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4x4 ARRAY MEMBRANE KEYPAD

Introduction:

Keypad is used as an input device to read the key pressed by the user and to process it. 4x4 keypad consists of 4 rows and 4 columns. Switches are placed between the rows and column.

A **4x4 membrane keypad** is a compact and a cost-effective input device that is commonly used in a variety of electronics projects. It consists of 16 buttons arranged in a 4x4 grid and is covered with a flexible membrane that protects the buttons and ensures their durability.

Features:

- Maximum Rating: 24 VDC, 30 mA.
- Interface: 8-pin access to 4×4 matrix.
- Dimensions: Keypad: 2.7 x 3.0 in (6.9 x 7.6 cm) Cable: 0.78 x 3.5 in (2.0 x 8.8 cm)
- Operating temp range: 32 to 122 °F (0 to 50 °C)

Specs:

- Weight: 7.5 grams.
- Keypad dimensions: 69mm x 77mm x 1mm (2.75" x 3" x 0.035")
- Length of cable + connector: 83mm.
- Connector: Dupont 7 pins, 0.1" (2.54mm) Pitch.

Objective:

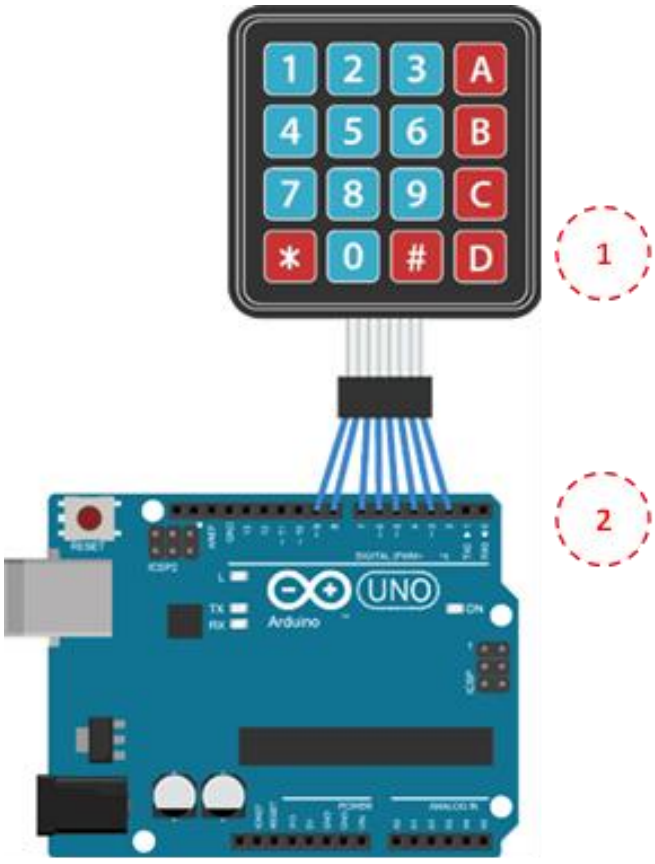
In this tutorial the Serial Monitor in Arduino IDE will be displaying value of a key that we pressed. Which mean when a key is pressed, the serial monitor will be displayed the same value that pressed before.

Components Needed:

- 4x4 Membrane keypad
- Arduino UNO
- Male jumper wire
- Breadboard
- USB cable

Procedures:

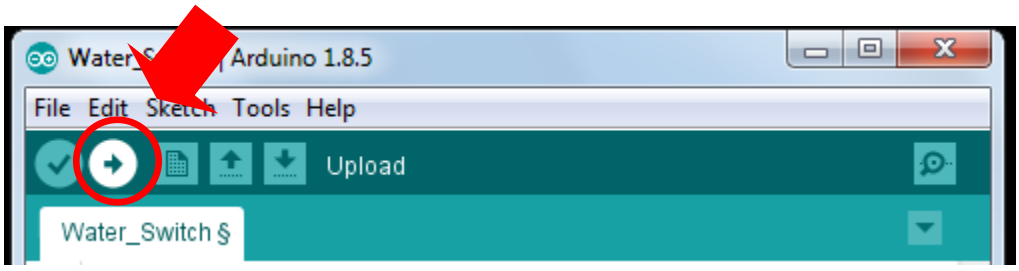
Step 1: Connect the rows Arduino pins 2 to 9 and rows membrane keypad pins.



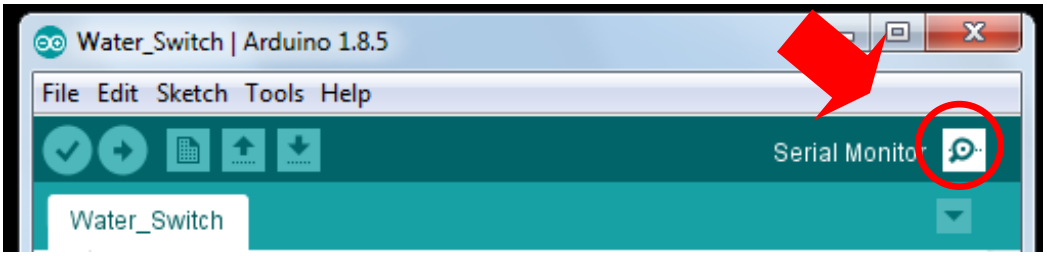
Step 2: Open Arduino IDE on PC and insert the given code below.

```
#include <Keypad.h>

const byte ROWS = 4; //four rows
const byte COLS = 4; //three columns
char hexaKeys[ROWS][COLS] = {
  {'1','2','3','A'},
  {'4','5','6','B'},
  {'7','8','9','C'},
  {'*','0','#','D'}
};

// connect the pins from right to left to pin 2, 3, 4, 5,6,7,8,9
byte colPins[ROWS] = {5,4,3,2}; //connect to the row pinouts of the
keypad
byte rowPins[COLS] = {9,8,7,6}; //connect to the column pinouts of the
keypad

Keypad customKeypad= Keypad(makeKeymap(hexaKeys), rowPins,
colPins, ROWS, COLS );

void setup(){
  Serial.begin(9600);
}

void loop(){

  char button = customKeypad.getKey();
    // just print the pressed key
   if (button){
    Serial.print(button);

  }
}
```

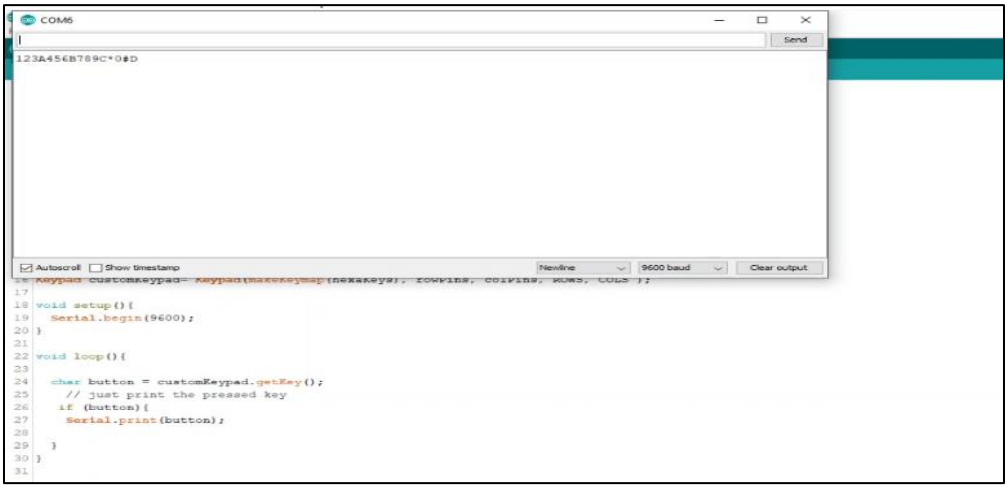
Step 3: After that, connect the Arduino UNO to the PC. Then click upload to start compiling and uploading program to the board.

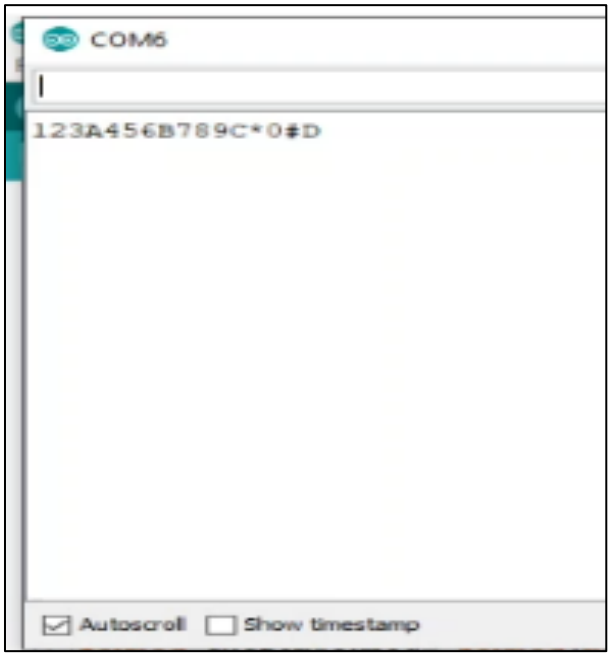


Step 4: After all step above complete. Click at the serial monitor

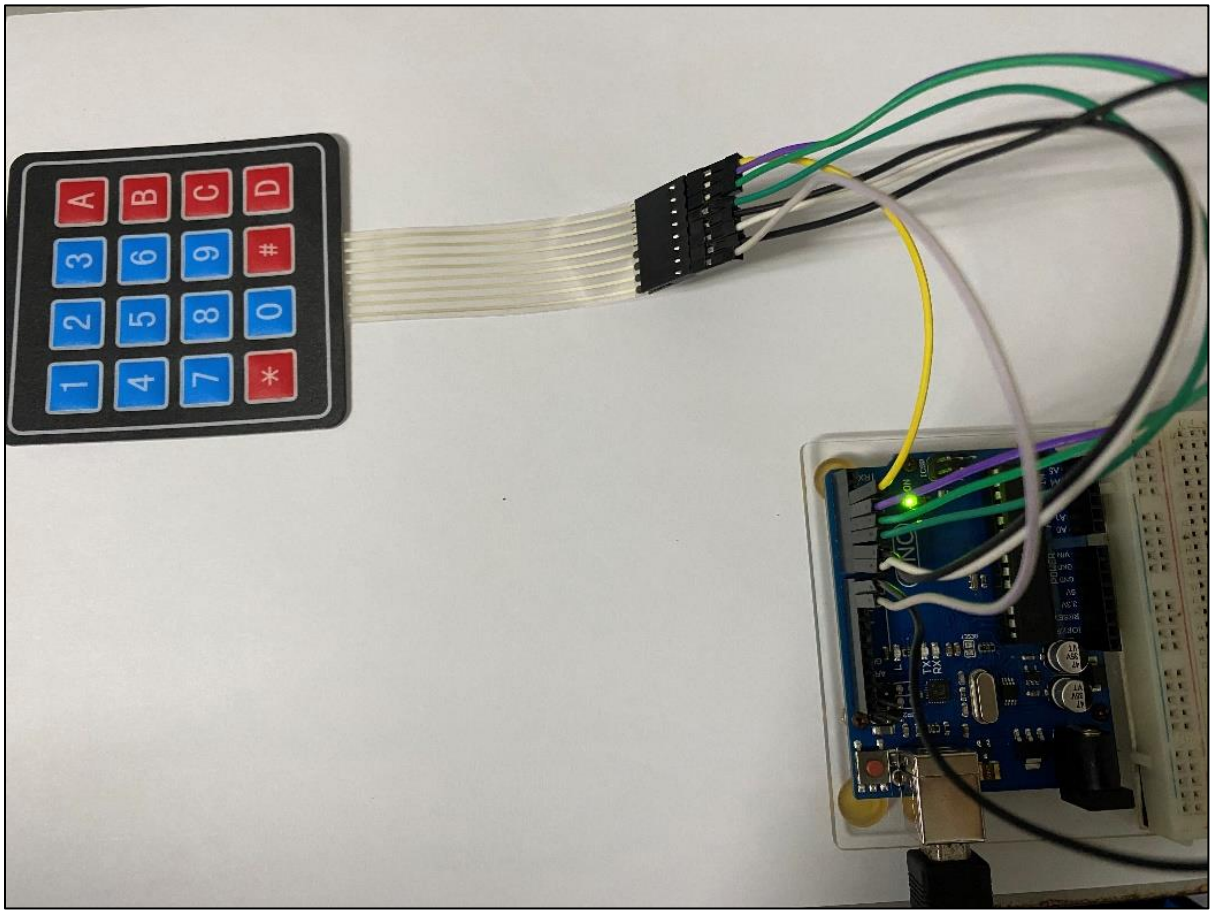


Step 5: Pressed any number and the value will be display at the serial monitor.





Circuit Connection Reference:



Additional Notes

For Arduino and Membrane keypad:

- R1 > D9
- R2 > D8
- R3 > D7
- R4 > D6
- C1 > D5
- C2 > D4
- C3 > D3
- C4 > D2

Attachments:

Serial Monitor	Membrane keypad