1. **Connect 6 LED to Arduino and Turn ON them one by one and Turn OFF them one by one in reverse manner.**

```
int timer = 500;
int ledPins[] = {
  0, 1, 2, 3, 4, 5
};
int pinCount = 6;

void setup() {
  for (int thisPin = 0; thisPin < pinCount; thisPin++) {
    pinMode(ledPins[thisPin], OUTPUT);
  }
}

void loop() {
  // loop from the lowest pin to the highest:
  for (int thisPin = 0; thisPin < pinCount; thisPin++) {
    // turn the pin on:
    digitalWrite(ledPins[thisPin], HIGH);
    delay(timer);
  }

  // loop from the highest pin to the lowest:
  for (int thisPin = pinCount - 1; thisPin >= 0; thisPin--) {
    digitalWrite(ledPins[thisPin], LOW);
    delay(timer);
  }
}
```

2. **Connect 6 LED to Arduino and Turn ON and OFF the EVEN and ODD LED**

```
int timer = 500;
int ledPins[] = {
  0, 1, 2, 3, 4, 5
};
int pinCount = 6;

void setup() {
  for (int thisPin = 0; thisPin < pinCount; thisPin++) {
    pinMode(ledPins[thisPin], OUTPUT);
  }
}
```

```
void loop() {
  // turn on EVEN
  for (int thisPin = 1; thisPin < pinCount; thisPin += 2) {
    // turn the pin on:
    digitalWrite(ledPins[thisPin], HIGH);
    delay(timer);
  }

  // turn on ODD
  for (int thisPin = 0; thisPin < pinCount; thisPin += 2) {
    // turn the pin on:
    digitalWrite(ledPins[thisPin], HIGH);
    delay(timer);
  }

  // turn off EVEN
  for (int thisPin = 1; thisPin < pinCount; thisPin += 2) {
    // turn the pin on:
    digitalWrite(ledPins[thisPin], LOW);
    delay(timer);
  }


// turn off ODD
  for (int thisPin = 0; thisPin < pinCount; thisPin += 2) {
    // turn the pin on:
    digitalWrite(ledPins[thisPin], LOW);
    delay(timer);
  }
}
```

3. **Connect 3 LED to Arduino and Execute Sequentially using Loop**

ON → LED1
OFF → LED1
ON → LED1, LED2
OFF → LED2, LED1
ON → LED1, LED2, LED3
OFF → LED3, LED2, LED1

```
int timer = 500;
int ledPins[3]  = {1, 2, 3 };
```

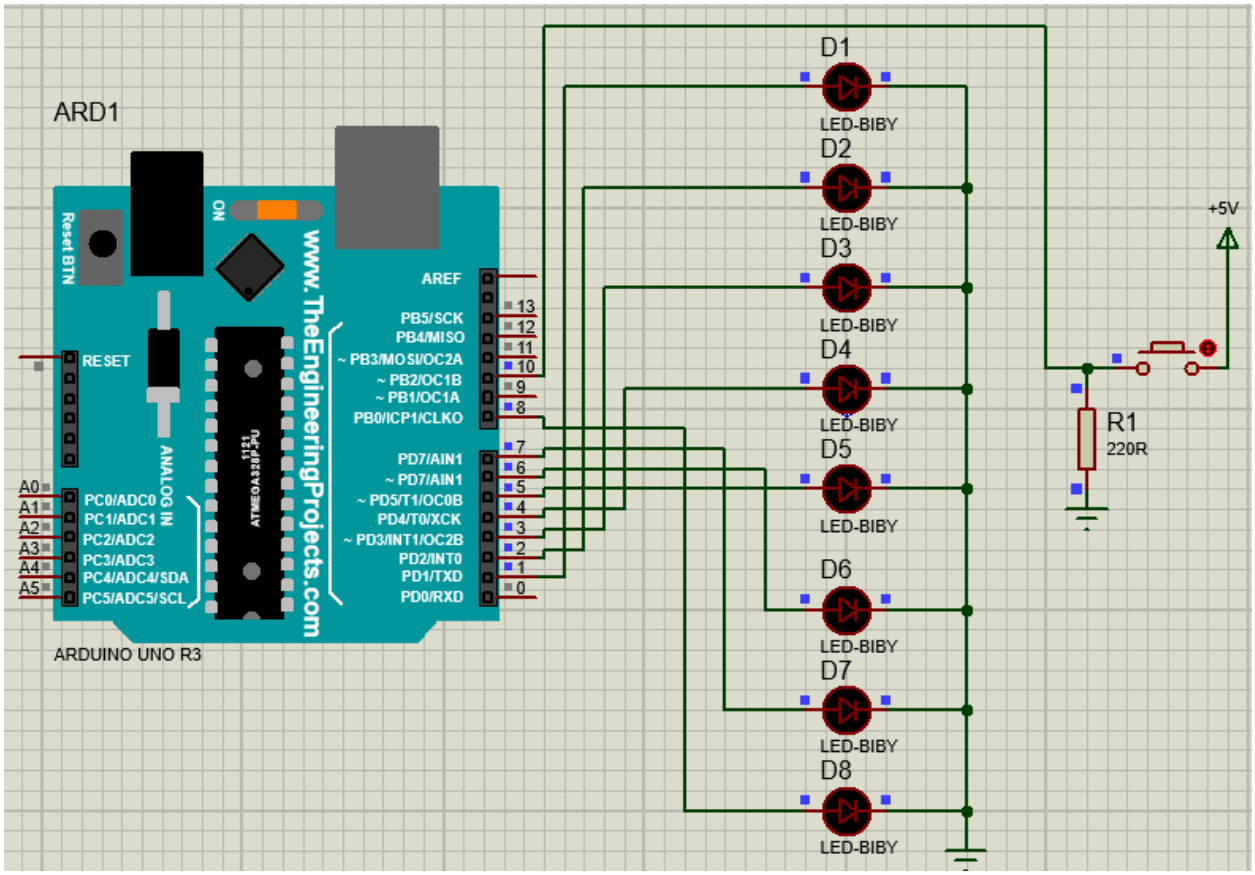
```
void setup(){
  for(int i = 0; i < 3; i++){
    pinMode(ledPins[i], OUTPUT);
  }
}

void loop() {
  //turn on LED-1
  digitalWrite(ledPins[0], HIGH);
  delay(timer);

  // turn off LED-1
  digitalWrite(ledPins[0], LOW);
  delay(timer);

  //turn on LED-1, LED-2
  digitalWrite(ledPins[0], HIGH);
  digitalWrite(ledPins[1], HIGH);
  delay(timer);

  //turn off LED-1, LED-2
  digitalWrite(ledPins[0], LOW);
  digitalWrite(ledPins[1], LOW);
  delay(timer);

  //turn on LED-1, LED-2, LED-3
  digitalWrite(ledPins[0], HIGH);
  digitalWrite(ledPins[1], HIGH);
  digitalWrite(ledPins[2], HIGH);
  delay(timer);

  //turn off LED-1, LED-2, LED-3
  digitalWrite(ledPins[0], LOW);
  digitalWrite(ledPins[1], LOW);
  digitalWrite(ledPins[2], LOW);
  delay(timer);

}
```

4. **Connect LED in the following manner to show the Alphabet**

```
int ledPins[13] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13};
void setup() {
  for(int i = 0; i < 13; i++){
```

```
  pinMode(ledPins[i], OUTPUT);
  }
}

void loop() {
 // Showing 'N'
 digitalWrite(ledPins[0], HIGH);
 digitalWrite(ledPins[1], HIGH);
 digitalWrite(ledPins[2], HIGH);
 digitalWrite(ledPins[3], HIGH);
 digitalWrite(ledPins[4], HIGH);
 digitalWrite(ledPins[6], HIGH);
 digitalWrite(ledPins[8], HIGH);
 digitalWrite(ledPins[9], HIGH);
 digitalWrite(ledPins[10], HIGH);
 digitalWrite(ledPins[11], HIGH);
 digitalWrite(ledPins[12], HIGH);

}
```

5. **Connect 8 LED and blink 8 led using push button (when you press button 8 led will blink).**

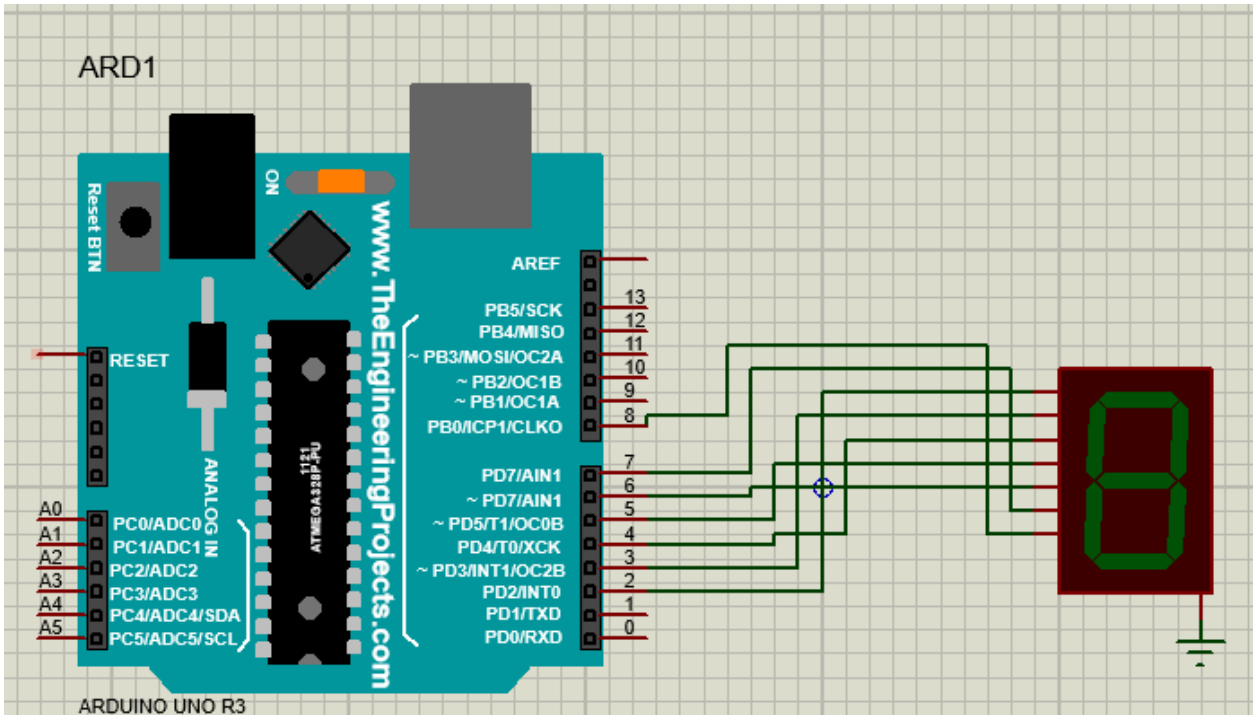


Code:

```
int buttonPin = 10;
 int ledPins[8] =  {1, 2, 3, 4, 5, 6, 7, 8};

// variables will change:
int buttonState = 0;         // variable for reading the pushbutton status

void setup() {
  for(int i = 0; i < 8; i++){
     pinMode(ledPins[i], OUTPUT);
    }
   // initialize the pushbutton pin as an input:
  pinMode(buttonPin, INPUT);
}

void loop() {
  // read the state of the pushbutton value:
  buttonState = digitalRead(buttonPin);
```

```
  // check if the pushbutton is pressed.
  // if it is, the buttonState is HIGH:
  if (buttonState == HIGH) {
    // turn LED on:
    for(int i = 0; i < 8; i++){
        digitalWrite(ledPins[i], HIGH);
      }

  } else {
    // turn LED off:
    for(int i = 0; i < 8; i++){
    digitalWrite(ledPins[i], LOW);
    }
  }
}
```

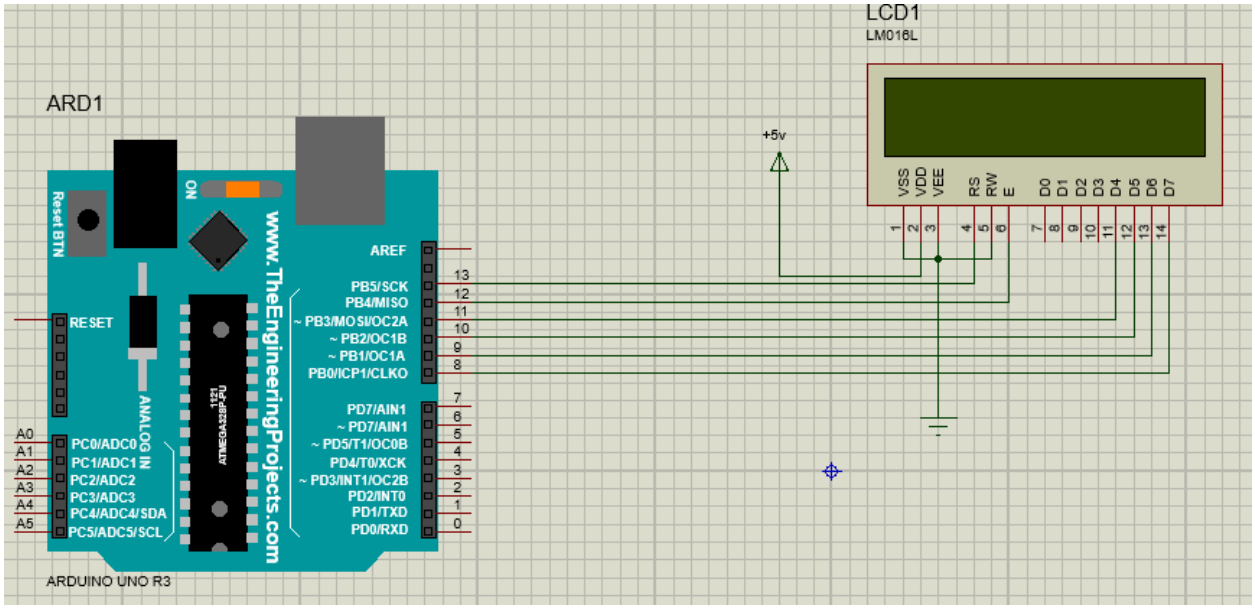
6. **Seven Segment Display Interfacing with Arduino in Proteus. (Show Character and Number)**




```
int segmentPins[7] = {2, 3, 4, 5, 6, 7, 8};
bool numbers[10][7] = {
{1, 1, 1, 1, 1, 1, 0}, // 0
{0, 1, 1, 0, 0, 0, 0}, // 1
{1, 1, 0, 1, 1, 0, 1}, // 2
```

```
  {1, 1, 1, 1, 0, 0, 1}, // 3
  {0, 1, 1, 0, 0, 1, 1}, // 4
  {1, 0, 1, 1, 0, 1, 1}, // 5
  {1, 0, 1, 1, 1, 1, 1}, // 6
  {1, 1, 1, 0, 0, 0, 0}, // 7
  {1, 1, 1, 1, 1, 1, 1}, // 8
  {1, 1, 1, 1, 0, 1, 1}  // 9
};

void setup() {
  for(int i = 0; i < 7; i++){
    pinMode(segmentPins[i], OUTPUT);
    }
}

void loop() {
  for(int n = 0; n < 10; n++){
    displayNumbers(n);
    delay(500);
    }
}

void displayNumbers(int num){
  for(int i = 0; i < 7; i++){
     digitalWrite(segmentPins[i], numbers[num][i] == 1 ? HIGH: LOW);
    }
  }
```

7. **16×2 LCD Interfacing with Arduino and try all the available example code in Arduino Software**




```
#include <LiquidCrystal.h>
LiquidCrystal lcd(13, 12, 11, 10, 9, 8);

void setup() {
  lcd.begin(16, 2);
  // Print a message to the LCD.
  lcd.print("Hello Everyone");
}

void loop() {
  lcd.setCursor(0, 1);
  lcd.print(millis() / 1000);
}
```

8. BCD to 7-Segment Decoder Circuit with IC 4511