Gupta  Registration Number: RA1911003030265  Date of Experiment: 21-09-2021  Date of submission: 28-10-2021 |

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Marks split up** | **Max. Marks (10)** | **Marks Obtained** |
| 1 | Preparation of Record | 03 |  |
| 2 | Execution of Experiment | 02 |  |
| 3 | Observations and Result | 02 |  |
| 4 | Viva questions | 03 |  |
| **Total** | | |  |

**EXPERIMENT – 6**

**Date: - 21-09-2021**

**AIM: - DC motor interfacing with Arduino.**

**SOFTWARE USED: - Arduino, Proteus 8 Professional.**

**CODE: -**

void setup() {

pinMode (1, OUTPUT);

pinMode (2, OUTPUT);

}

void loop() {

digitalWrite (1,HIGH);

digitalWrite (2,LOW);

delay (2000);

digitalWrite (1, LOW);

digitalWrite (2,HIGH);

delay (2000);

}

Text

Description automatically generated

**OUTPUT: -**

Chart

Description automatically generated with low confidence

**RESULT: -**

**The EXPERIMENT-6 has been performed successfully.**

A picture containing logo

Description automatically generated

**SRM INSTITUTE OF SCIENCE & TECHNOLOGY**

**DELHI-NCR CAMPUS MODINAGAR**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**18EC0108J-Embedded System Design Using ARDUINO Laboratory**

|  |
| --- |
| Title of Experiment: Stepper Motor Interfacing with Arduino. |
| Name of the candidate: Ananya Gupta  Registration Number: RA1911003030265  Date of Experiment: 12-10-2021  Date of submission: 28-10-2021 |

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Marks split up** | **Max. Marks (10)** | **Marks Obtained** |
| 1 | Preparation of Record | 03 |  |
| 2 | Execution of Experiment | 02 |  |
| 3 | Observations and Result | 02 |  |
| 4 | Viva questions | 03 |  |
| **Total** | | |  |

**EXPERIMENT – 7**

**Date: - 12-10-2021**

**AIM: - Stepper Motor Interfacing with Arduino.**

**SOFTWARE USED: - Arduino, Proteus 8 Professional.**

**CODE: -**

#include <Stepper.h>

const int spr=4;

Stepper steper (spr, 8, 9, 10, 11);

void setup() {

// put your setup code here, to run once:

steper.setSpeed (10);

Serial.begin (9600);

}

void loop() {

// put your main code here, to run repeatedly:

steper.step (spr);

delay (200);

steper.step (-spr);

delay (200);

}

Text, application

Description automatically generated

**OUTPUT: -**

Diagram

Description automatically generated

Diagram

Description automatically generated with medium confidence

**RESULT: -**

**The EXPERIMENT-7 has been performed successfully.**

A picture containing logo

Description automatically generated

**SRM INSTITUTE OF SCIENCE & TECHNOLOGY**

**DELHI-NCR CAMPUS MODINAGAR**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**18EC0108J-Embedded System Design Using ARDUINO Laboratory**

|  |
| --- |
| Title of Experiment: Establish Serial Communication using Arduino. |
| Name of the candidate: Ananya Gupta  Registration Number: RA1911003030265  Date of Experiment: 26-10-2021  Date of submission: 28-10-2021 |

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Marks split up** | **Max. Marks (10)** | **Marks Obtained** |
| 1 | Preparation of Record | 03 |  |
| 2 | Execution of Experiment | 02 |  |
| 3 | Observations and Result | 02 |  |
| 4 | Viva questions | 03 |  |
| **Total** | | |  |

**EXPERIMENT – 8**

**Date: - 26-10-2021**

**AIM: - Establish Serial Communication using Arduino.**

**SOFTWARE USED: - Arduino, Proteus 8 Professional.**

**CODE: -**

// the setup routine runs once when you press reset:

void setup() {

// initialize serial communication at 9600 bits per second:

Serial.begin(9600);

}

void loop() {

// print out the state of the button:

Serial.println("SRM\*");

delay(500); // delay in between reads for stability

}

Graphical user interface, text, application

Description automatically generated

**OUTPUT: -**

Chart

Description automatically generated

**RESULT: -**

**The EXPERIMENT-8 has been performed successfully.**