

ARDUINO IDE FAMILIARIZATION AND INTRODUCTION TO EMBEDDED C

September 11, 2015

Installing Arduino IDE in Windows

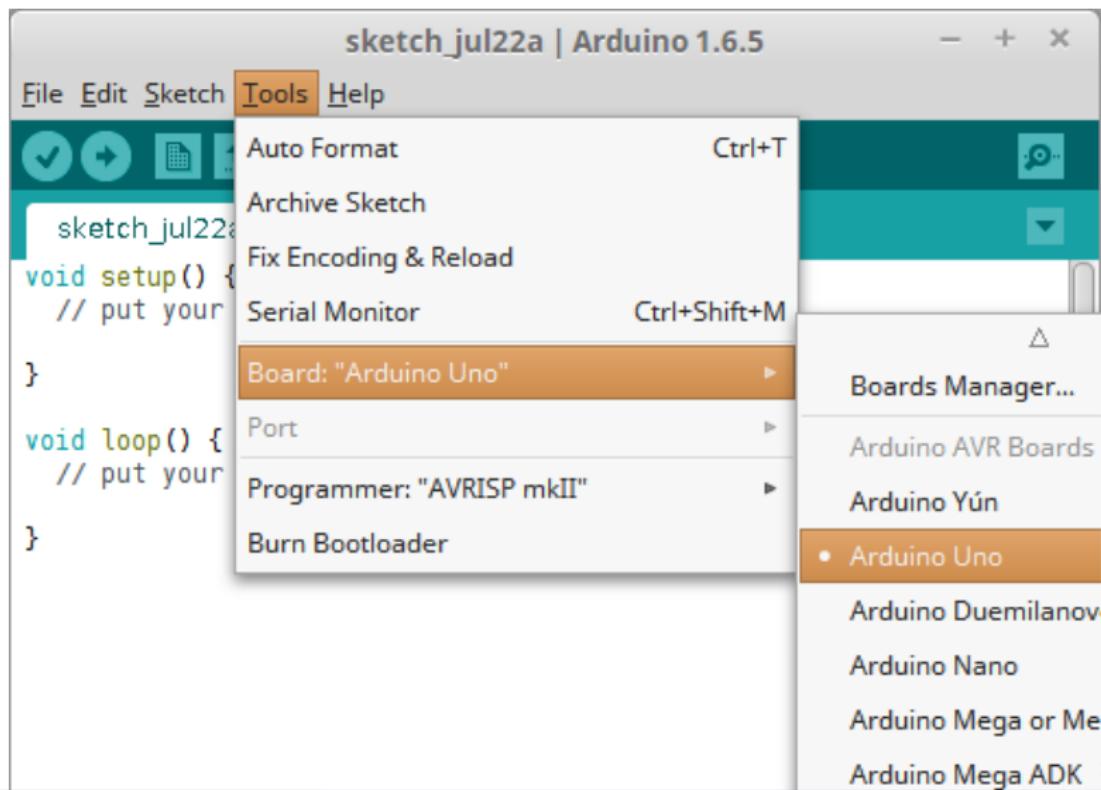
- Extract the arduino installation file from the support CD to the desktop



- Double click on arduino.exe to open the Arduino IDE

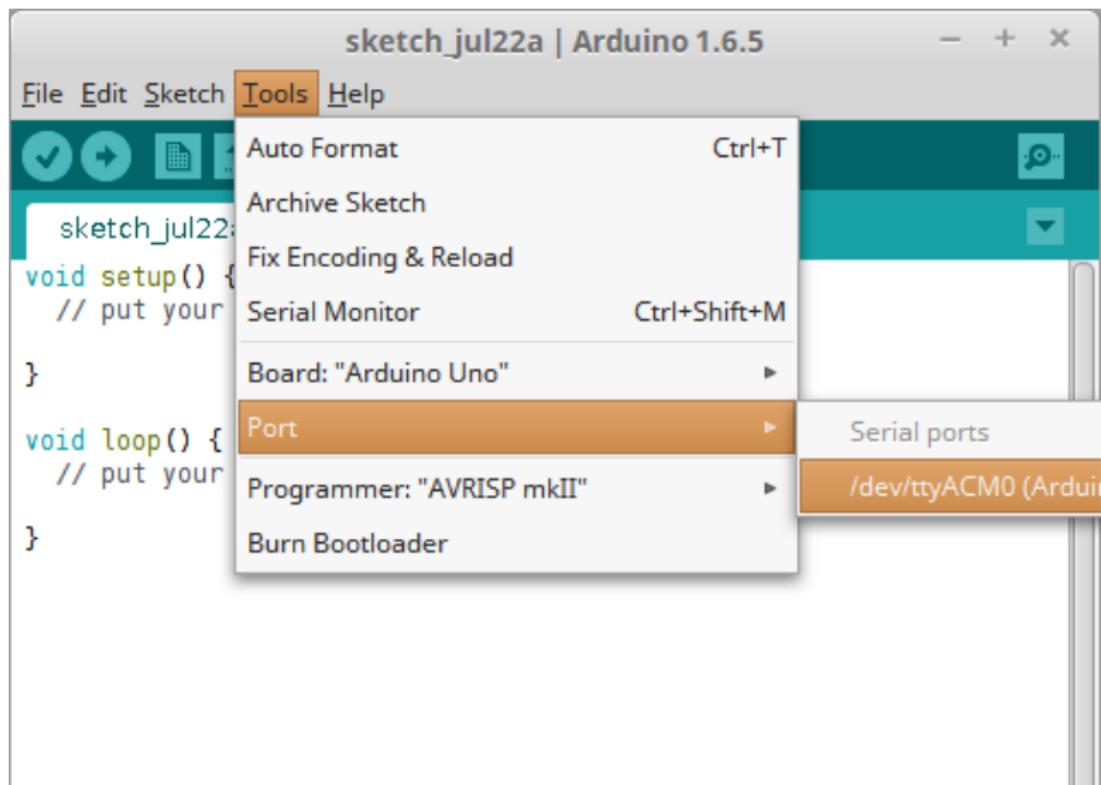
Choosing the right Board

- Tools → Board → Arduino UNO



Choosing the Serial Port

- Tools → Port → COMxx



Embedded c

- Language extension of C, used in embedded systems.
- Simpler to understand, learn and use.
- Machine Independent.
- Can be used in any microprocessor/microcontroller.
- Uses simple commands to control the device, so occupies less memory.
- C; can also be called as mid-level program, since it is closest to assembly language.
- Efficient, reduced overhead and development time.

Data Types

- char -8 bits
- int -16 bits
- float- 32 bits
- double- 32 bits

Arduino Coding Framework

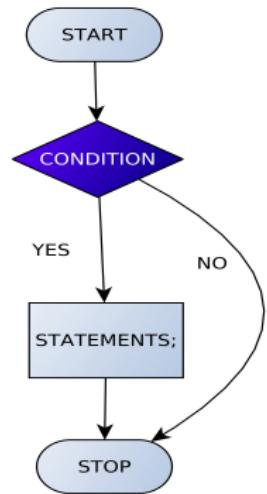
The screenshot shows the Arduino IDE interface with the title bar "sketch_jul22b | Arduino 1.6.5". The menu bar includes File, Edit, Sketch, Tools, and Help. Below the menu is a toolbar with icons for save, run, upload, and download. The code editor window displays the following Arduino sketch:

```
void setup() {
  // put your setup code here, to run once:
  // hardware initialisations should be done here
}

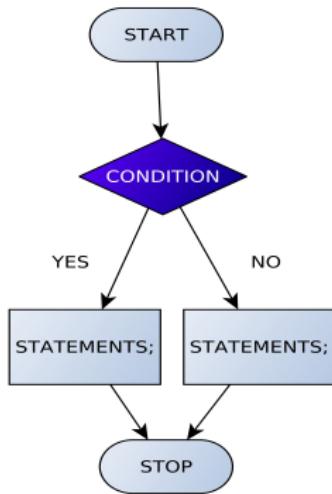
void loop() {
  // put your main code here, to run repeatedly:
  // infinite loop -- microcontroller code will never exit
}
```

Branching

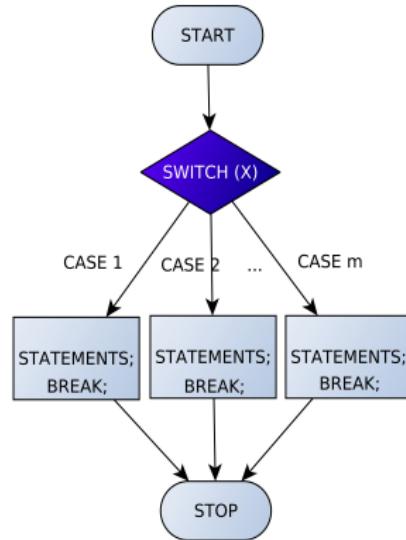
if



if else

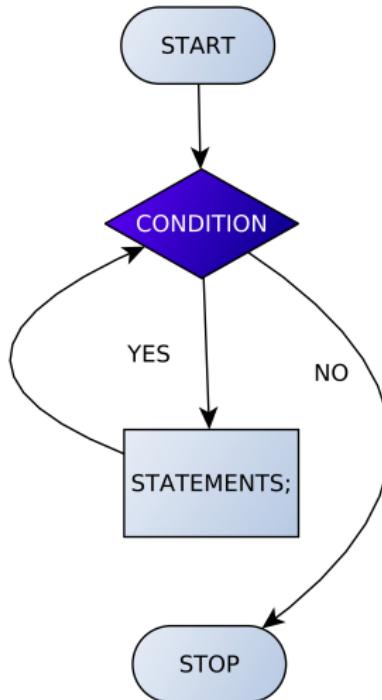


switch case



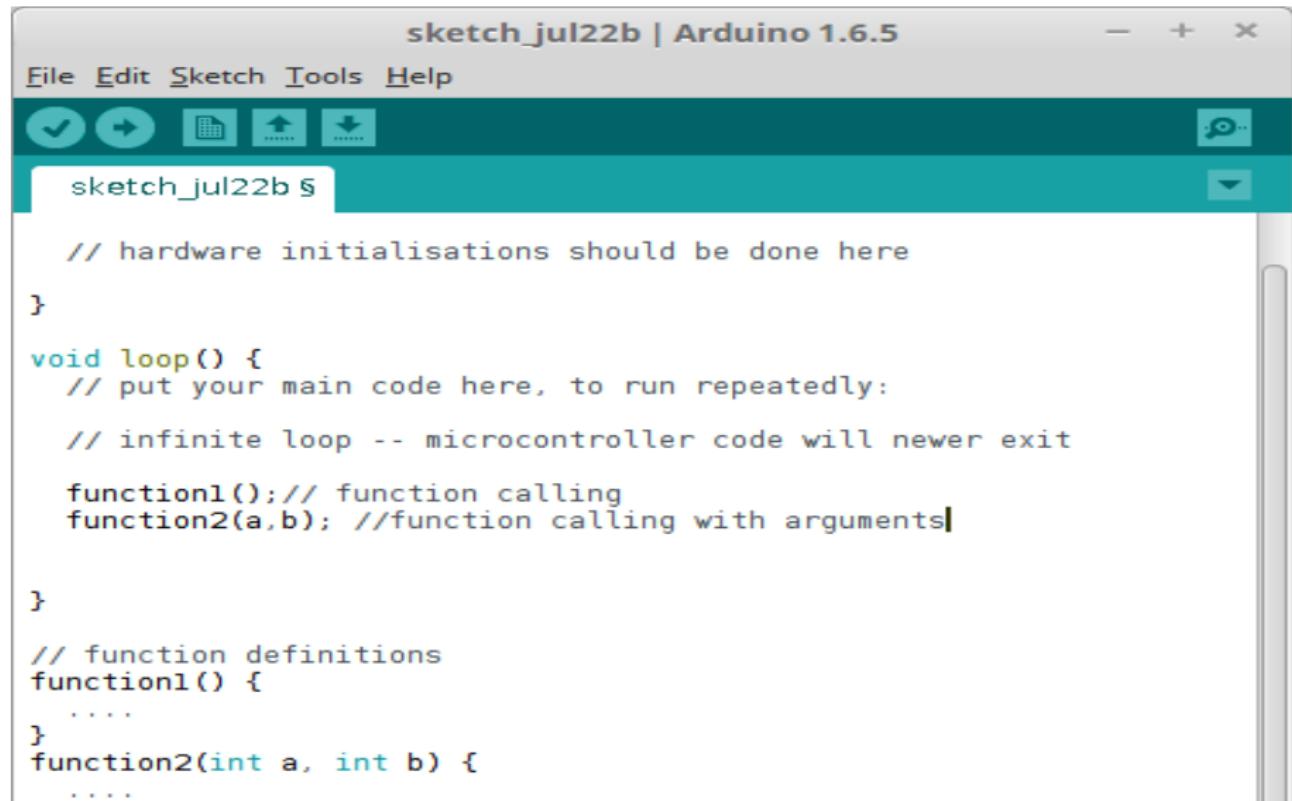
Looping

- for
- while
- do while



- Write a program to blink an LED for 1 second using 1 millisecond delay.
- Write a program to turn ON an LED when the input is HIGH and to turn OFF an LED when the input is LOW.
- Write a program to fade out the LED from maximum brightness to OFF and vice versa

Function Calling



The screenshot shows the Arduino IDE interface with the title bar "sketch_jul22b | Arduino 1.6.5". The menu bar includes File, Edit, Sketch, Tools, and Help. Below the menu is a toolbar with icons for upload, download, and serial communication. The code editor window contains the following code:

```
// hardware initialisations should be done here
}

void loop() {
    // put your main code here, to run repeatedly:
    // infinite loop -- microcontroller code will never exit
    function1(); // function calling
    function2(a,b); //function calling with arguments

}

// function definitions
function1() {
    ....
}
function2(int a, int b) {
    ....
}
```