



# Lecture (08)

## Arduino MC 02

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By:

**Dr. Ahmed ElShafee**

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## Analog input

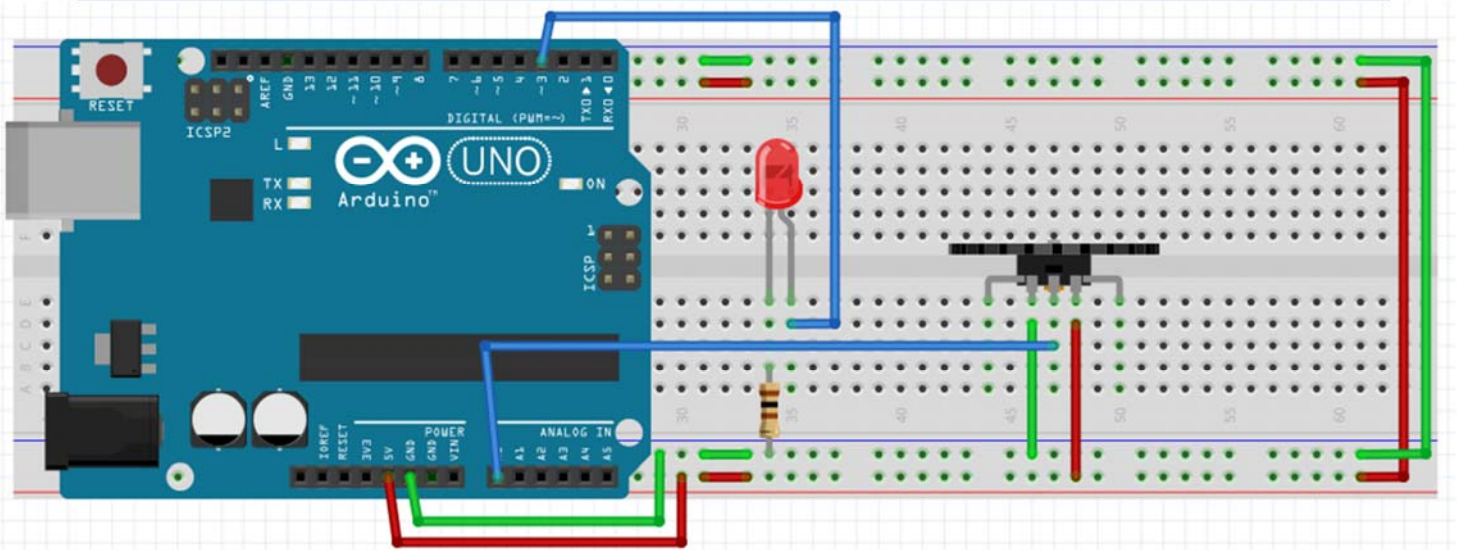
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- Arduino uses a 10-bit A/D Converter:
- this means that you get input values from 0 to 1023
  - $0\text{ V} \rightarrow 0$
  - $5\text{ V} \rightarrow 1023$

Ex:

- `int sensorValue = analogRead(A0);`

# Project 06, Analog DC dimmer



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```
#define LED 3
int brightness=0;
int control=0;
void setup()
{
  pinMode(LED, OUTPUT);
}

void loop()
{
  control=analogRead(0);
  brightness=control/4;
  analogWrite(LED,brightness);
}
```

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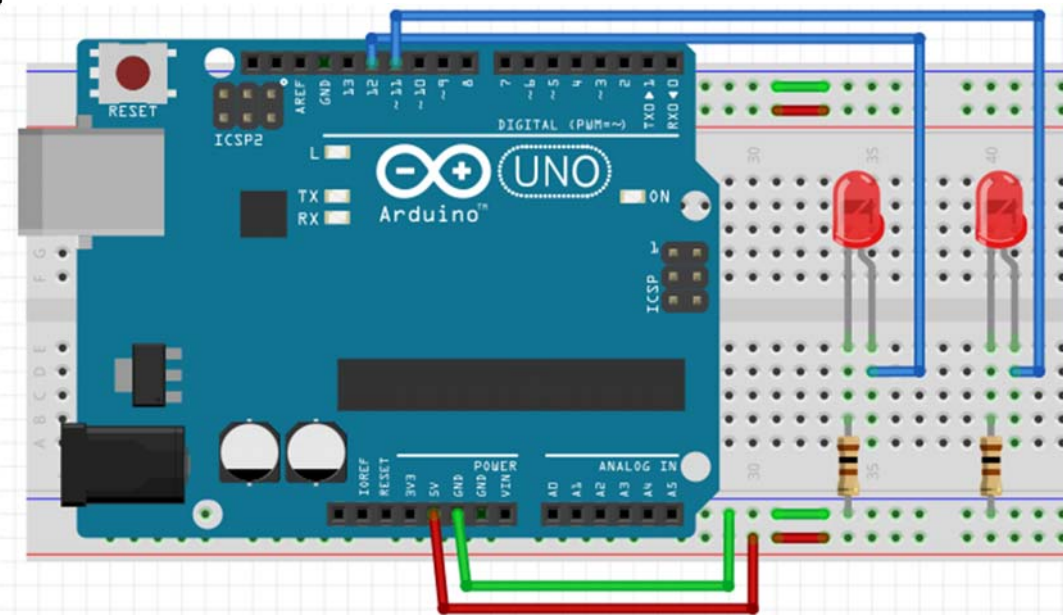
# Project 07, serial echo

```
void setup()
{
  Serial.begin(9600);
}
void loop()
{
  if (Serial.available() > 0)
  {
    char inByte = Serial.read();
    Serial.print("you typed : ");
    Serial.print(inByte);
    Serial.println();
  }
}
```

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# Project 8, serial controlled leds



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```

#define led1 11
#define led2 12
int led1_status=0;
int led2_status=0;
void setup()
{
  Serial.begin(9600);
  pinMode(led1,OUTPUT);
  pinMode(led2,OUTPUT);
  digitalWrite(led1,led1_status);
  digitalWrite(led2,led2_status);
}
void loop()
{
  if (Serial.available() > 0)
  {
    char inByte = Serial.read();
    switch(inByte)
    {
      case '1':
        led1_status=!led1_status;
        digitalWrite(led1,led1_status);
        Serial.print("led one is now :");
        Serial.println(led1_status);

```

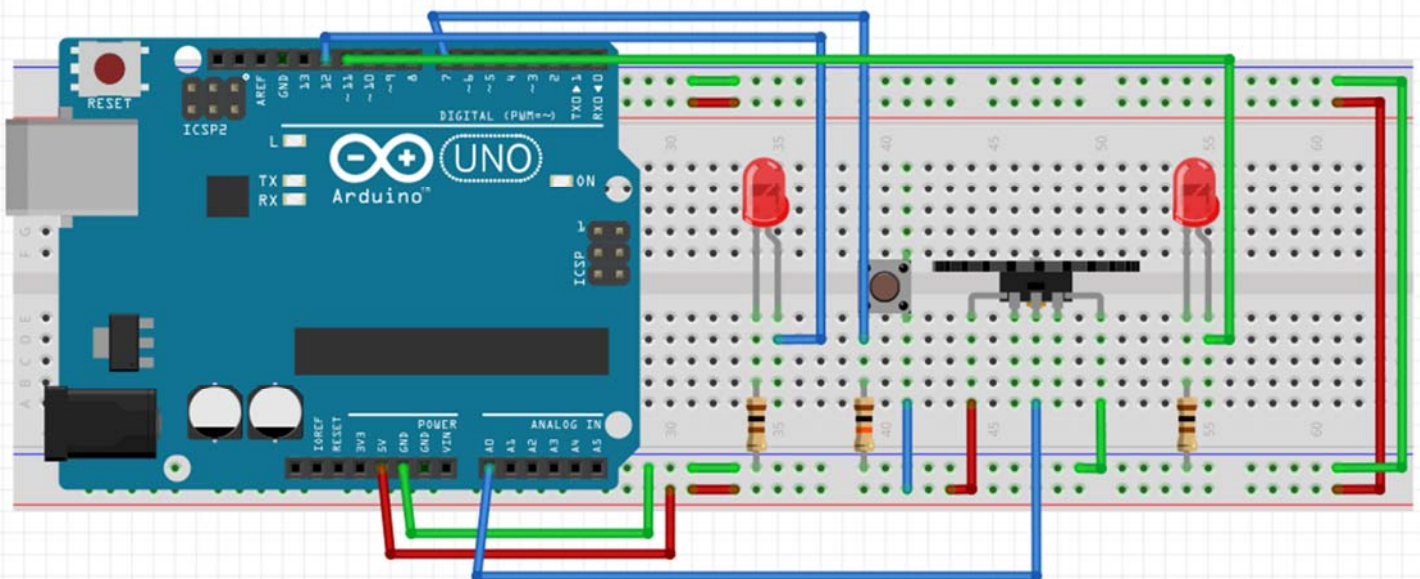
```

break;
case'2':
  led2_status=!led2_status;
  digitalWrite(led2,led2_status);
  Serial.print("led two is now :");
  Serial.println(led2_status);
  break;
default:
  Serial.println("unknown command");
  break;
}
}
}

```

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## Project 9, serial controlled leds, monitor press and pot



```

#define led1 11
#define led2 12
#define button 7
int led1_status=0;
int led2_status=0;
int potValue=0;
int pressStatus=1;
void setup()
{
  Serial.begin(9600);
  pinMode(led1,OUTPUT);
  pinMode(led2,OUTPUT);
  digitalWrite(led1,led1_status);
  digitalWrite(led2,led2_status);
}
void loop()
{
  if(pressStatus!=digitalRead(button))
  {
    pressStatus=(int)digitalRead(button);
    Serial.print("Button value = ");
    Serial.println(pressStatus);
  }

```

```

if (Serial.available() > 0)
{
  char inByte = Serial.read();
  switch(inByte)
  {
    case '1':
      led1_status=!led1_status;
      digitalWrite(led1,led1_status);
      Serial.print("led one is now :");
      Serial.println(led1_status);
      break;
    case '2':
      led2_status=!led2_status;
      digitalWrite(led2,led2_status);
      Serial.print("led two is now :");
      Serial.println(led2_status);
      break;
    case 'p':
      potValue=analogRead(0);
      Serial.print("Pot value = ");
      Serial.println((float)potValue*5/1024);
      break;

```

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```

default:
  Serial.println("unknown command");
  break;
}
}
}

```

```

#define led1 11
#define led2 12
#define button 7
int led1_status=0;
int led2_status=0;
int potValue=0;
int pressStatus=1;
void setup()
{
  Serial.begin(9600);
  pinMode(led1,OUTPUT);
  pinMode(led2,OUTPUT);
  digitalWrite(led1,led1_status);
  digitalWrite(led2,led2_status);
}
void loop()
{
  if(analogRead(0)!=potValue)
  {
    potValue=analogRead(0);
    Serial.print("Pot value = ");
    Serial.println((float)potValue*5/1024); }

```

```

if(pressStatus!=digitalRead(button))
{
  pressStatus=(int)digitalRead(button);
  Serial.print("Button value = ");
  Serial.println(pressStatus);
}
if (Serial.available() > 0)
{
  char inByte = Serial.read();
  switch(inByte)
  {
    case '1':
      led1_status=!led1_status;
      digitalWrite(led1,led1_status);
      Serial.print("led one is now :");
      Serial.println(led1_status);
      break;
    case '2':
      led2_status=!led2_status;
      digitalWrite(led2,led2_status);
      Serial.print("led two is now :");
      Serial.println(led2_status);
      break;

```

```

default:
  Serial.println("unknown command");
  break;
}
}
}

```



**Thanks,..**  
**See you next week (ISA),...**

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