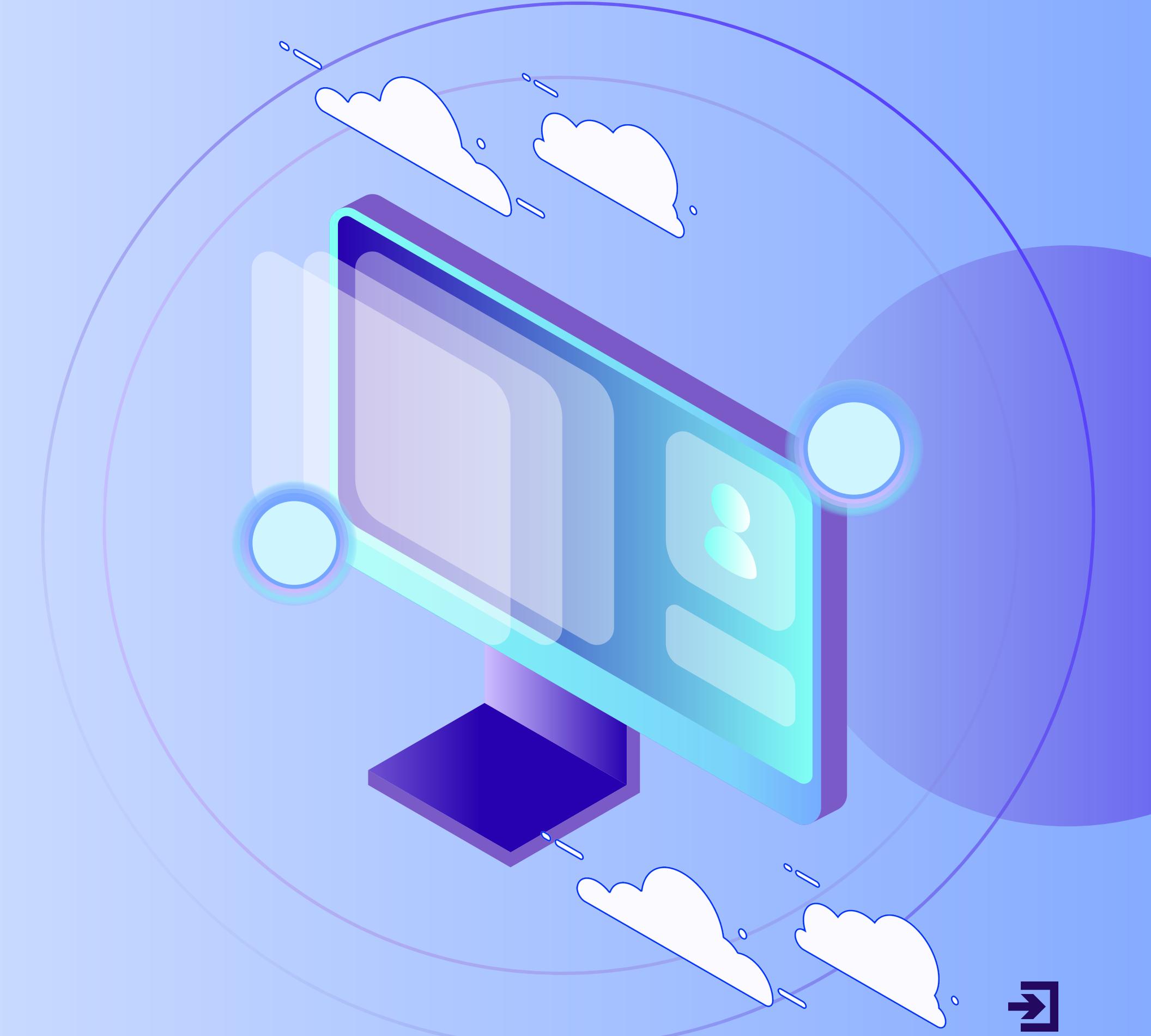


INTERNET OF THINGS

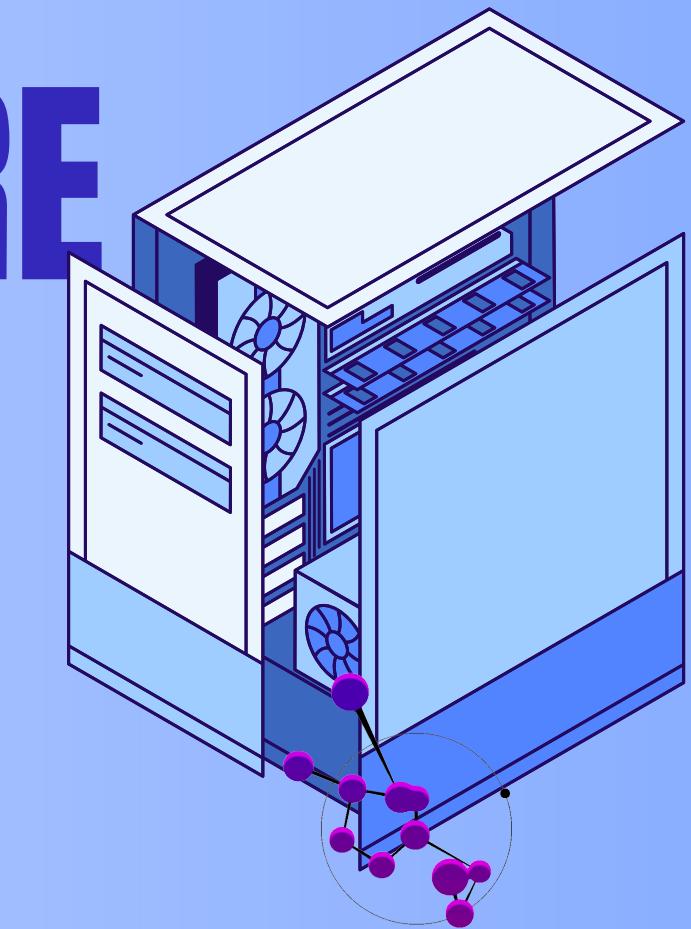
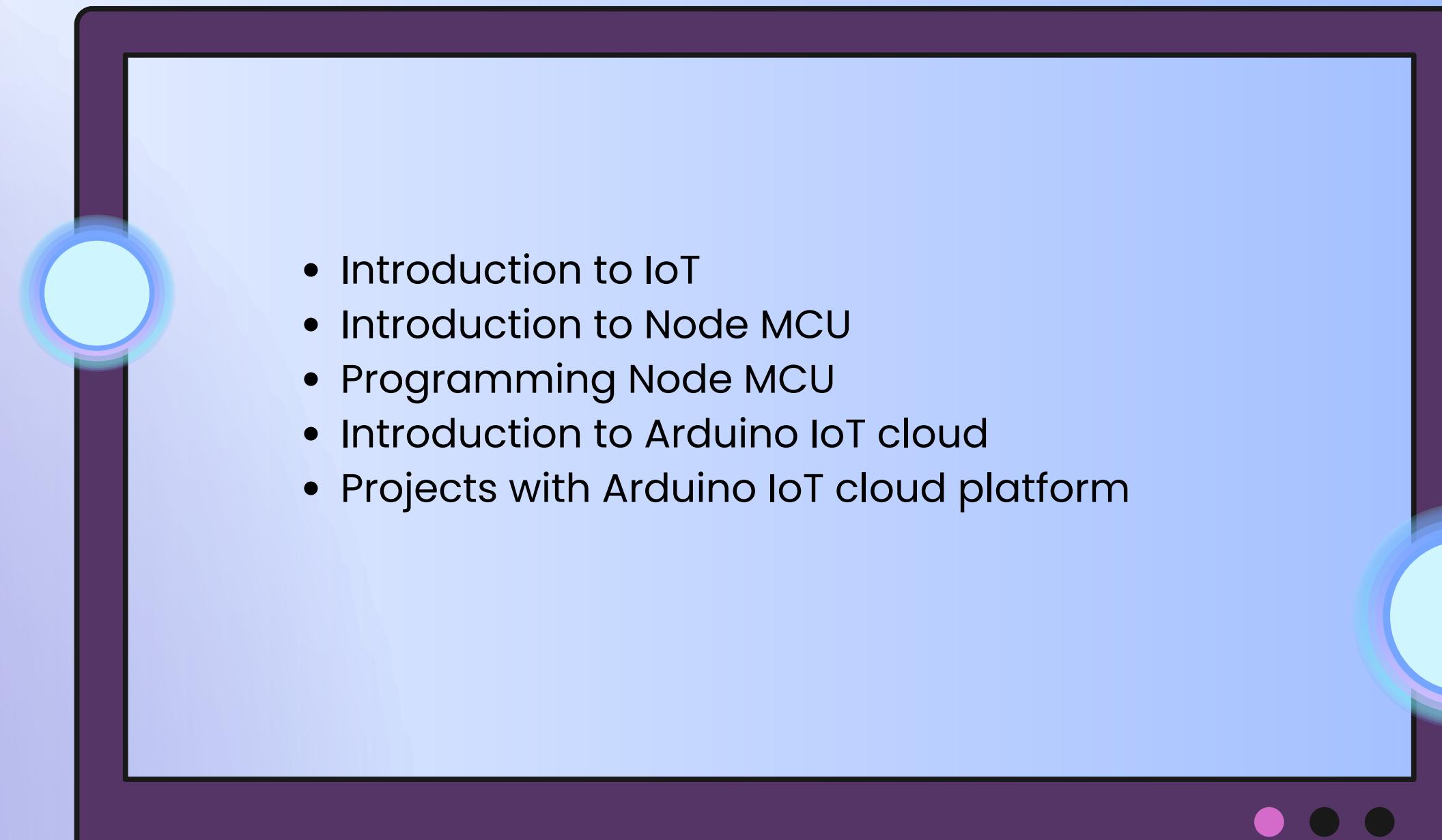
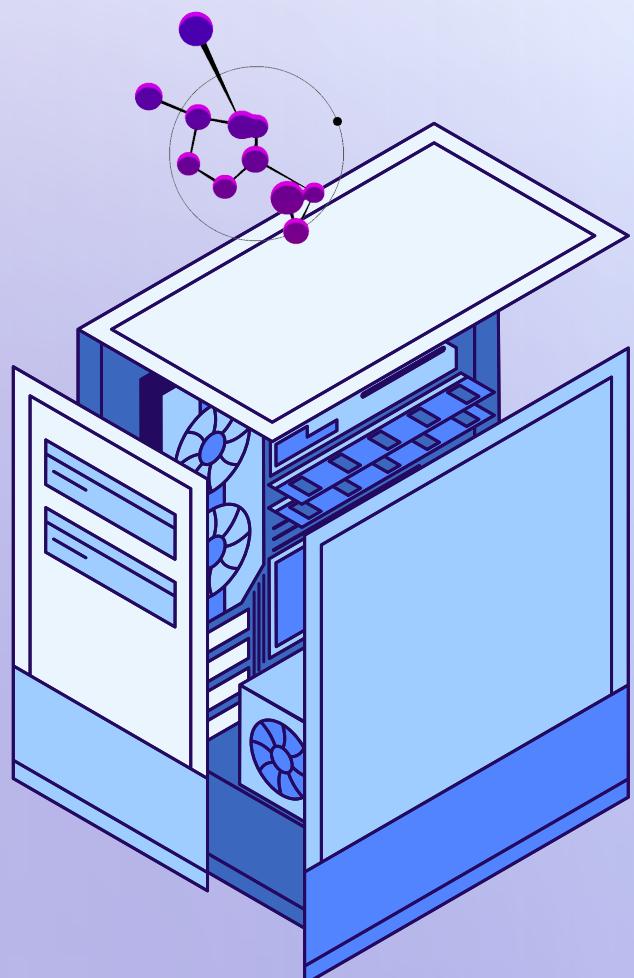


GET IN TO THE WONDER WORLD



THINGS WE ARE GOING TO DO HERE

- Introduction to IoT
- Introduction to Node MCU
- Programming Node MCU
- Introduction to Arduino IoT cloud
- Projects with Arduino IoT cloud platform



WHAT IS IOT



The Internet of Things (IoT) is a concept where everyday objects are connected to the internet and can communicate with each other. Imagine your phone, smart thermostat, and refrigerator all talking to each other to make your life easier. IoT lets devices collect and share data, enabling smart automation and control.

- Connected Devices: IoT involves connecting everyday objects—like your smartwatch, lights, or even your car—to the internet.
- Data Sharing: These devices collect and exchange data to provide useful information or automate tasks. For example, a smart thermostat can adjust your home's temperature based on your schedule.
- Automation: IoT allows devices to work together automatically without manual input. For instance, your smart lights can turn on when you enter a room.
- Remote Control: You can control IoT devices from anywhere using your smartphone or computer, making it convenient to manage your home or work environment.
- Improved Efficiency: IoT helps improve efficiency and saves time by automating routine tasks and providing insights based on data.

EXAMPLES FOR IOT

Smart Thermostats:

Devices like the Nest Thermostat adjust your home's temperature based on your preferences and schedule, and can be controlled remotely via a smartphone app.



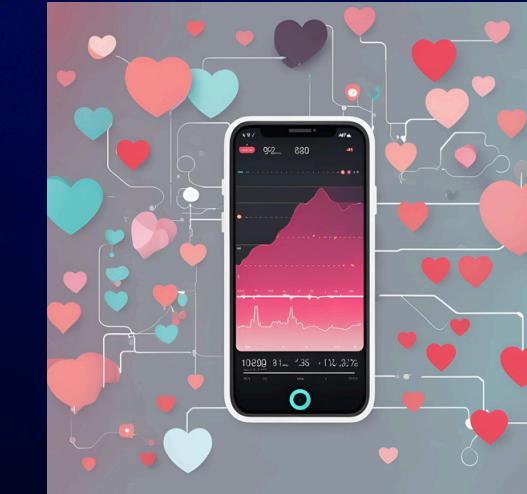
Smart Home Security

Systems such as Ring or Arlo offer security cameras and doorbells that you can monitor and control from your phone, with features like motion detection and two-way communication.



Fitness Trackers

Wearable devices like Fitbit or Apple Watch track your activity, heart rate, and sleep patterns, syncing this data to your phone to help you monitor and improve your health.





LETS DO IOT WITH NODE MCU

NodeMCU is a small, easy-to-use microcontroller board that can connect to the internet. Think of it as a tiny computer that helps you build smart gadgets.

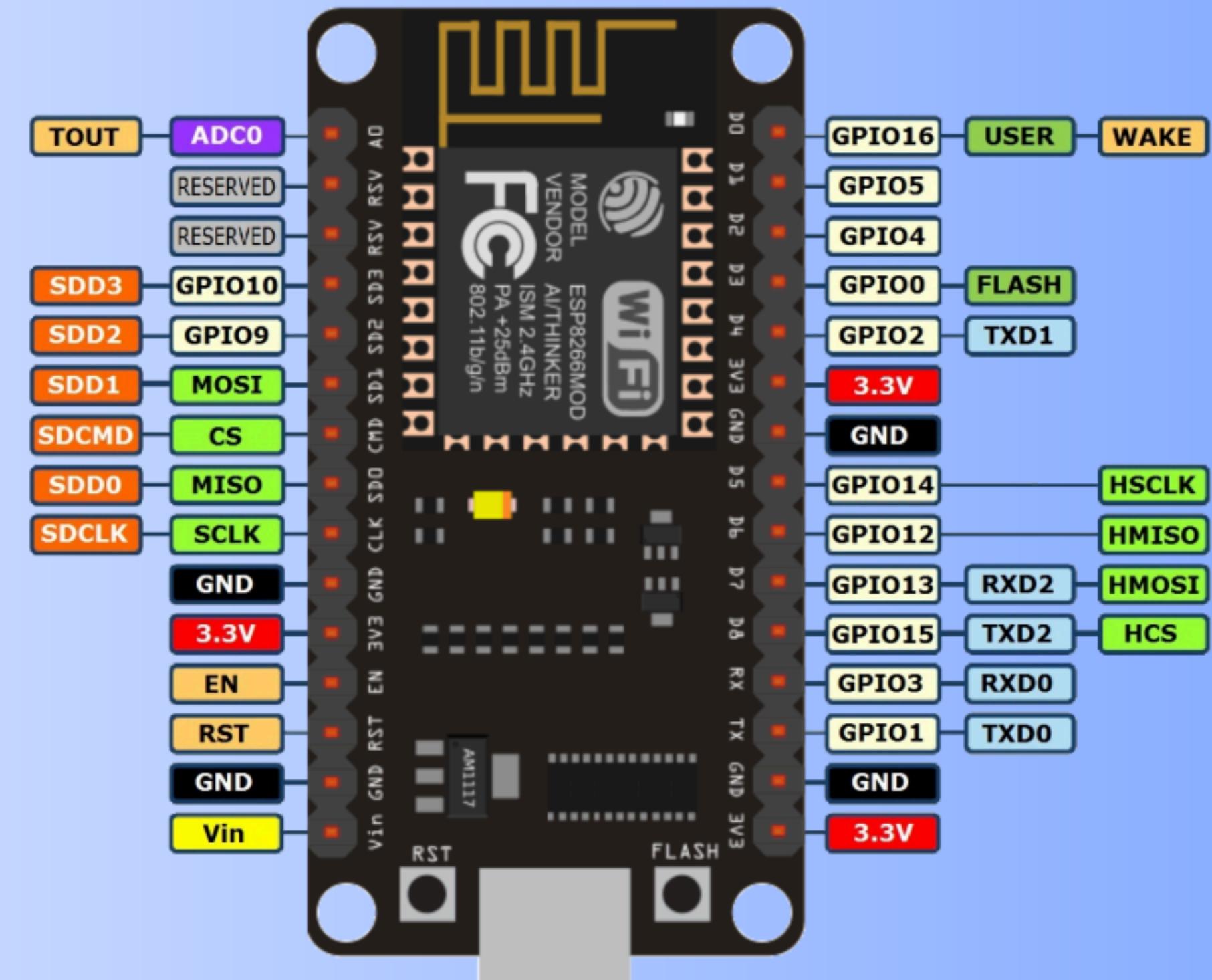


WHAT IS A NODE MCU

- **What It Is:** NodeMCU is a board with a chip called the ESP8266, which allows it to connect to Wi-Fi. It has pins you can use to connect sensors and actuators (things that can measure or control something).
- **What It Does:** With NodeMCU, you can make things like smart lights, weather stations, or even gadgets that send you alerts. It reads data from sensors (like temperature or motion) and can send this information over the internet.
- **How It Works:** You program NodeMCU using simple coding. Once it's programmed, it can interact with the internet or control other devices. For example, you could set it up to turn on a light when it gets dark or send you a message if your plants need water.

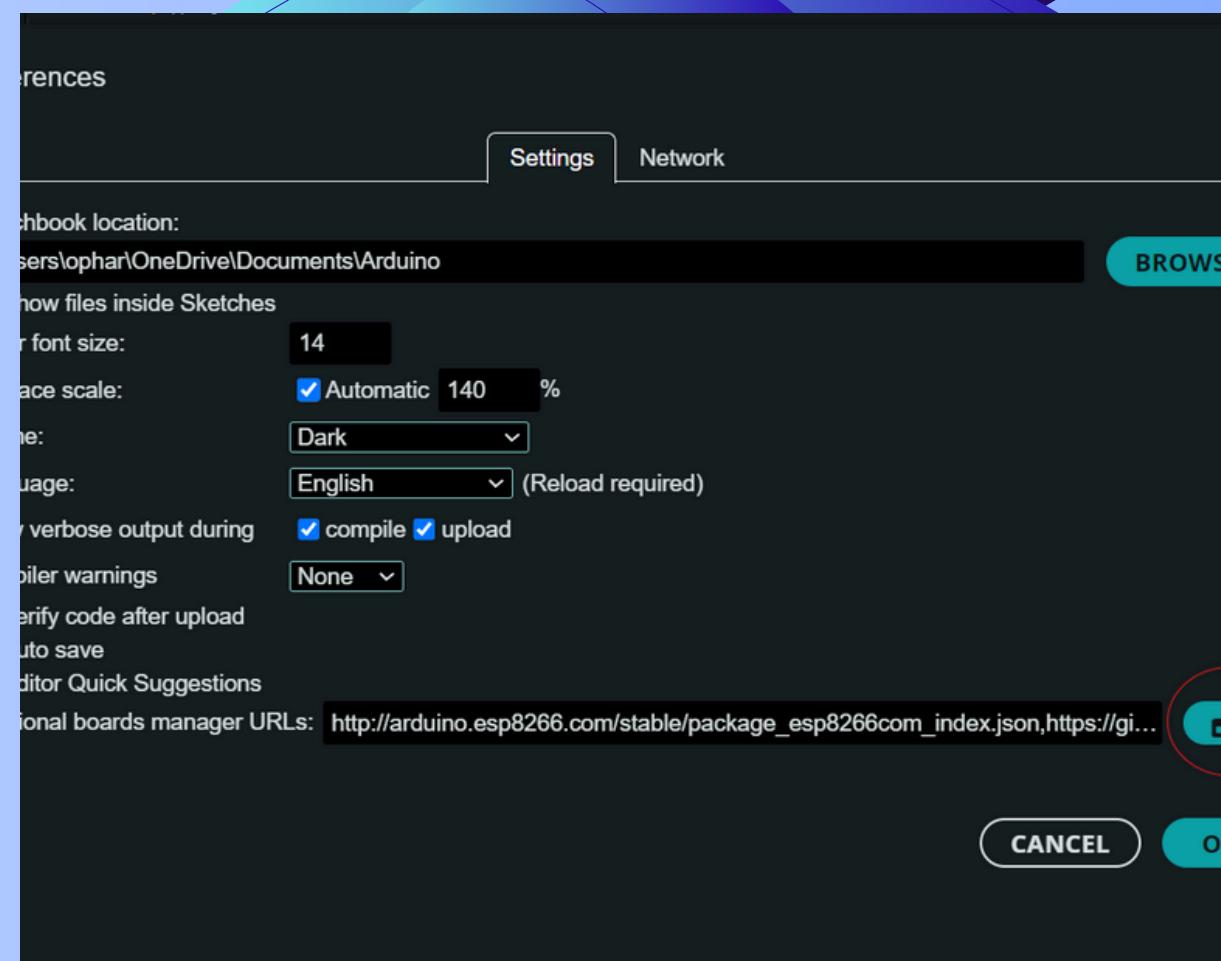
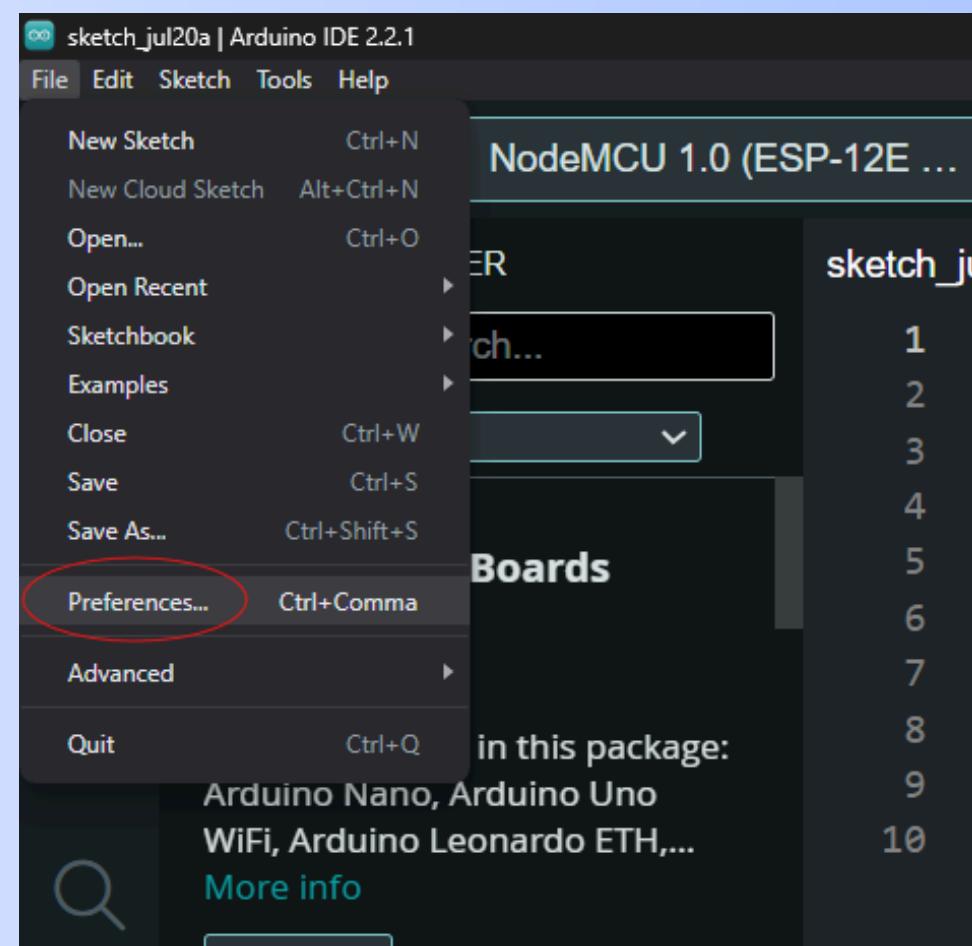
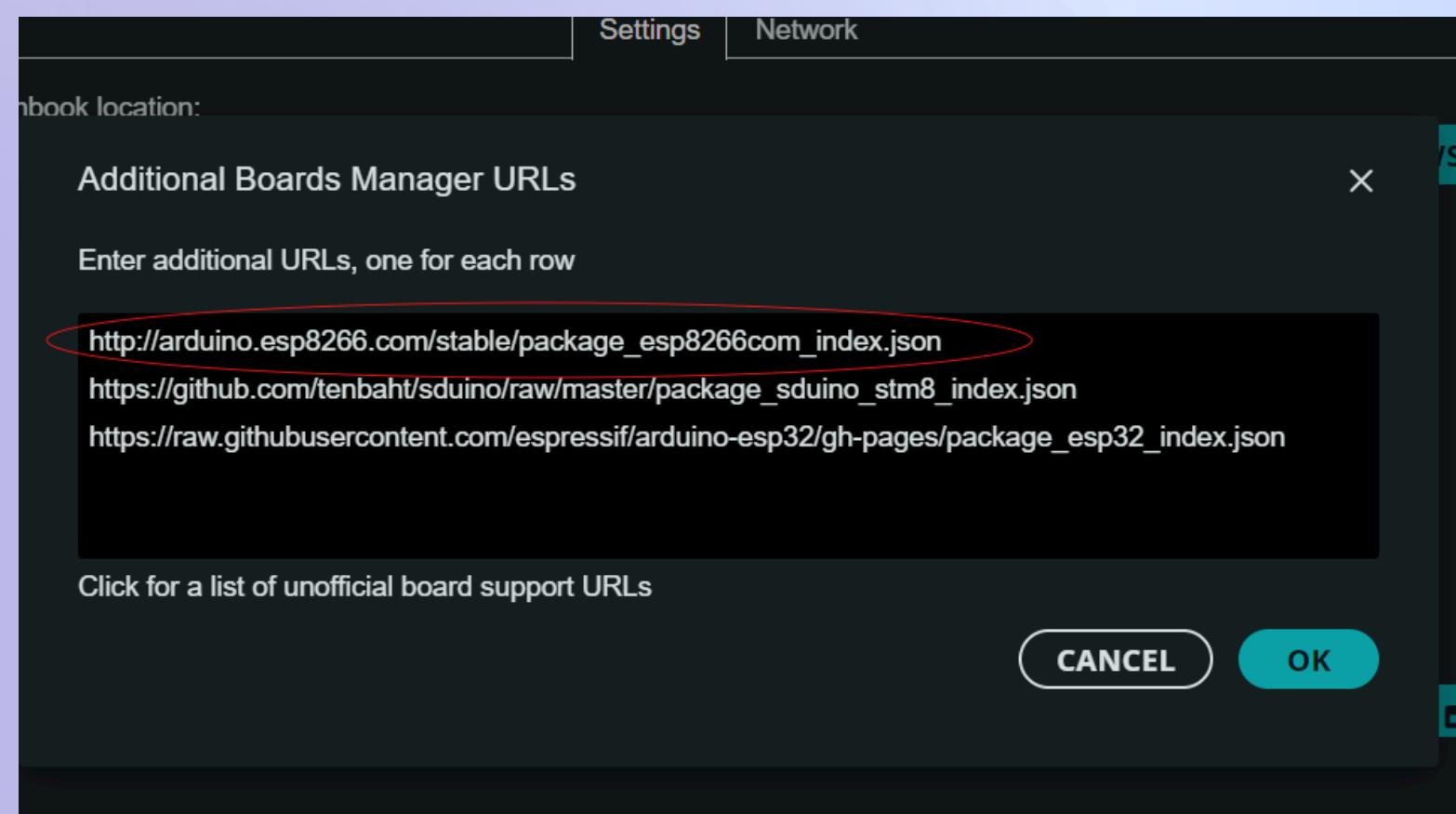
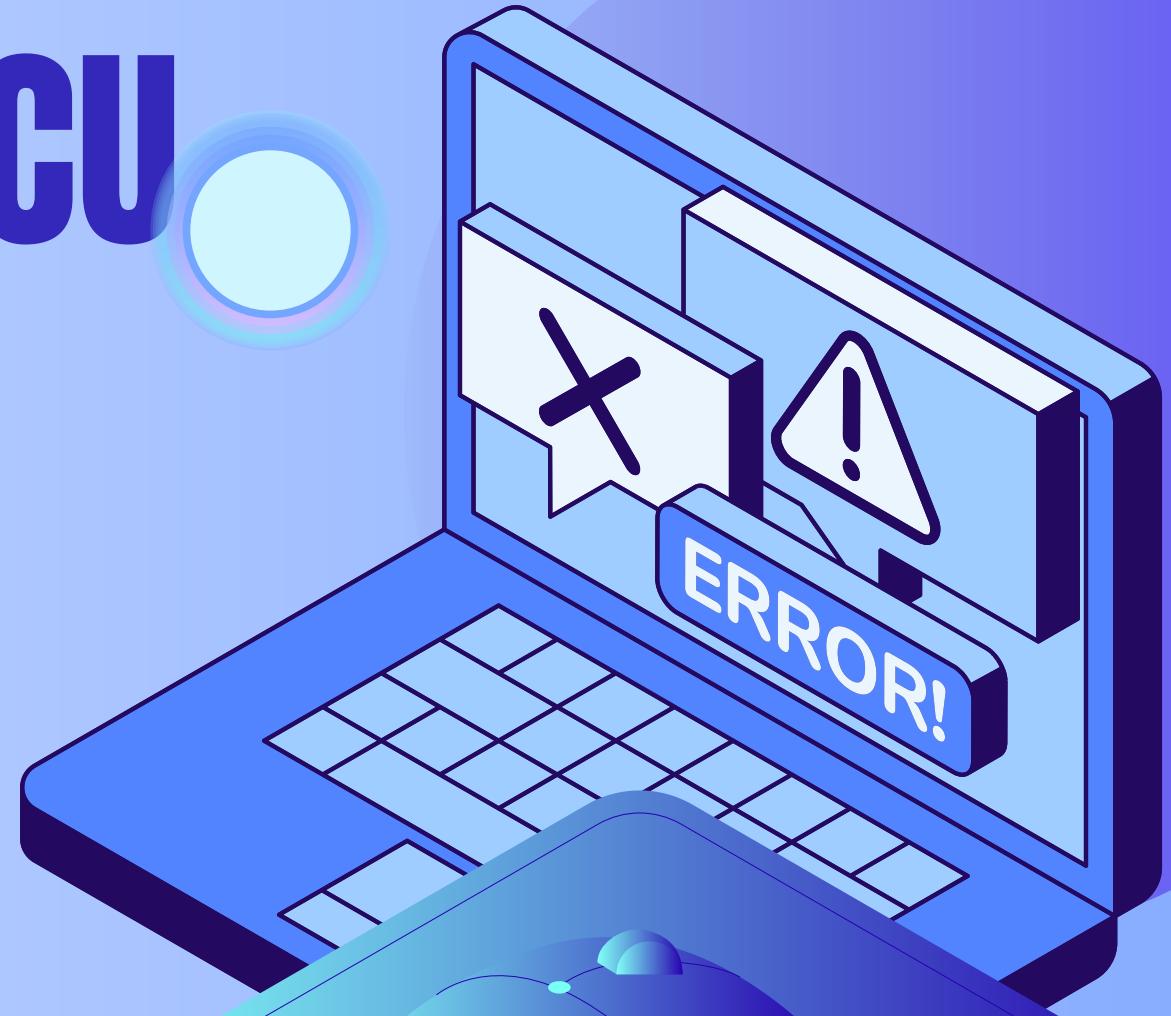
THE ANATOMY OF A NODE MCU

- The NodeMCU has 30 GPIO pins
- Very similar to arduino but work with 3v Voltage range
- Only one analog pin is available but all of the pins are Enabled with PWM
- Can be powered by a USB-Type B

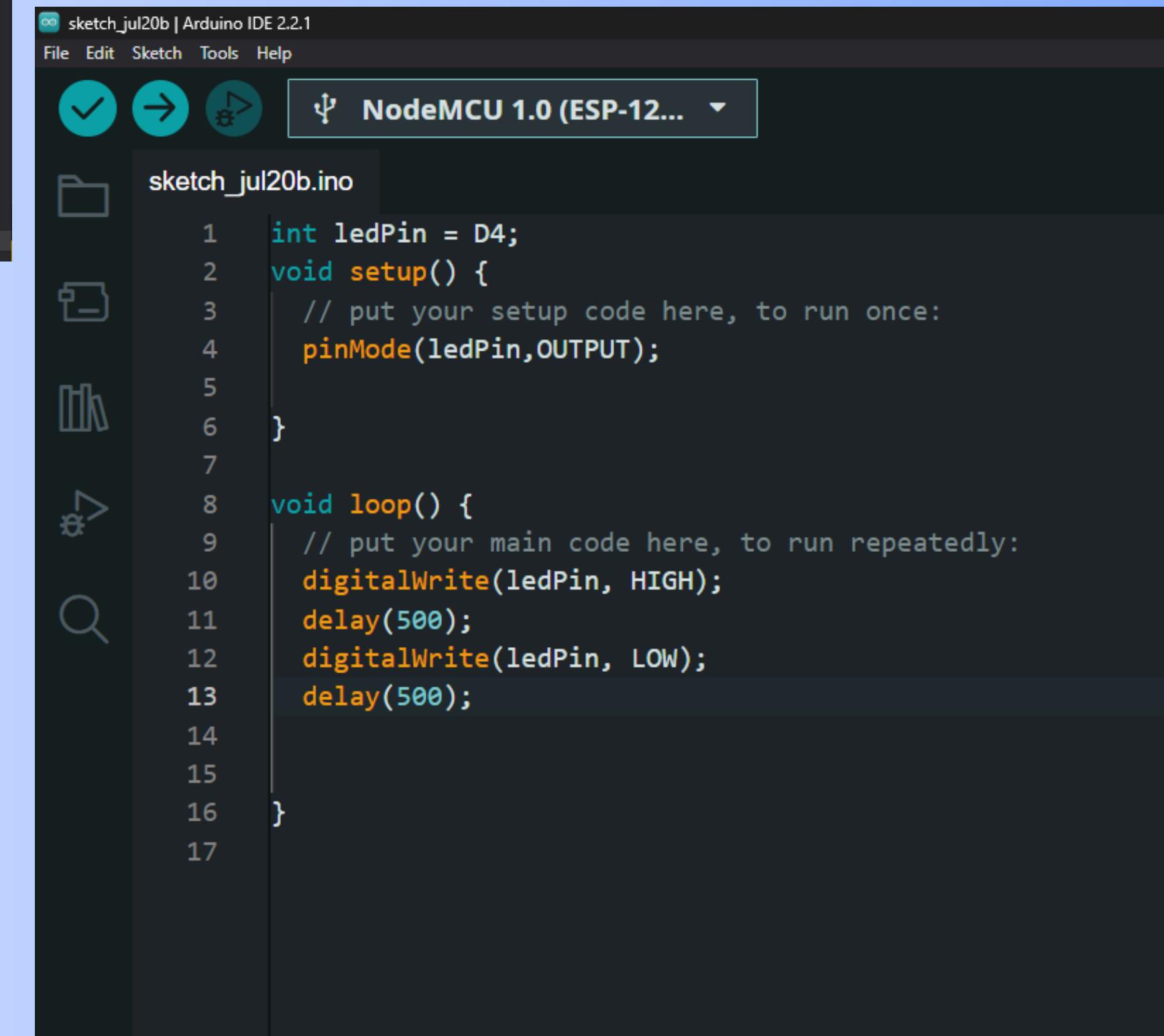


PROGRAMMING A NODE MCU

- Node MCU Can be programmed by Arduino IDE
- Requires some additional packages to installed to Arduino IDE



LED BLINK NODE MCU



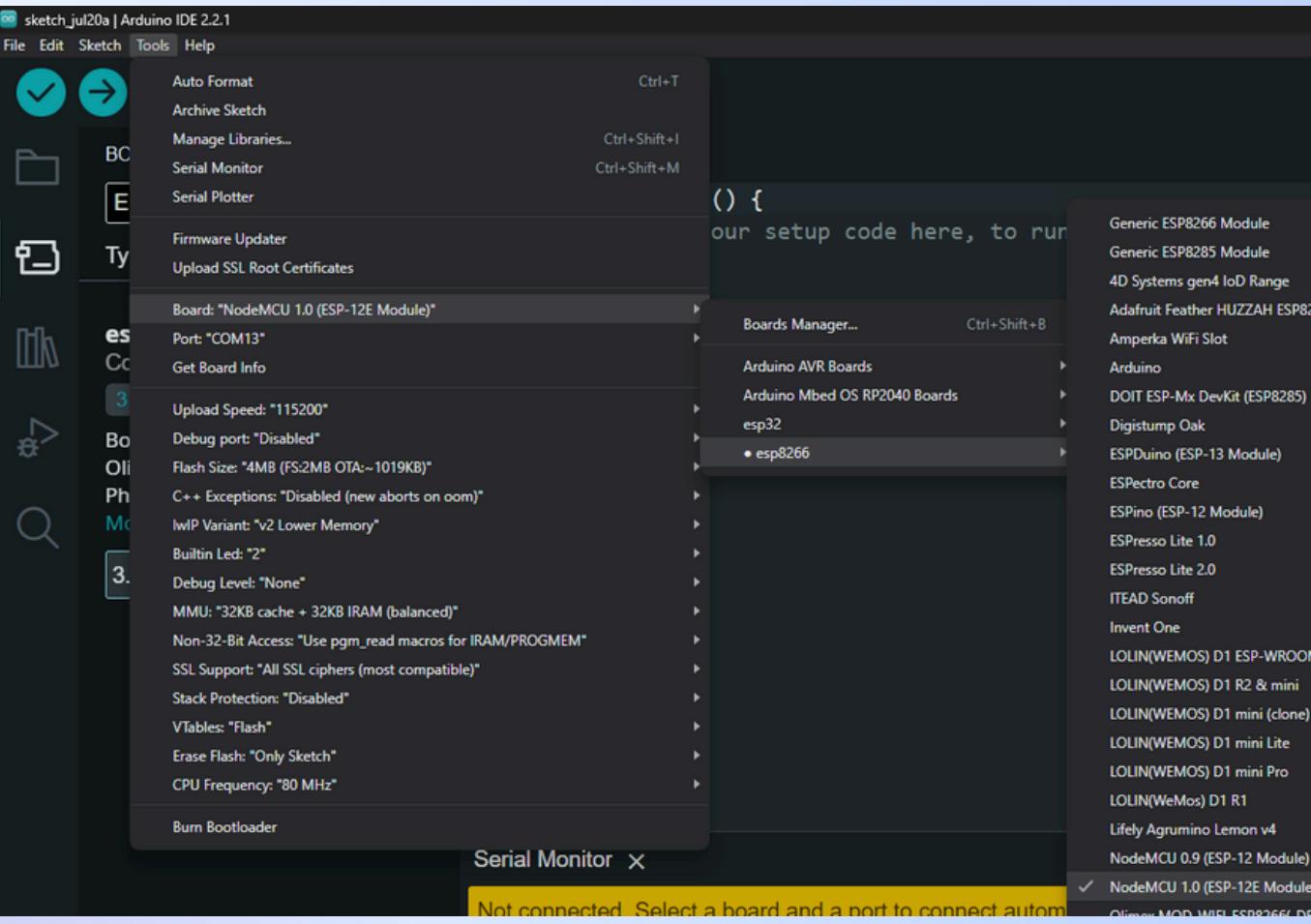
The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** sketch_jul20b | Arduino IDE 2.2.1
- File Menu:** File, Edit, Sketch, Tools, Help
- Tools Menu:** Board Manager..., Ctrl+Shift+B
- Board Selection:** NodeMCU 1.0 (ESP-12E Module) selected from the Boards Manager.
- Sketch Area:** The code for "sketch_jul20b.ino" is displayed:

```
int ledPin = D4;
void setup() {
    // put your setup code here, to run once:
    pinMode(ledPin,OUTPUT);
}

void loop() {
    // put your main code here, to run repeatedly:
    digitalWrite(ledPin, HIGH);
    delay(500);
    digitalWrite(ledPin, LOW);
    delay(500);
}
```

- The mentioned code makes the on board LED to blink
 - Make sure the the board selected is NodeMCU(ESP-12E)



THANK YOU!



6238622195



opharikesh2005@gmail.com