Mastering Arduino from beginners to core advance

THE COMPLETE COURSE

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Module 7
Serial communication basics
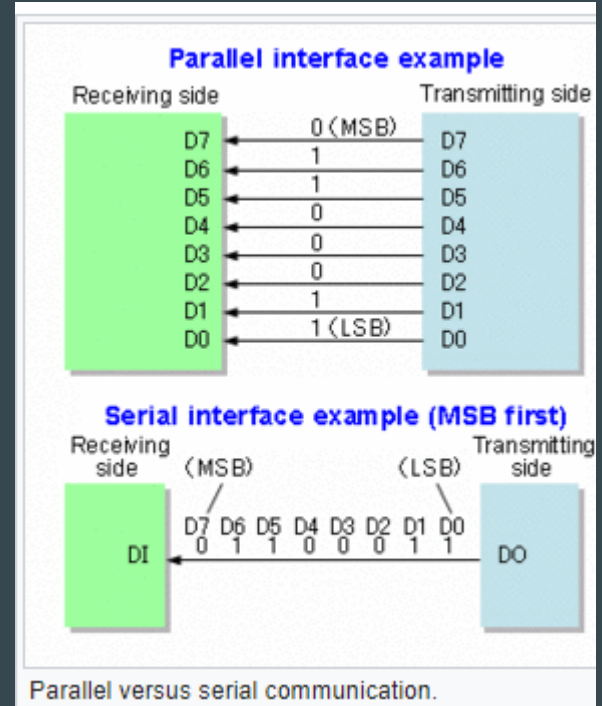
Content:

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3. **Serial write**

4. **Serial read**

Introduction to serial communication

Serial communication is the technique of communication between the embedded electronics
Between them by the method of sending one packet data at a time through a wire connection.
While in parallel communication the data between the devices is sand as multiple packets at
The same time by multiple channels

The communication between the arduino and the pc is done by serial communication.
The data which sent by thee arduino can be seen by the
Protocol serial begin in which the bits per second to the baud rate
Is called for the setting the same type on both the sides of
 communication channel
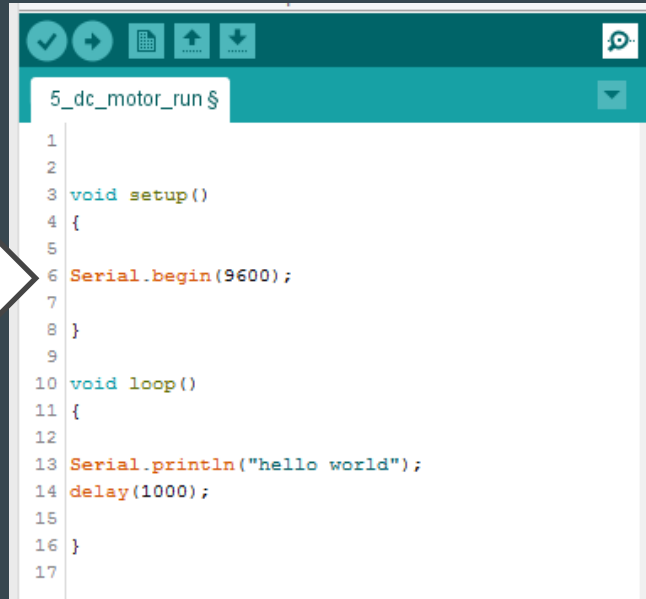
Parallel interface example

Receiving side   Transmitting side

D7	← 0 (MSB)	D7
D6	← 1	D6
D5	← 1	D5
D4	← 0	D4
D3	← 0	D3
D2	← 0	D2
D1	← 1	D1
D0	← 1 (LSB)	D0

Serial interface example (MSB first)

Receiving side   (MSB)   (LSB)   Transmitting side

DI ← D7 D6 D5 D4 D3 D2 D1 D0
      0 1 1 0 0 0 1 1   DO

Parallel versus serial communication.

Serial communication details

●**The serial communication is the communication method between arduino and pc**

●**It can be viewed in any serial monitor application when the baud rate at both the sides are same**

●**The serial communication can also be done with other devices such mpu6050 sensor and arduino for data transmission**

●**The board can have more than one communication channels such as n Mega and due have 3 as tx1,rx1 for serial tx2,rx2 for serial 2 and so on**

Serial begin

To initialise the data to be viewed on the serial monitor first we have to define the serial function and begin the communication with serial. Begin with desired baud rate say 9600 between the parenthesis

Serial.begin function with baud rate = 9600

```
5_dc_motor_run §

1
2
3  void setup()
4  {
5
6  Serial.begin(9600);
7
8  }
9
10 void loop()
11 {
12
13 Serial.println("hello world");
14 delay(1000);
15
16 }
17
```
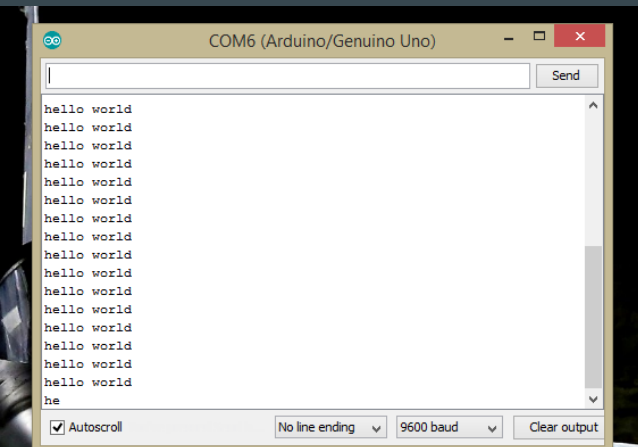
Functions

If (Serial)
available()
availableForWrite()
begin()
end()
find()
findUntil()
flush()
parseFloat()
parseInt()
peek()
print()
println()
read()
readBytes()
readBytesUntil()
setTimeout()
write()
serialEvent()

Serial write

The serial write is the function is used to display a string on the pc serial monitor

It can be done with the function Serial.print() and for always print in new line
Use the function Serial.println() where ln stands for next line. It can write anything from data string
To integer

Serial .println function to print in next line

```
5_dc_motor_run §

1
2
3  void setup()
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7
8  }
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10 void loop()
11 {
12
13 Serial.println("hello world");
14 delay(1000);
15
16 }
17
```

COM6 (Arduino/Genuino Uno)

Send

hello world
hello world
hello world
hello world
hello world
hello world
hello world
hello world
hello world
hello world
hello world
hello world
hello world
hello world
hello world
he

☑ Autoscroll   No line ending   9600 baud   Clear output

Serial monitor

Serial read

The serial read is the function that is used to read
 the data that is inserted through serial monitor
And perform the logical operation based on that

It is used to control the arduino with the help of serial monitor
 so that the arduino will function as it is programmed

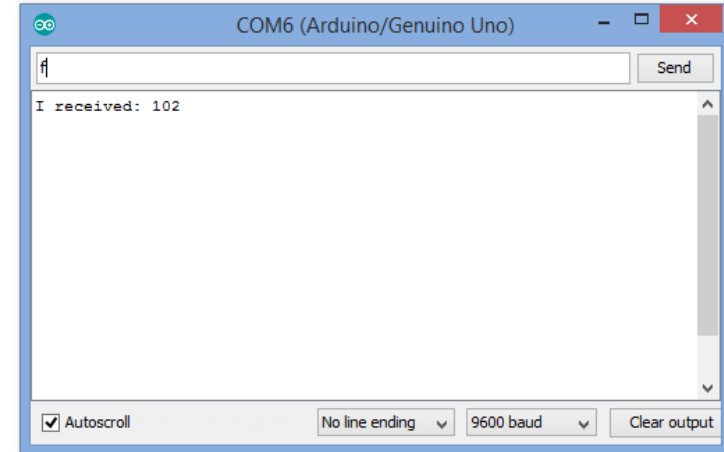Here the serial monitor takes the input as a character and tells its ascii value + 49 as default in arduino

```
int incomingByte = 0;   // for incoming serial data

void setup() {
        Serial.begin(9600);      // opens serial port,
}


void loop() {

        // send data only when you receive data:
        if (Serial.available() > 0)
        {
            // read the incoming byte:
        incomingByte = Serial.read();
        Serial.print("I received: ");
        Serial.println(incomingByte, DEC);
        }
}
```

COM6 (Arduino/Genuino Uno)

f

Send

I received: 102

☑ Autoscroll   No line ending   9600 baud   Clear output

Demo

Next Module :
other IDE for programming in arduino