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Semester (1)

Learning outcomes of Unit 3

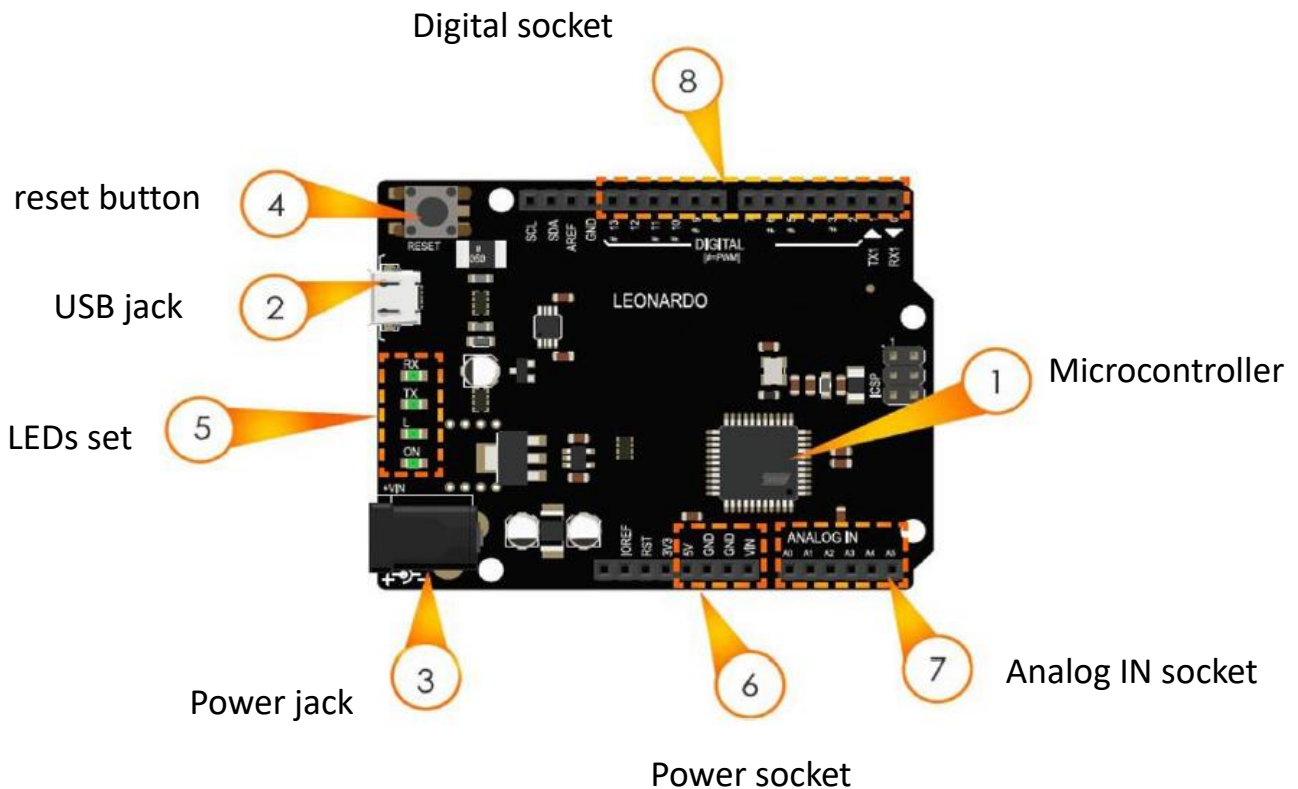
- Explain the application of the Arduino microcontroller.
- Identify the main parts of the Arduino board.
- Recognize the layout of the Arduino IDE programming interface.
- Explain the Arduino programming structure.
- Configure the Arduino IDE software to work with the Arduino board.

Your Teacher : Ghaida Ameen.

Definitions:

- ❖ **Microcontroller**: Self-contained control device that has 3 main parts: memory, input/output peripherals and a processor.
- ❖ **Arduino board**: simple microcontroller board reads sensory inputs and translate them in to outputs that perform and give a specific output that perform a specific function.

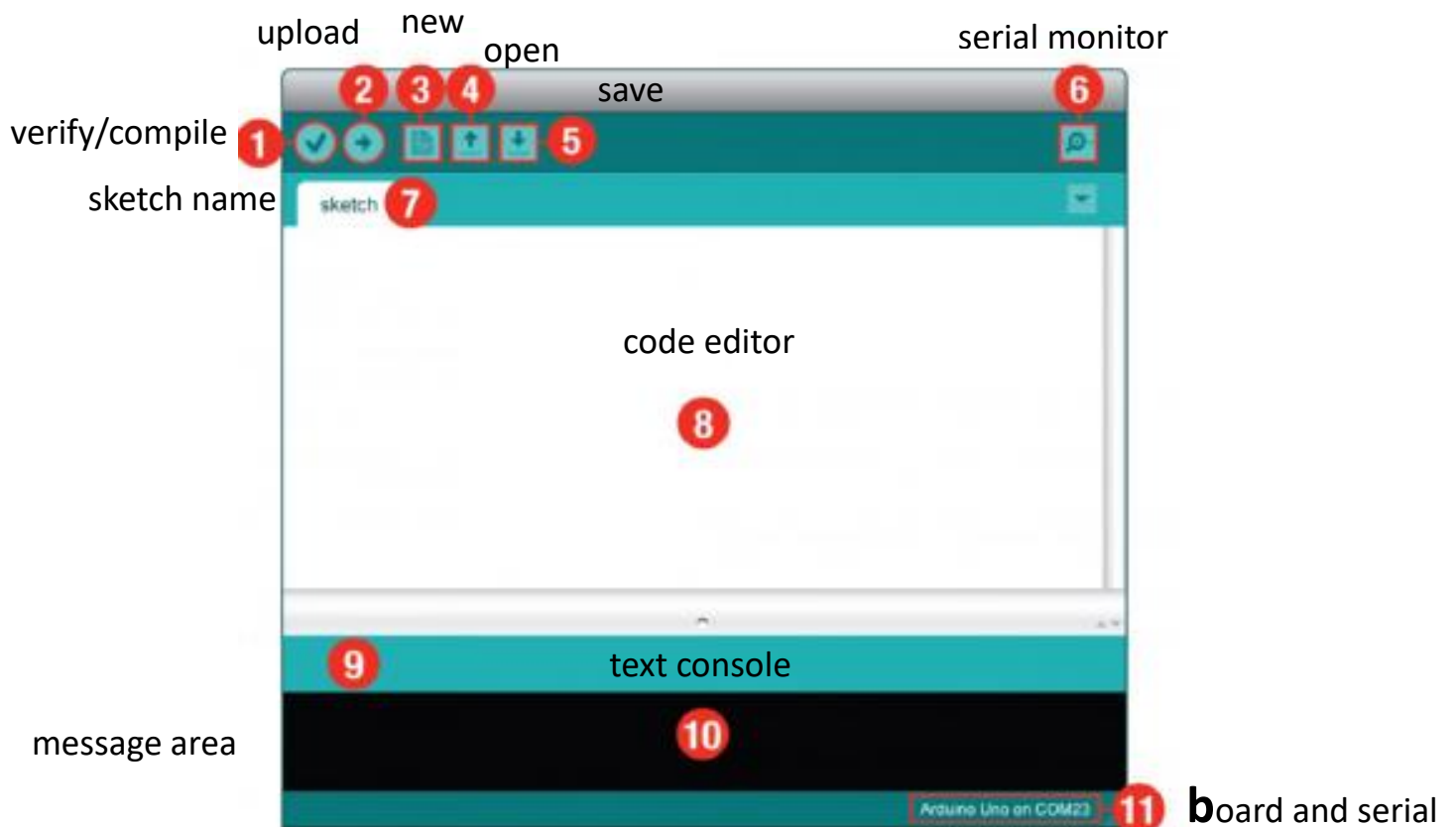
The Leonardo Arduino Board parts:



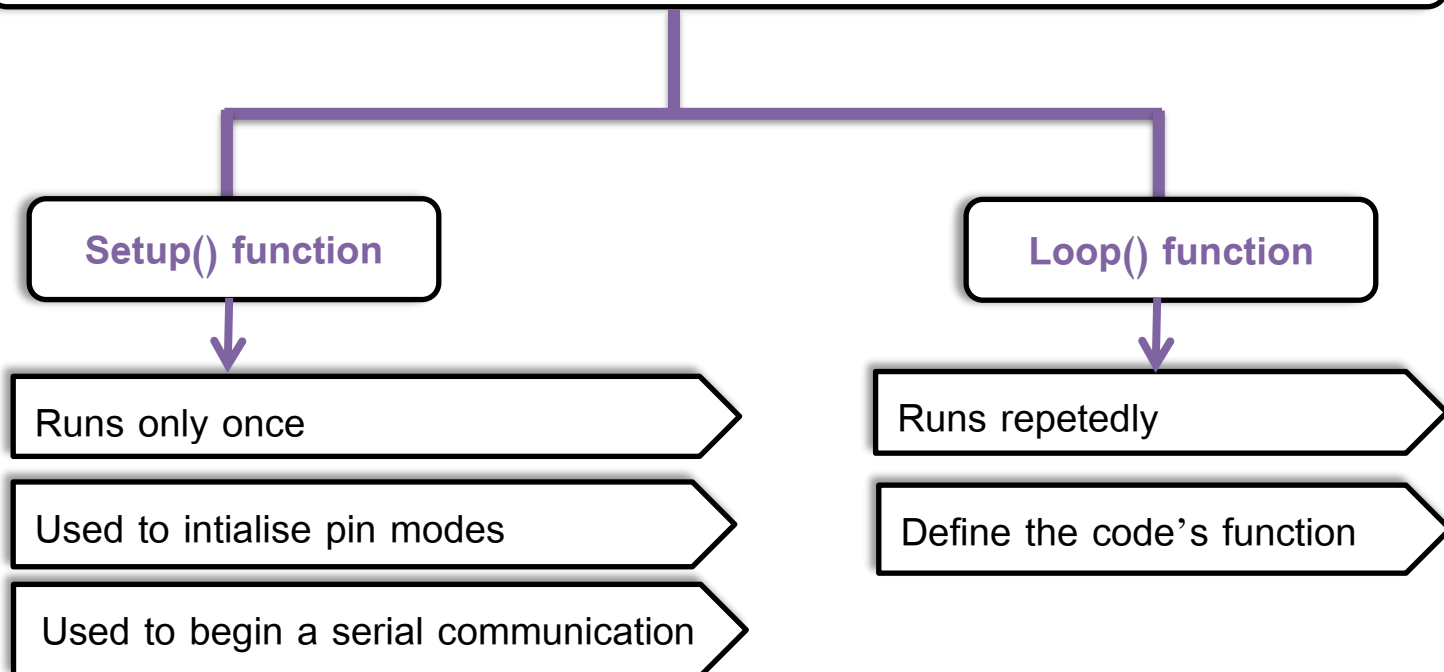
Arduino's advantages and disadvantages:

Advantages	Disadvantages
Programmable	Limited output current (40 mA)
Ready to use	
Flexible	
Cost effective	

The Arduino IDE software parts:



Arduino code structure and the difference between them:



Some important codes used in programming Arduino board :

- **PinMode (pin# , MODE) :** This code used to initialized the electrical components used with Arduino by defining the pin number that the component connected to, and the mode which refers to (INPUT or OUTPUT), so there is two styles for the pinMode: **PinMode (pin# , INPUT);**

PinMode (pin# , OUTPUT);

- **DigitalRead (pin#) :** This code used to read digital signal from digital Input electrical components.
- **AnalogueRead (pin#) :** This code used to read Analouge signal from Analouge Input electrical components.



- **DigitalWrite (pin# , High)**

DigitalWrite (pin# , LOW) : These codes used to write digital signals to the digital output electrical components, the value that the Arduino gives could be HIGH or LOW (0,1).

- **AnalogueWrite (pin# , value)** : These codes used to write Analogue signals to the Analogue output electrical components, the values that the Arduino gives could be different values.

Differentiation Questions :

- **What is the difference between the Digital and Analogue signals?**

Digital signals: is an electrical signals that represents information in the pattern of bits (0s and 1s), ((finite number of possibilities)).

Analogue signals: is a continuous signal with an infinite number of possibilities.

- **What is the difference between the Flowchart and Pseudocode?**

Flowchart : is a visual representation of the sequence of the process.

Pseudocode: It is a method to communicate design problem using statements and words very simple to everyday English.

Notice : All the activities in Chapter 3 very important

Done By teacher: **Ghaida Ameen**

Good lock my beautiful girls



Love you All