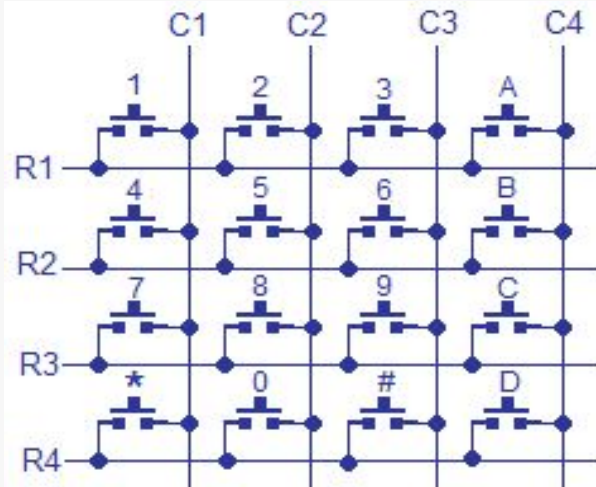# Interfacing of Keypad with Arduino

Hex Keypad

- This article is about how to interface a hex keypad to Arduino. Hex keypad is a very important component in embedded systems and the typical applications are code locks, calculators, automation systems or simply any thing that requires a character or numeric input.

- Hex key pad is simply an arrangement 0f 16 push button switches in a 4X4 matrix form. Typically a hex keypad will have keys for number 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and letters A, B, C, D, *, #.

- The hex keypad will have 8 connection wires namely R1, R2, R3, R4 and C1, C2, C3, C4 representing the rows and columns respectively. The schematic diagram and photo of a typical hex keypad is shown in the figure below.

- The program identifies the pressed key by a method called column scanning. In this method a particular row is kept low and other rows are held high.

- The logic status of each column line is scanned. If a particular column is found low, then that means the key that comes in between that column and row is short(pressed). Then the program registers that key being pressed.

- Rows R1, R2, R3 and R4 are interfaced to digital pins 6, 7, 8 and 9 pins of the arduino respectively. Columns C1, C2, C3 and C4 are interfaced to the digital pins 10, 11, 12, 13 of the arduino. The arduino is connected to PC through the USB port.
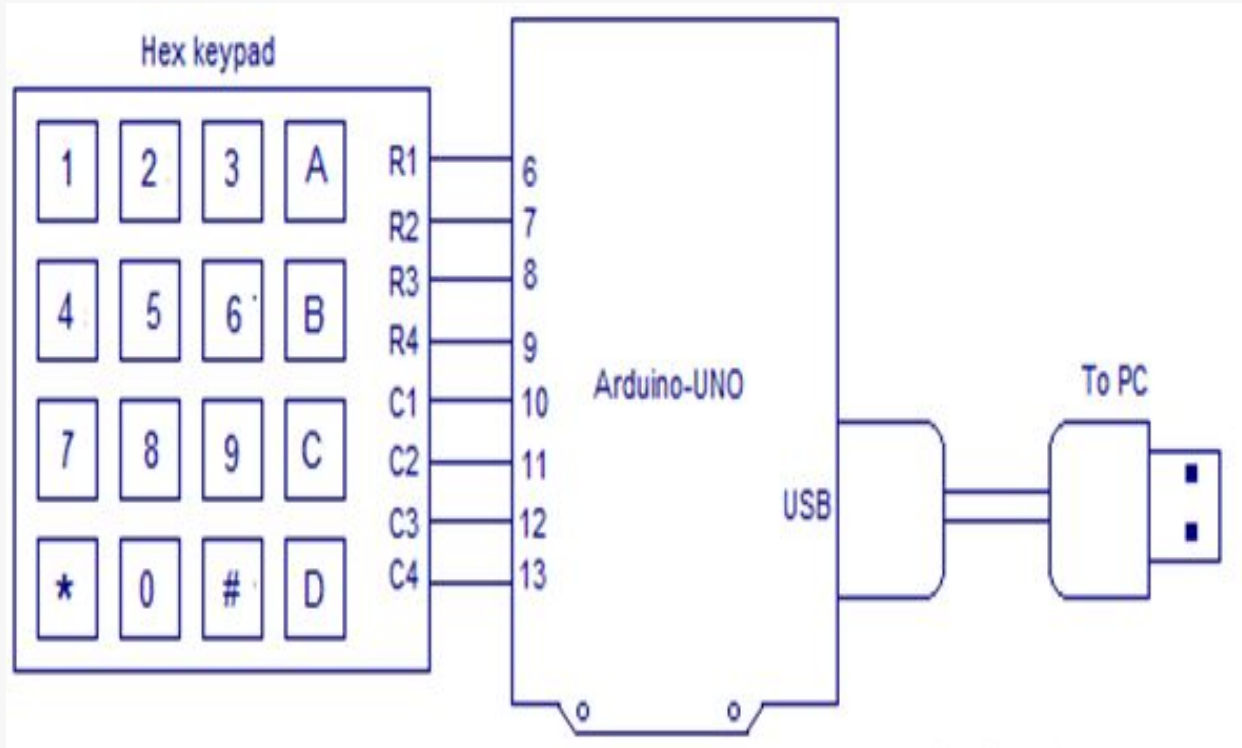- The circuit is powered from the USB itself and no external power supply is needed.

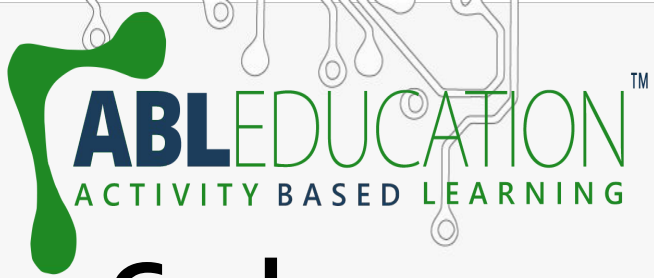
Hex keypad   www.circuitstoday.com

Components Required

- Arduino Uno
- Hex keypad
- Jumper Wires

Connection Diagram

Code

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Interfacing_of_Keypad

```
int r1=6;
int r2=7;
int r3=8;
int r4=9;
int c1=10;
int c2=11;
int c3=12;
int c4=13;
int colm1;
int colm2;
int colm3;
int colm4;

void setup()
{
  pinMode(r1,OUTPUT);
  pinMode(r2,OUTPUT);
  pinMode(r3,OUTPUT);
  pinMode(r4,OUTPUT);
  pinMode(c1,INPUT);
  pinMode(c2,INPUT);
  pinMode(c3,INPUT);
  pinMode(c4,INPUT);
  Serial.begin(9600);
  digitalWrite(c1,HIGH);
  digitalWrite(c2,HIGH);
```

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```
  digitalWrite(c1,HIGH);
  digitalWrite(c2,HIGH);
  digitalWrite(c3,HIGH);
  digitalWrite(c4,HIGH);
}
void loop()
{
  digitalWrite(r1,LOW);
  digitalWrite(r2,HIGH);
  digitalWrite(r3,HIGH);
  digitalWrite(r4,HIGH);
  colm1=digitalRead(c1);
  colm2=digitalRead(c2);
  colm3=digitalRead(c3);
  colm4=digitalRead(c4);
  if(colm1==LOW)
  {Serial.println("1");
   delay(200);}
  else
  {
   if(colm2==LOW)
   {Serial.println("2");
    delay(200);}
   else
   {
    if(colm3==LOW)
```

```
   delay(200);}
 else
 {
 if(colm3==LOW)
 {Serial.println("3");
   delay(200);}
 else
 {
 if(colm4==LOW)
 {Serial.println("A");
    delay(200);}
 }}}

 digitalWrite(r1,HIGH);
 digitalWrite(r2,LOW);
 digitalWrite(r3,HIGH);
 digitalWrite(r4,HIGH);
 colm1=digitalRead(c1);
 colm2=digitalRead(c2);
 colm3=digitalRead(c3);
 colm4=digitalRead(c4);
 if(colm1==LOW)
 {Serial.println("4");
   delay(200);}
 else
 ;
```

```cpp
{Serial.println("4");
 delay(200);}
else
{
 if(colm2==LOW)
 {Serial.println("5");
  delay(200);}
 else
 {
 if(colm3==LOW)
 {Serial.println("6");
    delay(200);}
 else
 {
 if(colm4==LOW)
 {Serial.println("B");
    delay(200);}
 }}}

digitalWrite(r1,HIGH);
digitalWrite(r2,HIGH);
digitalWrite(r3,LOW);
digitalWrite(r4,HIGH);
colm1=digitalRead(c1);
colm2=digitalRead(c2);
colm3=digitalRead(c3);
```

```
colm2=digitalRead(c2);
colm3=digitalRead(c3);
colm4=digitalRead(c4);
if(colm1==LOW)
{Serial.println("7");
    delay(200);}
else
{
 if(colm2==LOW)
 {Serial.println("8");
     delay(200);}
 else
 {
 if(colm3==LOW)
 {Serial.println("9");
     delay(200);}
 else
 {
 if(colm4==LOW)
 {Serial.println("C");
     delay(200);}
 }}}
digitalWrite(r1,HIGH);
digitalWrite(r2,HIGH);
digitalWrite(r3,HIGH);
digitalWrite(r4,LOW);
```

```
        delay(200);;
  }}}
digitalWrite(r1,HIGH);
digitalWrite(r2,HIGH);
digitalWrite(r3,HIGH);
digitalWrite(r4,LOW);
colm1=digitalRead(c1);
colm2=digitalRead(c2);
colm3=digitalRead(c3);
colm4=digitalRead(c4);
if(colm1==LOW)
{Serial.println("*");
    delay(200);}
else
{
 if(colm2==LOW)
 {Serial.println("0");
       delay(200);}
 else
 {
 if(colm3==LOW)
 {Serial.println("#");
    delay(200);}
 else
 {
 if(colm4==LOW)
 {Serial.println("D");
    delay(200);}

 }}}

}
```

Project Link : https://youtu.be/m4R9Dw_ngBo