21DS631 -Embedded RTOS

Assignment 1

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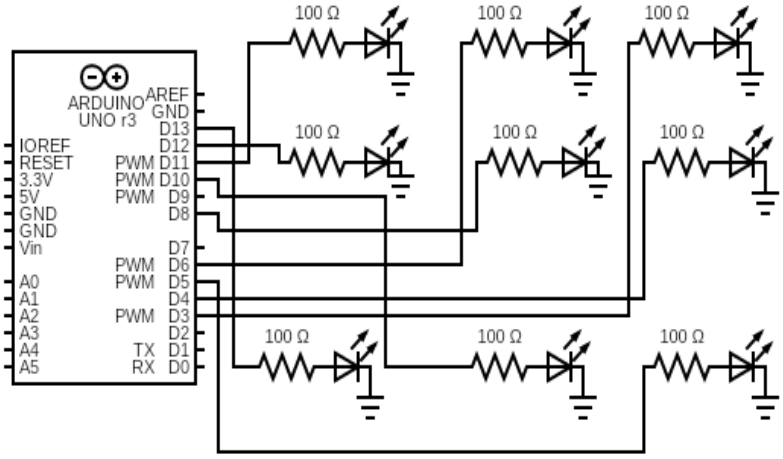
Link to Tinkercad :
https://www.tinkercad.com/things/hTNEgNHPPaf-assignment1/editel?sharecode=lYcjT6sJ9WQgxtcudGi2N7mTNH0wNoR6swMpZ5ndq6Y

Circuit diagram:



Code snippet:

```
int ledPin1=11; int ledPin2=12; int ledPin3=13;
int ledPin4=8; int ledPin5=9; int ledPin6=10;
int ledPin7=5; int ledPin8=6; int ledPin9=7;
void setup()
{
  pinMode(ledPin1,OUTPUT); pinMode(ledPin2,OUTPUT); pinMode(ledPin3,OUTPUT);
  pinMode(ledPin4,OUTPUT);pinMode(ledPin5,OUTPUT);pinMode(ledPin6,OUTPUT);
  pinMode(ledPin7,OUTPUT);pinMode(ledPin8,OUTPUT);pinMode(ledPin9,OUTPUT);
}
void L()
{
  digitalWrite(ledPin1,HIGH);digitalWrite(ledPin2,HIGH);digitalWrite(ledPin3,HIGH);
  digitalWrite(ledPin4,LOW);digitalWrite(ledPin5,LOW);digitalWrite(ledPin6,HIGH);
  digitalWrite(ledPin7,LOW);digitalWrite(ledPin8,LOW);digitalWrite(ledPin9,HIGH);
}
void Z()
{
  digitalWrite(ledPin1,HIGH);digitalWrite(ledPin2,LOW);digitalWrite(ledPin3,HIGH);
  digitalWrite(ledPin4,HIGH);digitalWrite(ledPin5,HIGH);digitalWrite(ledPin6,HIGH);
  digitalWrite(ledPin7,HIGH);digitalWrite(ledPin8,LOW);digitalWrite(ledPin9,HIGH);
}
void V()
```

```
{
  digitalWrite(ledPin1,HIGH); digitalWrite(ledPin2,LOW); digitalWrite(ledPin3,LOW);
  digitalWrite(ledPin4,LOW); digitalWrite(ledPin5,LOW);digitalWrite(ledPin6,HIGH);
  digitalWrite(ledPin7,HIGH);digitalWrite(ledPin8,LOW);digitalWrite(ledPin9,LOW);
}
void U()
{
  digitalWrite(ledPin1,HIGH);digitalWrite(ledPin2,HIGH);digitalWrite(ledPin3,HIGH);
  digitalWrite(ledPin4,LOW);digitalWrite(ledPin5,LOW);digitalWrite(ledPin6,HIGH);
  digitalWrite(ledPin7,HIGH); digitalWrite(ledPin8,HIGH);digitalWrite(ledPin9,HIGH);
}
void loop()
{
  L();
  delay(4000);
  Z();
  delay(4000);
  V();
  delay(4000);
  U();
  delay(4000);
}
```

Implementation details :

In this problem we are given 3*3 LEDs so totally 9 LEDs are used. The digital pins are assigned to these LEDs from (D2 to D13). Then pinMode is assigned to each LED. For each pin there will be 3 registers So DDR register will be set as output in this case as we need digital output only. Then by using these 9 LEDs we have to represent letter L,Z,V,U by turning ON and OFF the required LEDs as per the letter. So digitalWrite is assigned to each pin in the letters which will be set as either HIGH or LOW accordingly. Here the port register will control the pins high and low. Then in the void loop all letters will be called. In the circuit all LEDs are connected to their corresponding digitalpin in Arduino board. And other end of the LEDs are grounded. Here resistors are used as it will control the flow of current to LEDs. Higher the resistance value the current flowing to LED will be reduced.

So finally when the circuit is connected and simulation is done LEDs displays the letter L,Z,V,U repeatedly.