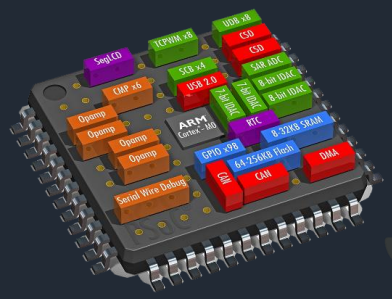
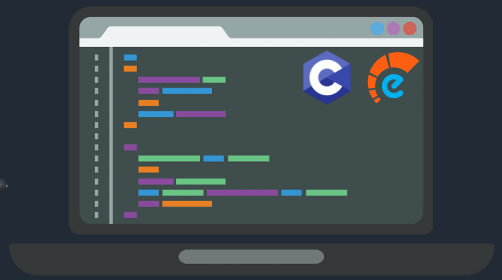
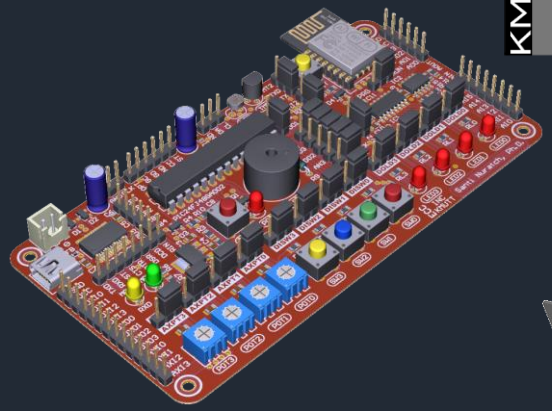
INC281
2020

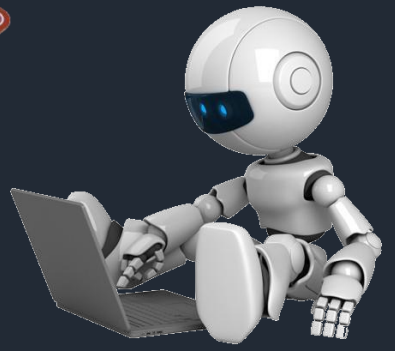
INC281-Lec-Lab-01

Introduction and Basic HTML









We Make Computers do More

Asst.Prof.Dr.Santi Nuratch

Embedded Computing and Control Lab. @ INC-KMUTT

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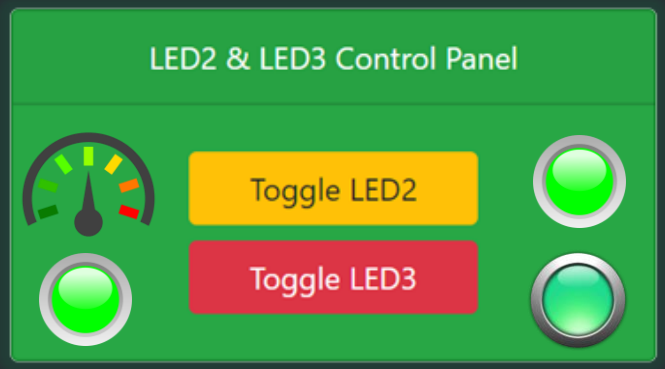
Department of Control System and Instrumentation Engineering,
King Mongkut's University of Technology Thonburi, **KMUTT**

Develop your own IoT applications

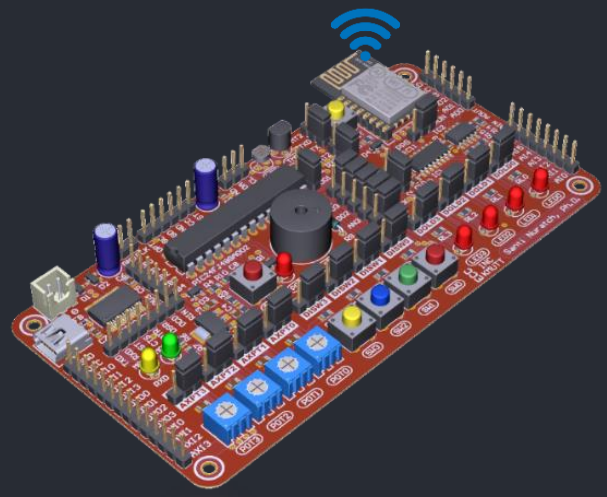
Web-based Application



Internet

HTTP
WebSockets
MQTT

IoT Device



Develop your own IoT applications

40%

Programming

20%

30%

Documents

40%

30%

Presentation

40%

Depended on situation

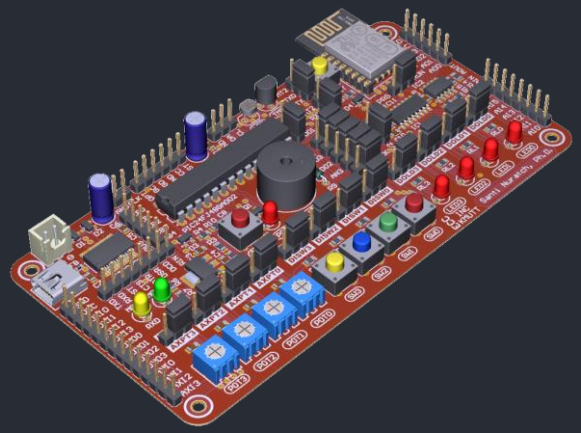
Develop your own IoT applications

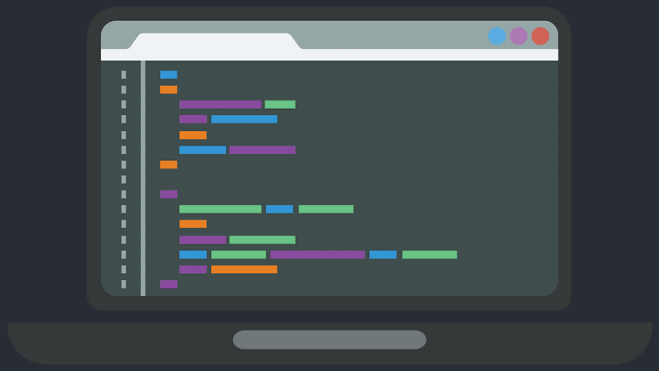
What is your project?

(Design and submit the 1st document next week!)

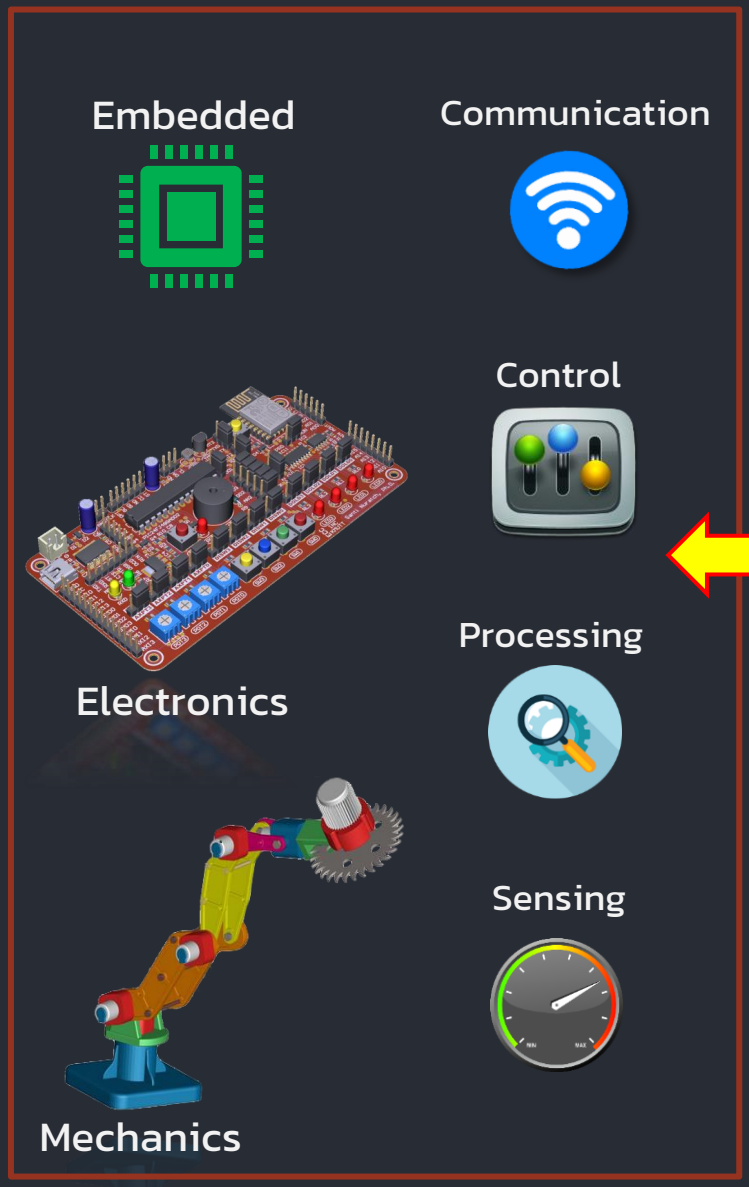
30%

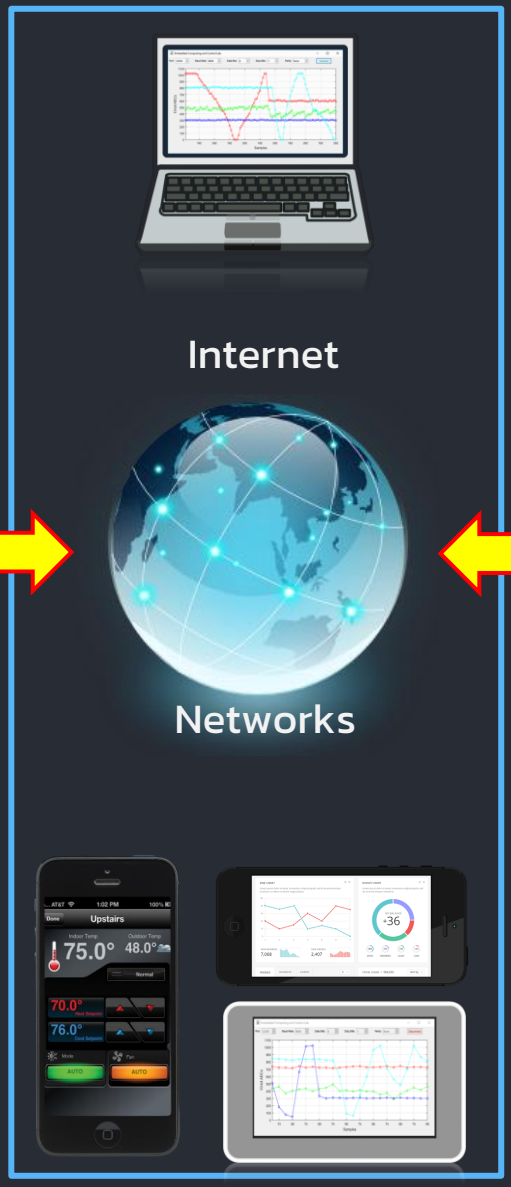
1. Hardware: Block diagram, circuit, description (in-depth details)
2. Software: Graphics User Interface, function description (in-depth details)

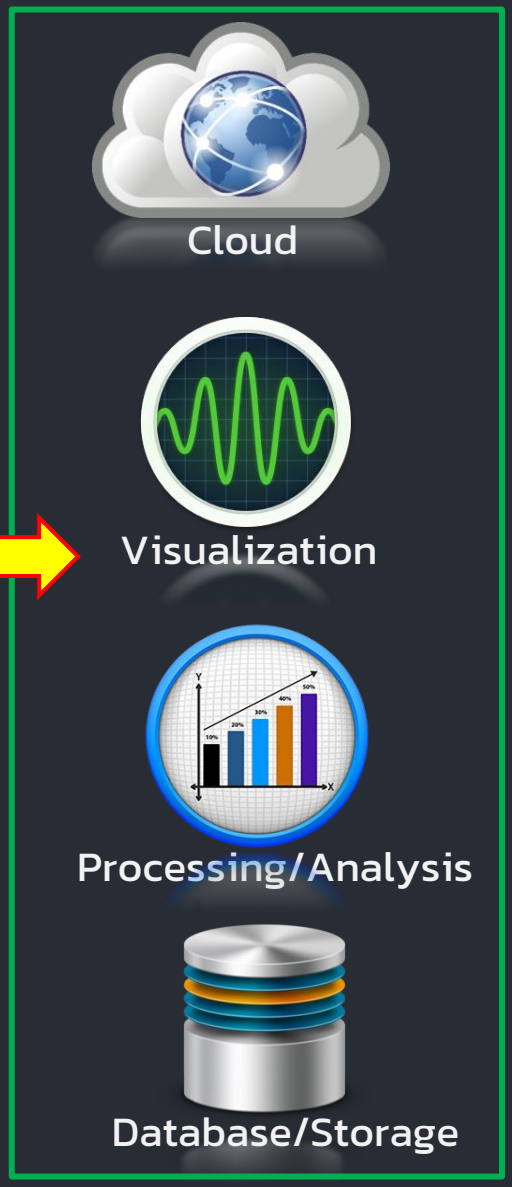




IoT Application Components







INC281 focus on the IoT applications

IoT Device

- Electronic Circuits (Sensors/Actuators)
- Microcontroller Circuit & System
- Embedded C Programming

Embedded Programming

Embedded C | **Algorithms**

IoT Application

- Web/GUI Design (HTML, CSS)
- JavaScript Programming (ES6)
- Web-based Control & Data Visualization

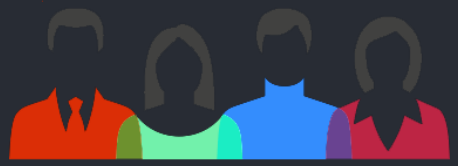
Web (Client/Server) Programming

Web | **Node.js** | **MongoDB**

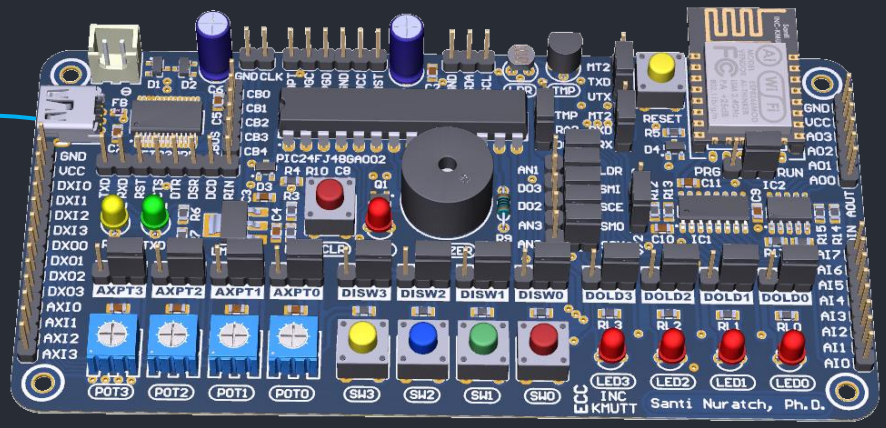
We integrate hardware and Software

Internet
Network

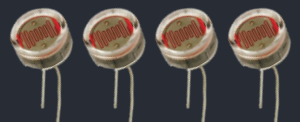
Router



Clients (Users)



Development Computer
(Programmer)



Analog Inputs

Digital Inputs

Digital Outputs

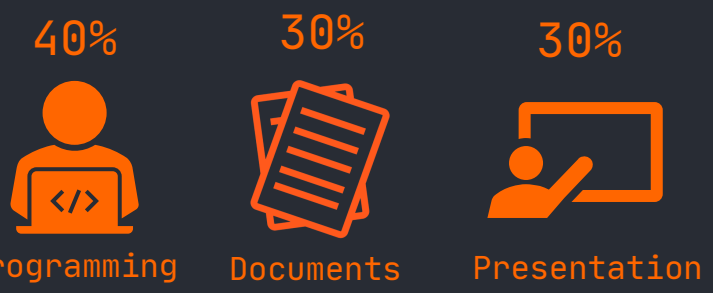
INC281/2 Learning Topics

This is the second section of the INC281. We focus on the basics of Web-based application development, Web-based programming. Three main parts to be studied in this section.

10% 1. **HTML** (Hypertext Markup Language)

10% 2. **CSS** (Cascading Style Sheet)

20% 3. **JavaScript**



HTML is the markup language that we use to structure and give meaning to our web content, for example defining paragraphs, headings, and data tables, or embedding images and videos in the page.

```
<html><head><title>INC281</title></head><body><h1>Welcome to Web Programming</h1></body></html>
```

CSS is a language of style rules that we use to apply styling to our HTML content, for example setting background colors and fonts, and laying out our content in multiple columns.

```
body{background-color: red; color: red; font-family: Helvetica; text-align: center; padding: 3px 10px;}
```

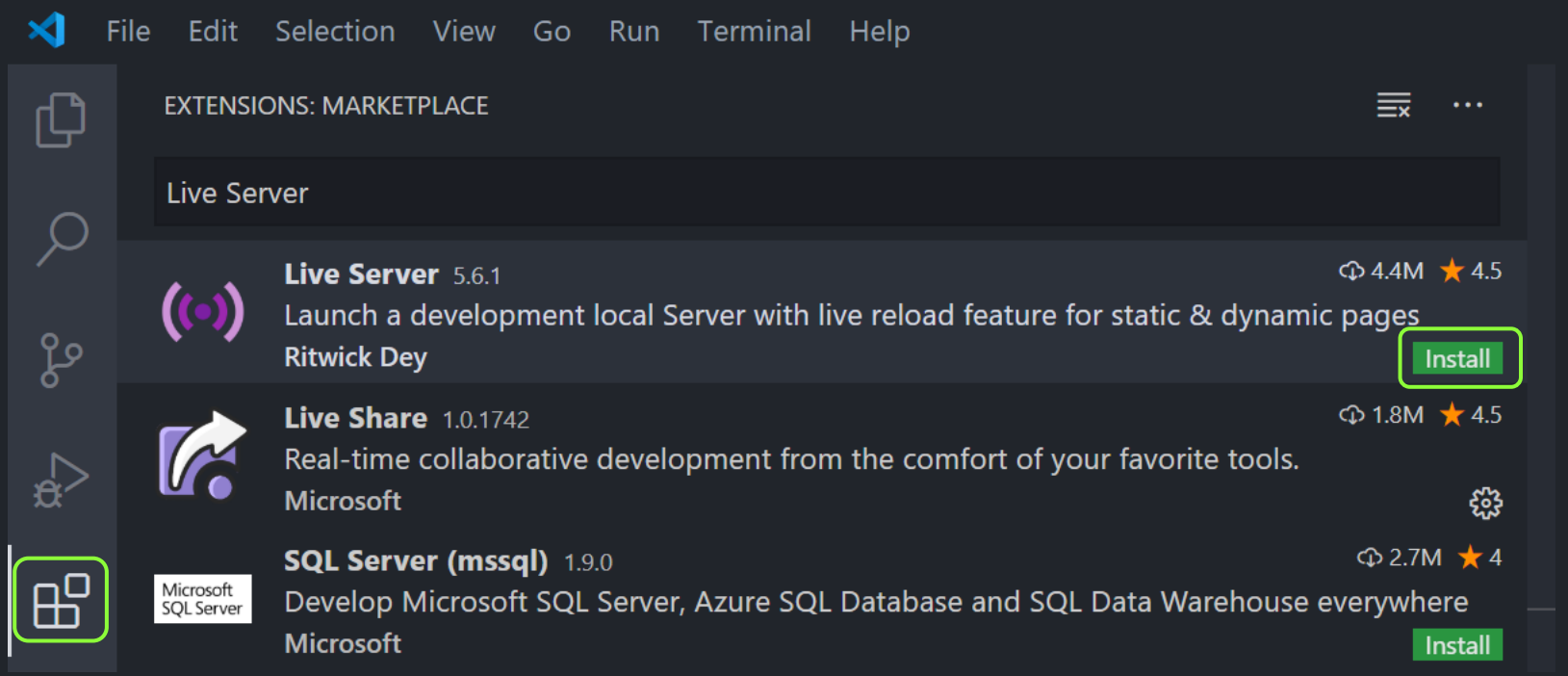
JavaScript is a scripting language that enables you to create dynamically updating content, control multimedia, animate images, and pretty much everything else.

```
let h1 = document.querySelector("h1"); h1.addEventListener("click", ()=>{h1.textContent="Hello INC281"});
```

Code Editor and Extension

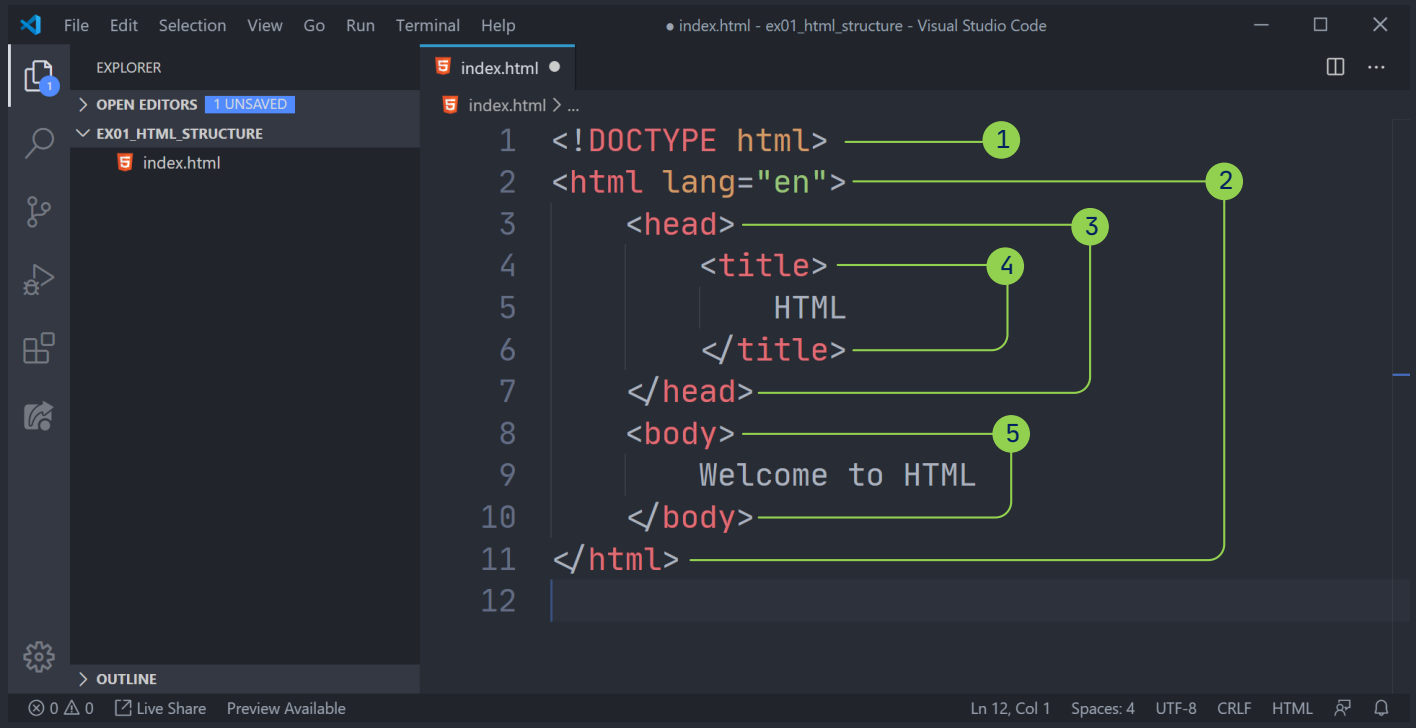
We use the VSCode and Live Server to develop our applications. Also, a Web browser, e.g., Google Chrome or Mozilla Firefox, is required.

1. Download and install the VSCode
2. Install the Live Server extension
3. Download and install the Google Chrome or Mozilla Firefox



Create a new Project

1) Create a new directory (folder), “ex01_html_structure.html”
2) Run the VSCode and open the created directory
3) Create a webpage file, “index.html” and add the lines of code



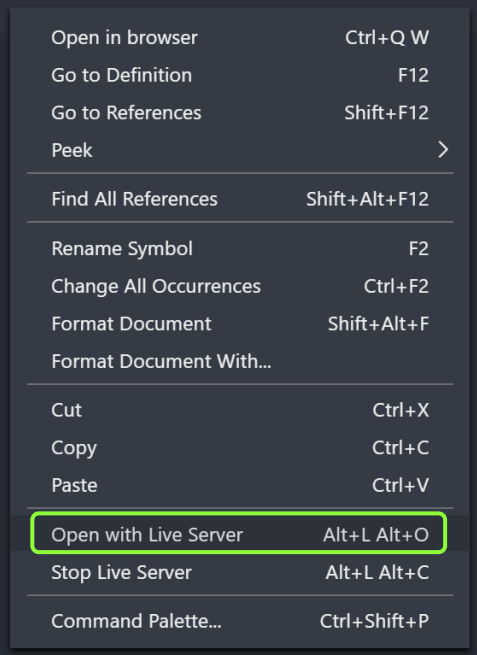
1. The <!DOCTYPE> type declaration must be the very first thing in your HTML document
2. Declares the webpage to be written in HTML
3. Delimits the webpage’s head
4. Defines the webpage’s title
5. Delimits the webpage body

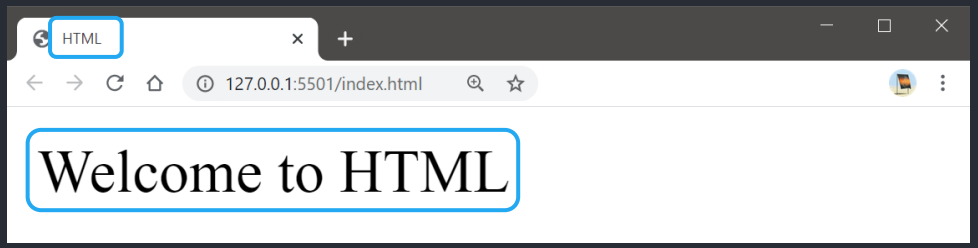
Check the result on the Web browser

1) Save the code (CRTL+S)
2) Right-Click on the HTML code and choose the "Open with Live Server"
3) Check the result on the web browser

index.html

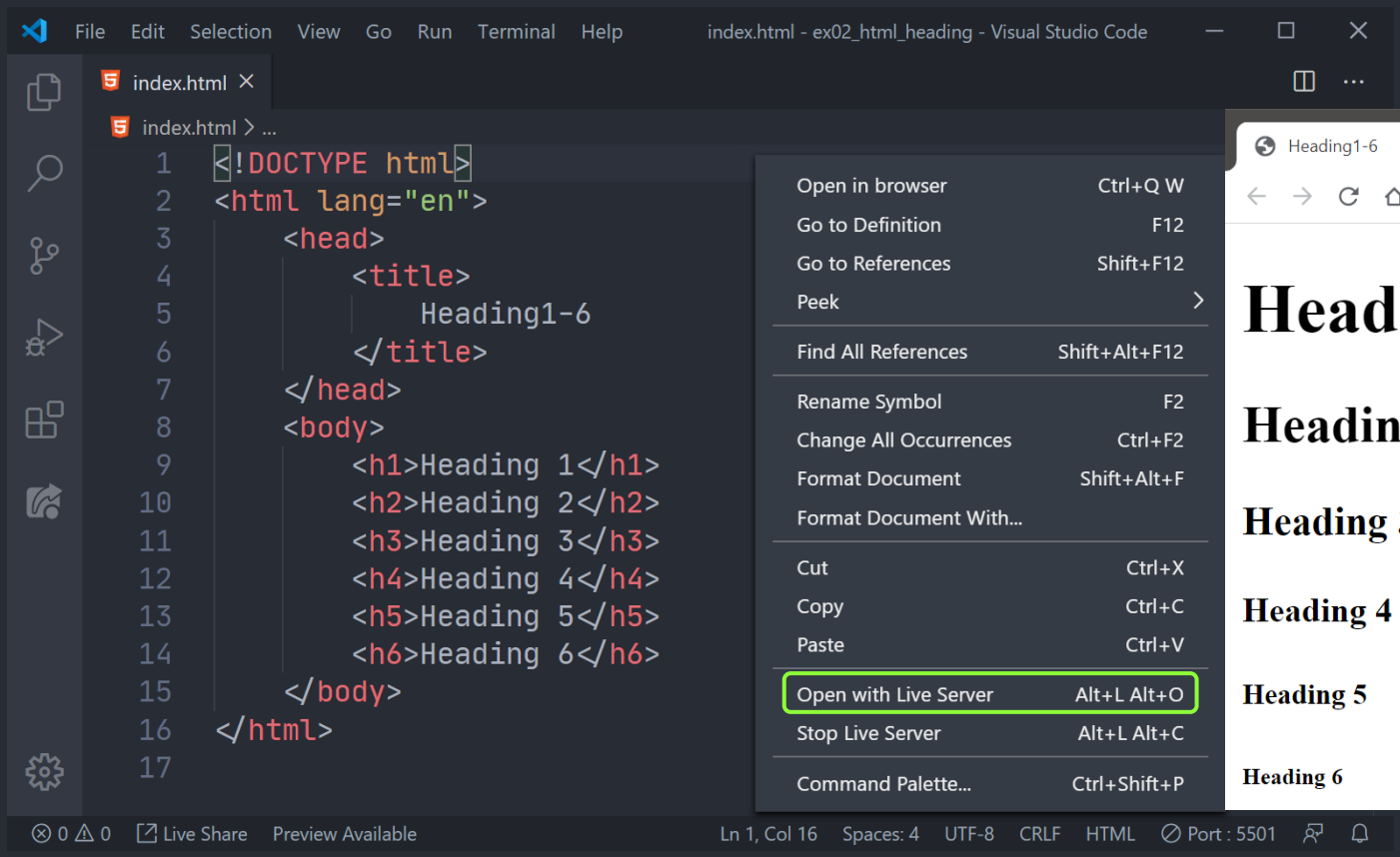
```
1  <!DOCTYPE html>
2  <html lang="en">
3      <head>
4          <title>
5              HTML
6          </title>
7      </head>
8      <body>
9          Welcome to HTML
10     </body>
11 </html>
12
```





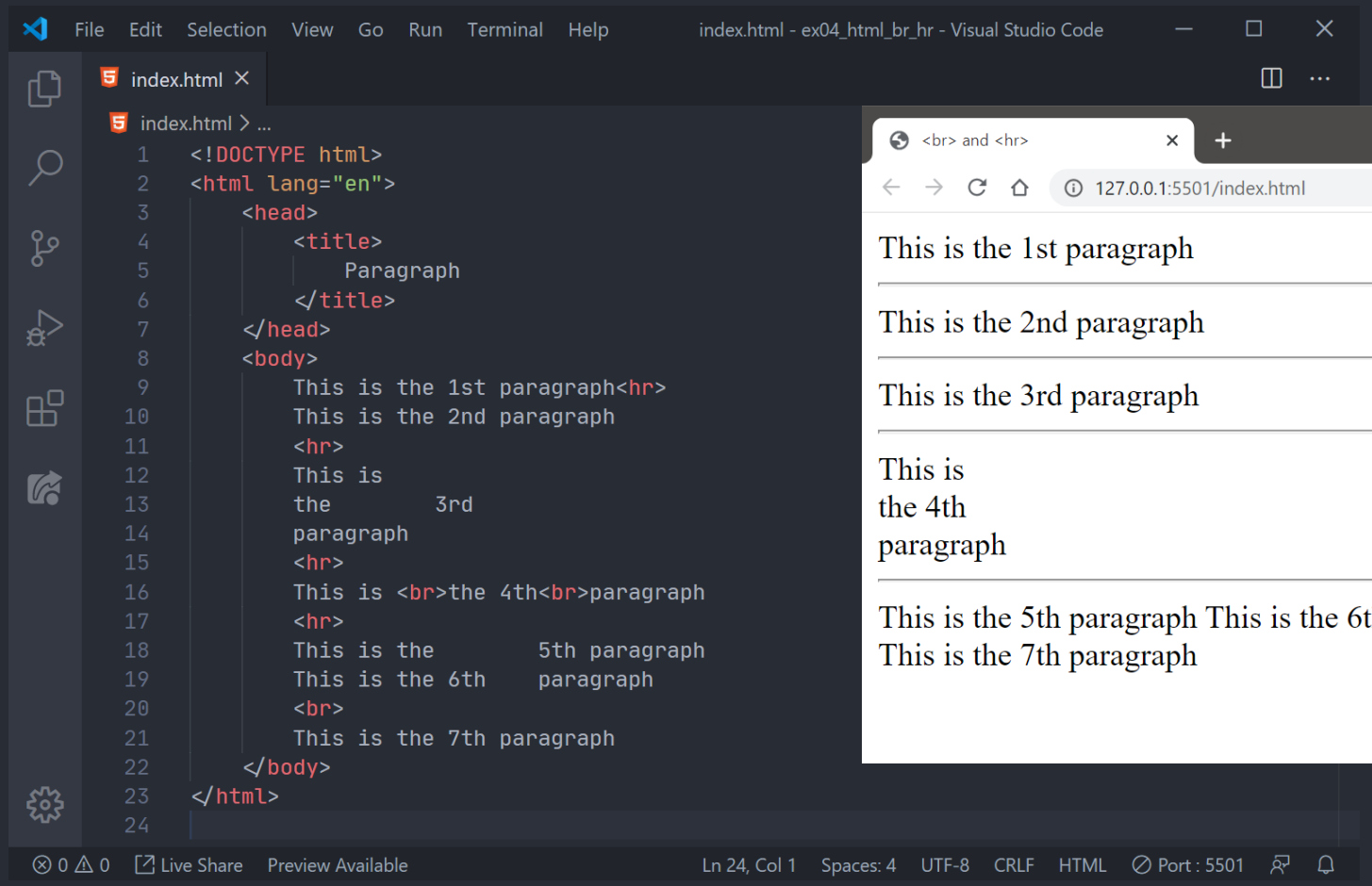
HTML Heading (h1 to h6)

1) Create a new directory (folder), "ex02_html_heading"
2) Run the VSCode and open the created directory
3) Create a webpage file, "index.html" and add the lines of code
4) Save the file, run the "Live Server" and check the result in the web browser



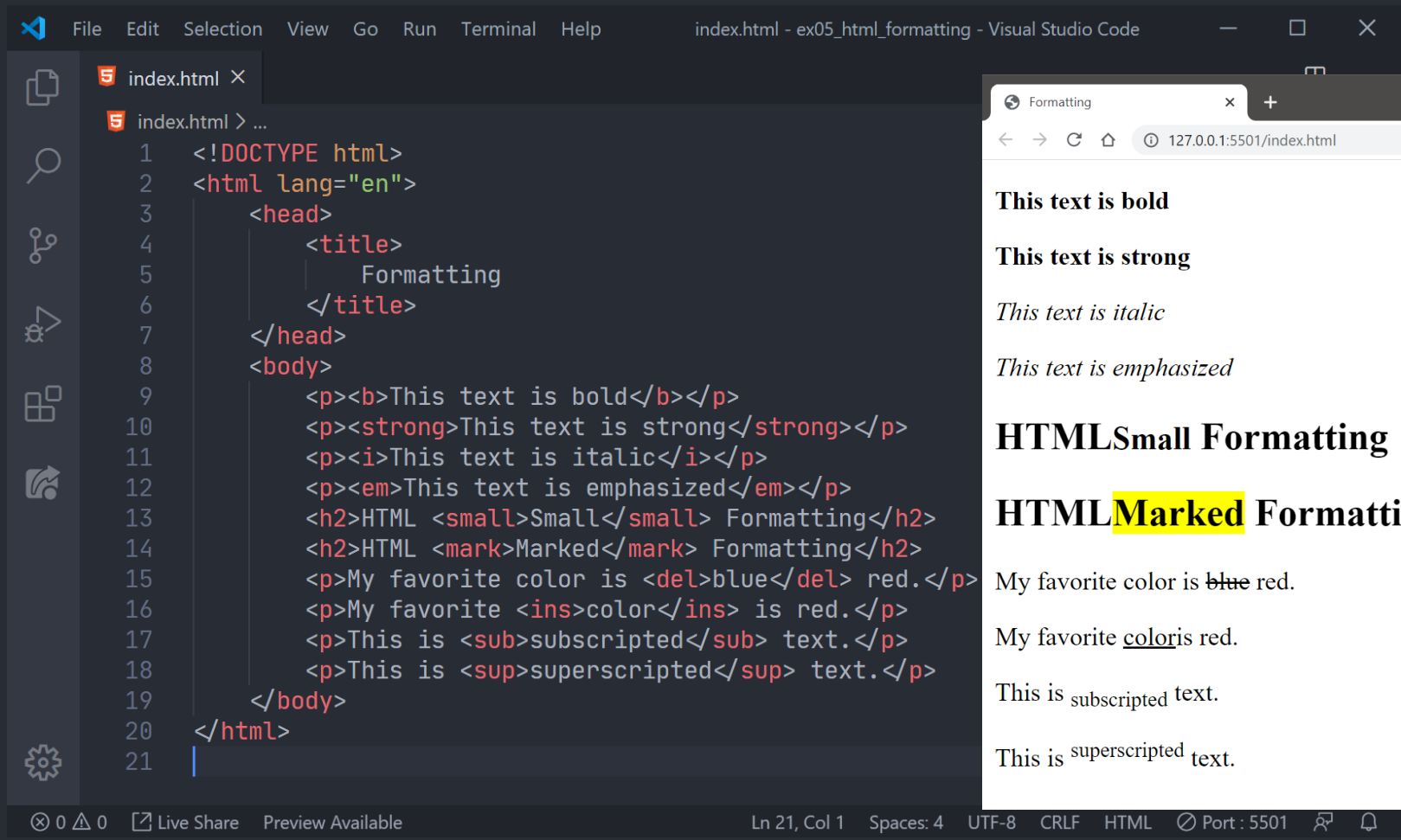
HTML Line Break and Horizontal Rules

1) Create a new directory (folder), "ex04_html_br_hr"
2) Run the VSCode and open the created directory
3) Create a webpage file, "index.html" and add the lines of code
4) Save the file, run the "Live Server" and check the result in the web browser



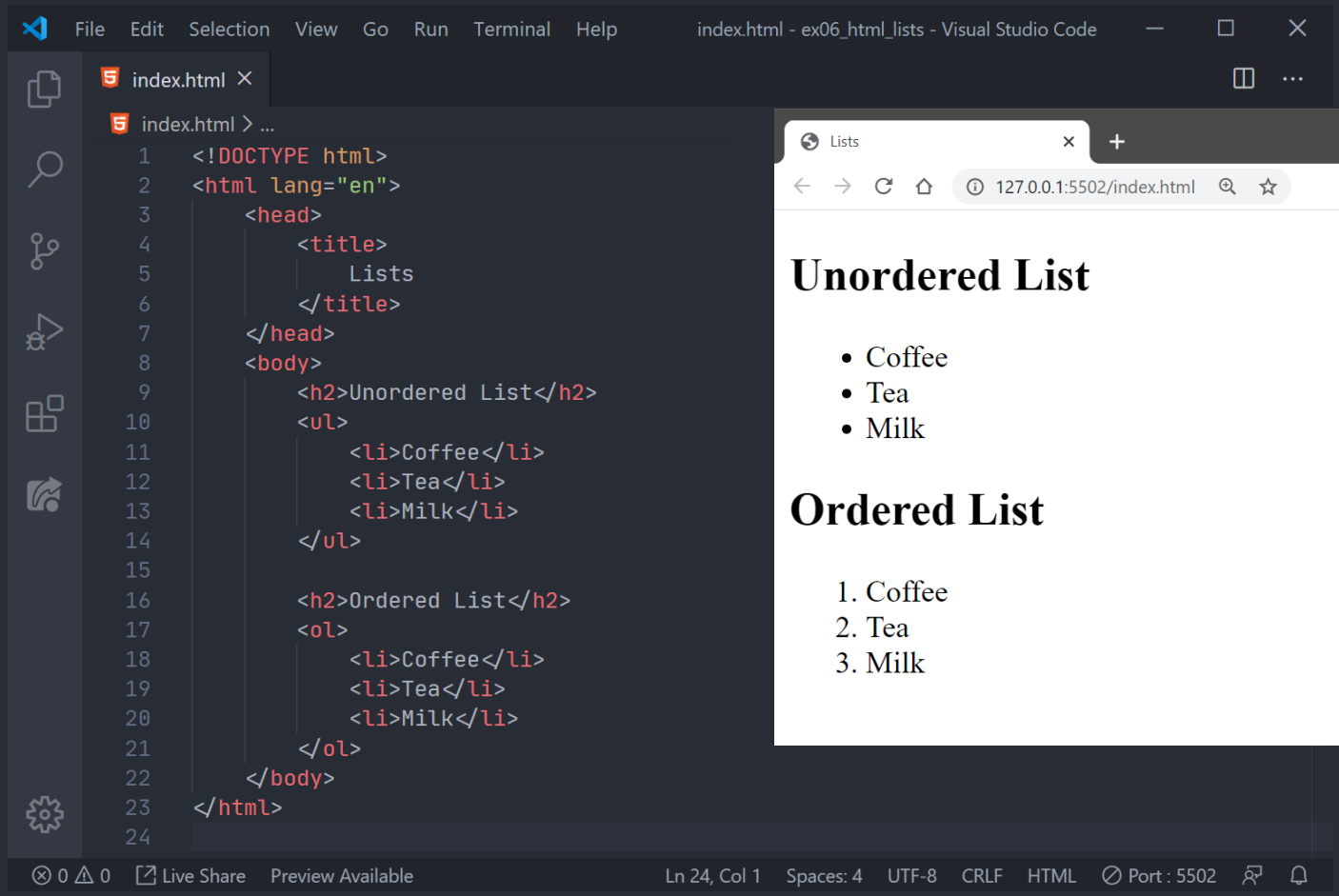
HTML Formatting

1) Create a new directory (folder), "ex05_html_formatting"
2) Run the VSCode and open the created directory
3) Create a webpage file, "index.html" and add the lines of code
4) Save the file, run the "Live Server" and check the result in the web browser



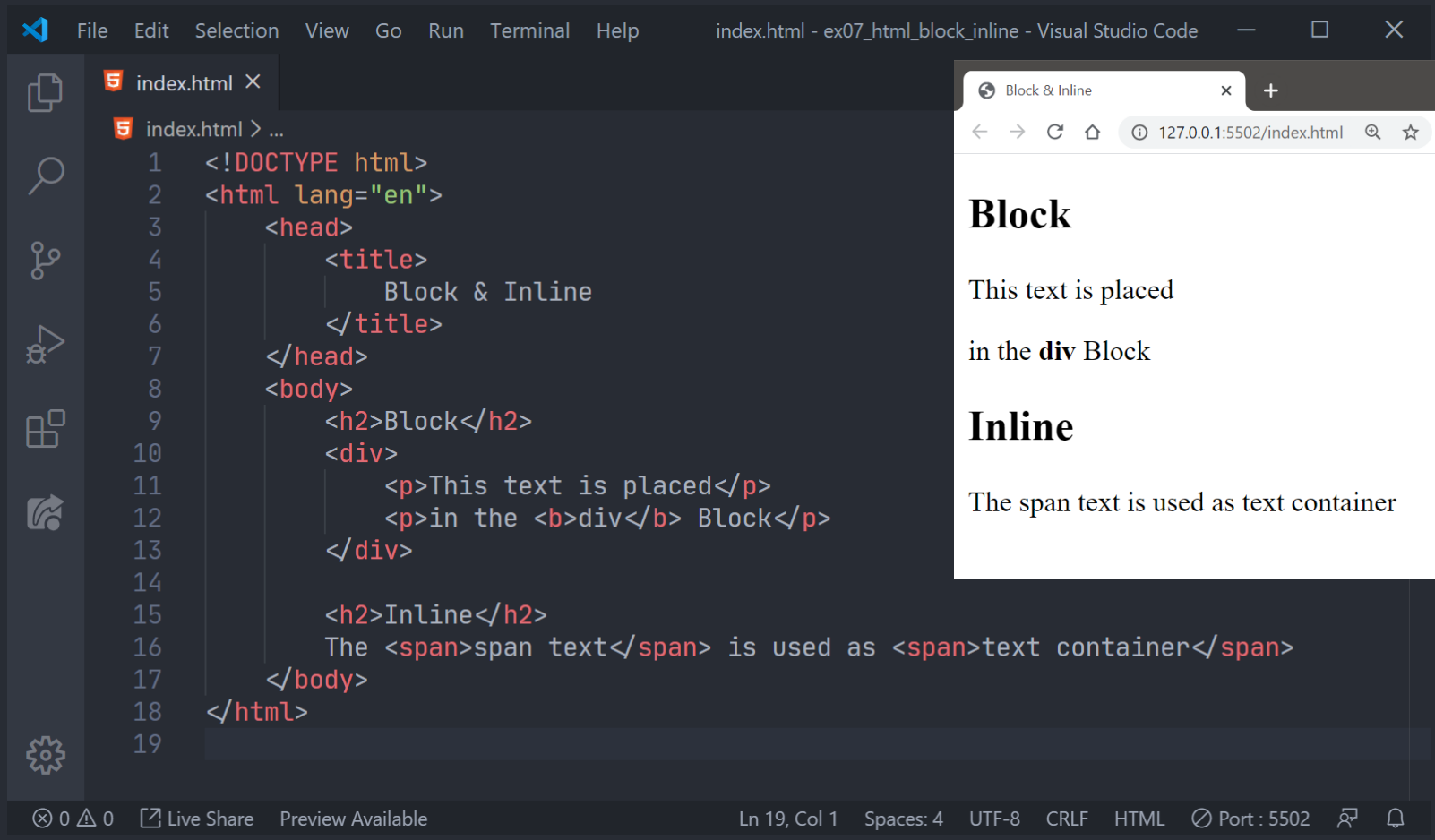
HTML Lists

1) Create a new directory (folder), "ex06_html_lists"
2) Run the VSCode and open the created directory
3) Create a webpage file, "index.html" and add the lines of code
4) Save the file, run the "Live Server" and check the result in the web browser



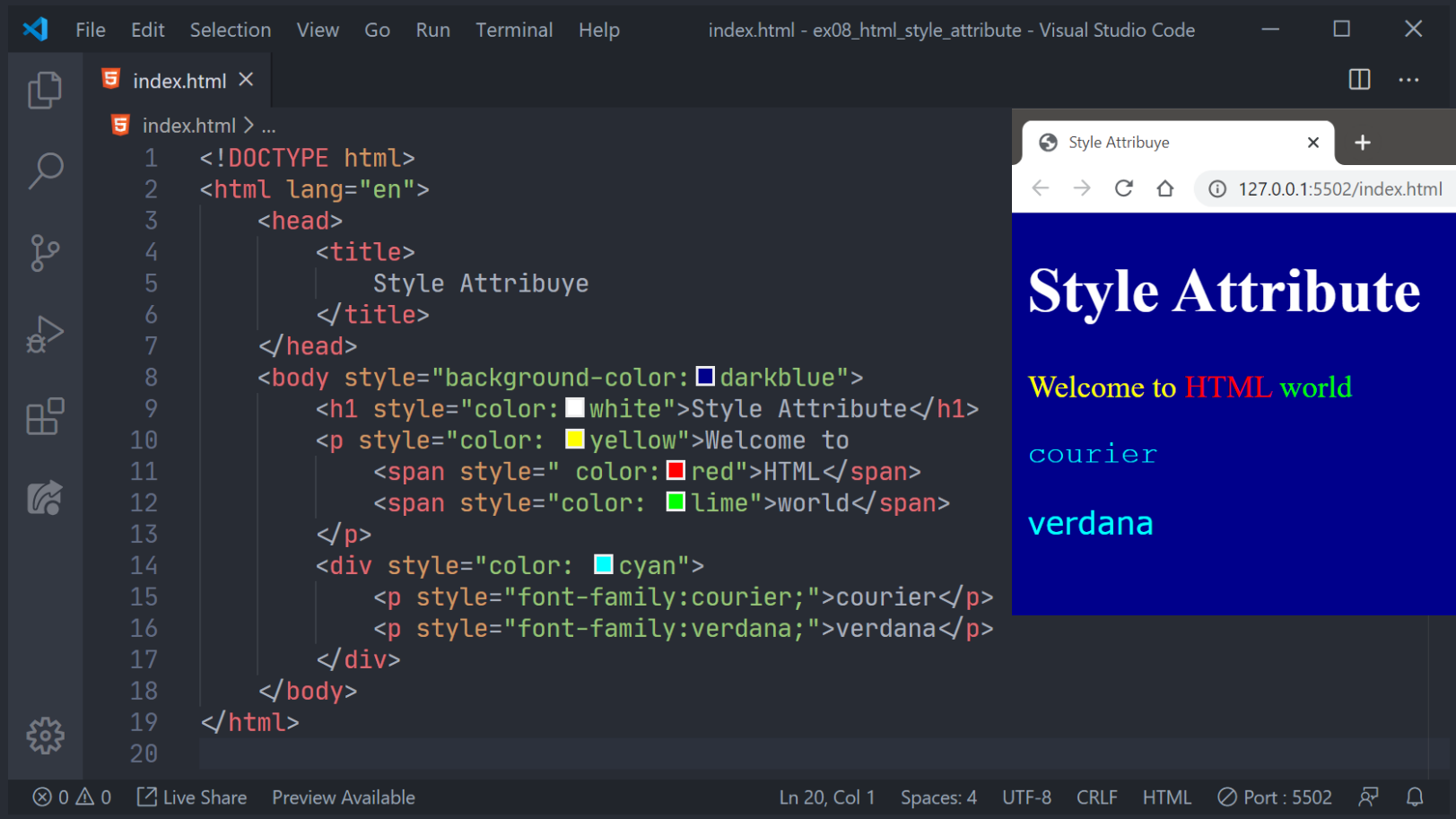
HTML Block and Inline Elements

1) Create a new directory (folder), "ex07_html_block_inline"
2) Run the VSCode and open the created directory
3) Create a webpage file, "index.html" and add the lines of code
4) Save the file, run the "Live Server" and check the result in the web browser



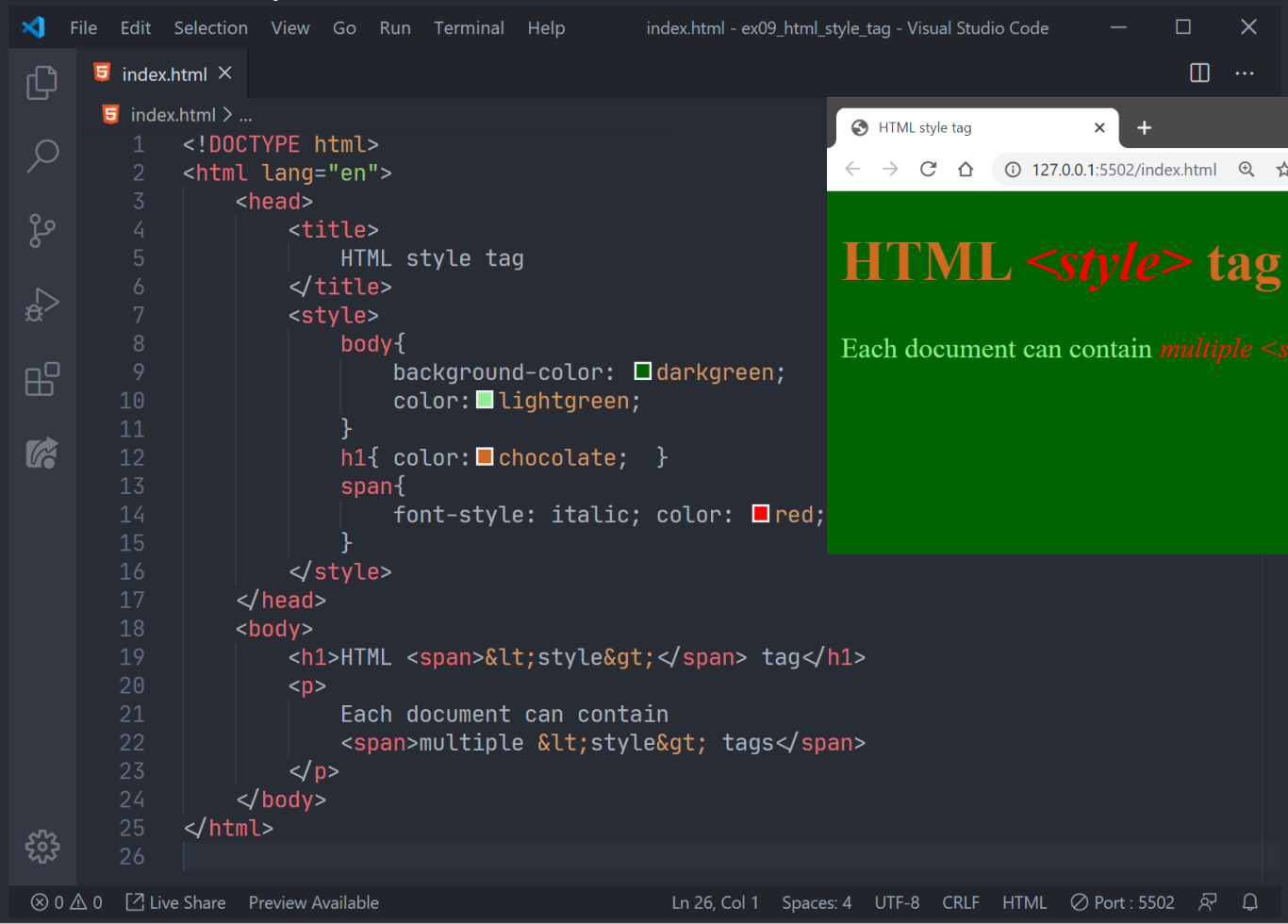
HTML Style Attribute

1) Create a new directory (folder), "ex08_html_style_attribute"
2) Run the VSCode and open the created directory
3) Create a webpage file, "index.html" and add the lines of code
4) Save the file, run the "Live Server" and check the result in the web browser



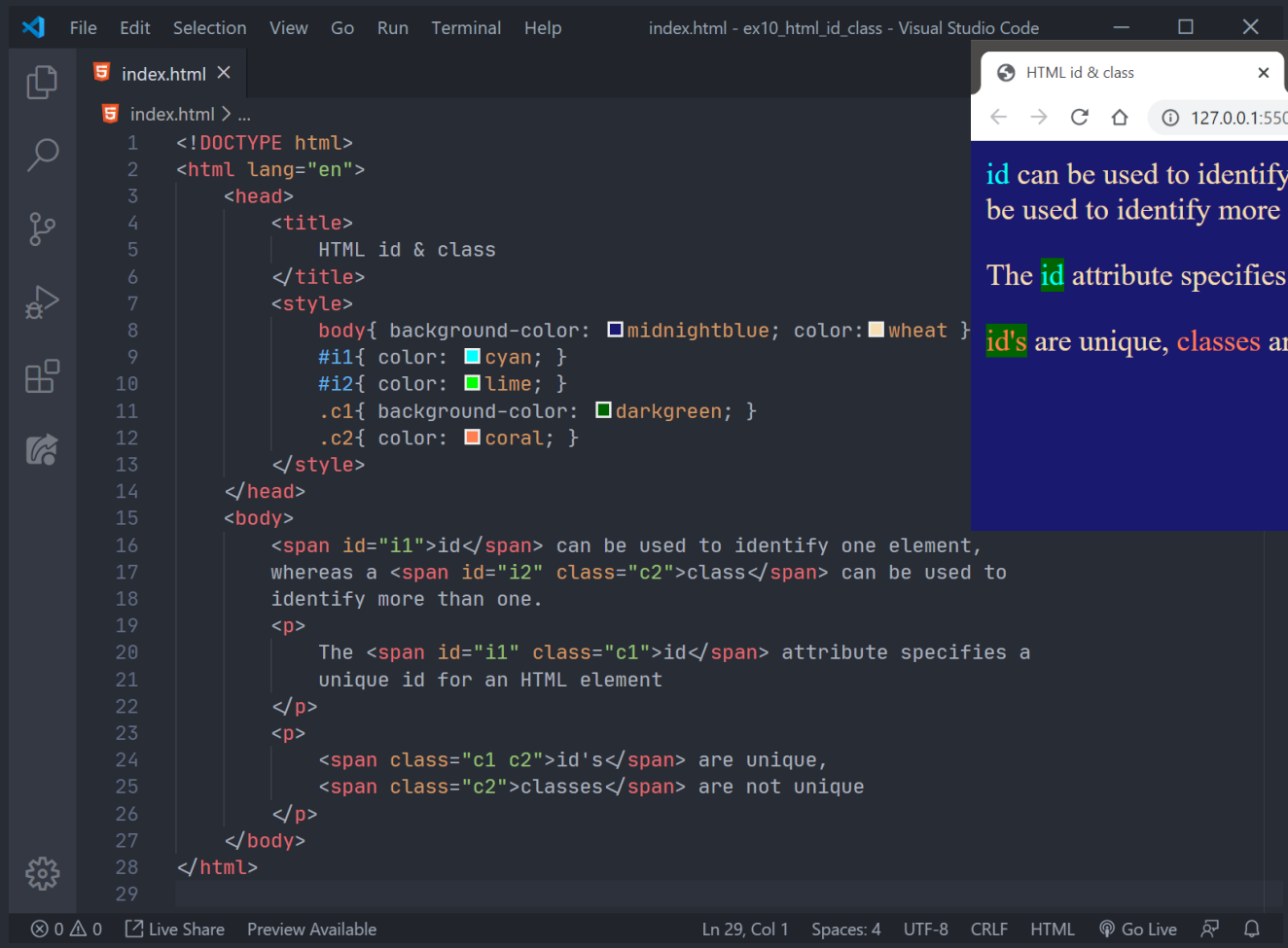
HTML <style> tag

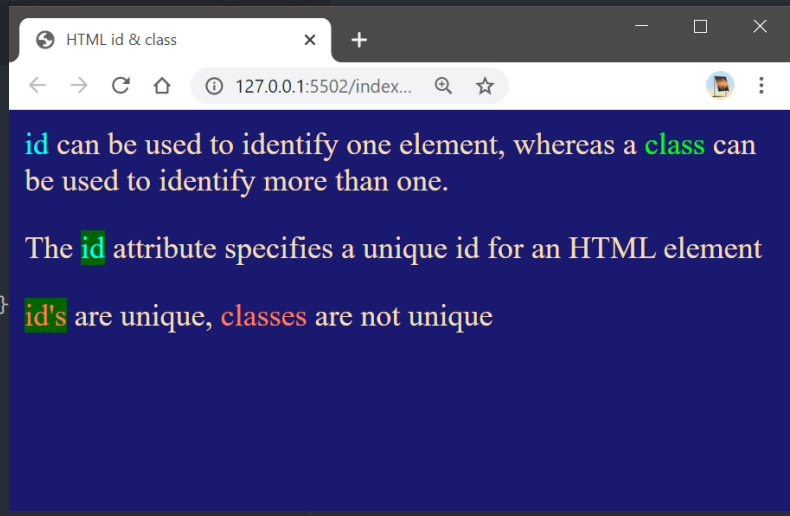
1) Create a new directory (folder), "ex09_html_style_tag"
2) Run the VSCode and open the created directory
3) Create a webpage file, "index.html" and add the lines of code
4) Save the file, run the "Live Server" and check the result in the web browser

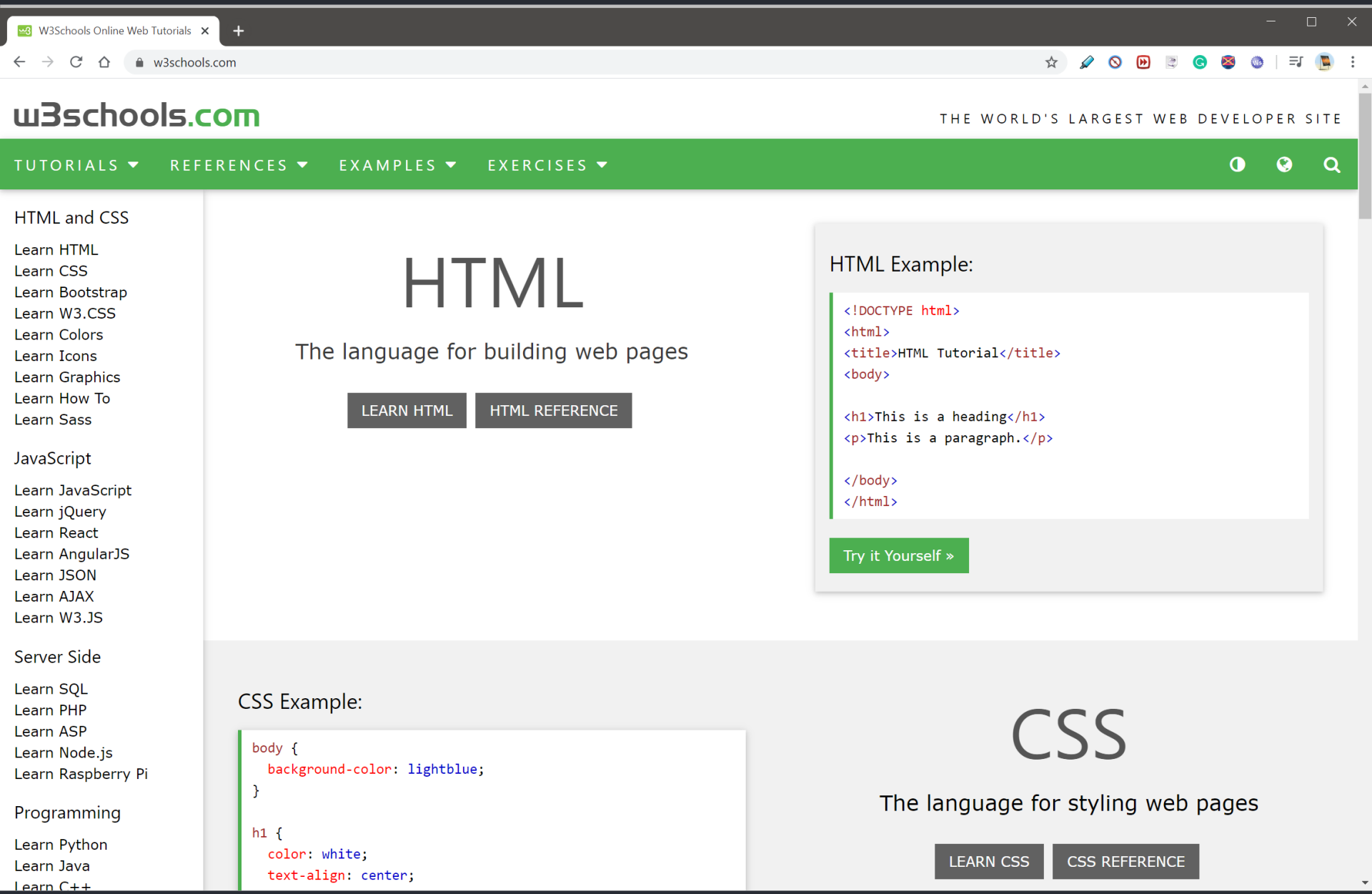


HTML id and class

1) Create a new directory (folder), "ex10_html_id_class"
2) Run the VSCode and open the created directory
3) Create a webpage file, "index.html" and add the lines of code
4) Save the file, run the "Live Server" and check the result in the web browser



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TUTORIALS
REFERENCES
EXAMPLES
EXERCISES
HTML and CSS
Learn HTML
Learn CSS
Learn Bootstrap
Learn W3.CSS
Learn Colors
Learn Icons
Learn Graphics
Learn How To
Learn Sass
JavaScript
Learn JavaScript
Learn jQuery
Learn React
Learn AngularJS
Learn JSON
Learn AJAX
Learn W3.JS
Server Side
Learn SQL
Learn PHP
Learn ASP
Learn Node.js
Learn Raspberry Pi
Programming
Learn Python
Learn Java
Learn C++
HTML
The language for building web pages
LEARN HTML
HTML REFERENCE
HTML Example:
<!DOCTYPE html>
<html>
<title>HTML Tutorial</title>
<body>
<h1>This is a heading</h1>
This is a paragraph.
</body>
</html>
Try it Yourself »
CSS Example:
body {
background-color: lightblue;
}
h1 {
color: white;
text-align: center;
CSS
The language for styling web pages
LEARN CSS
CSS REFERENCE

THANK YOU!

ECC

KMUTT INC

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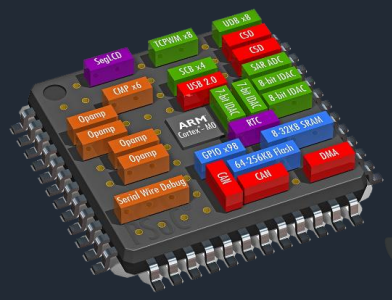

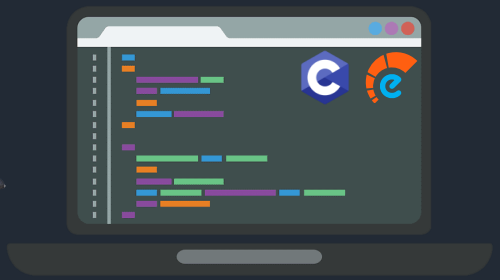

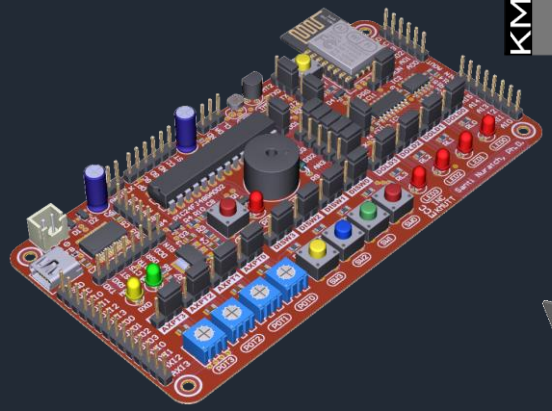

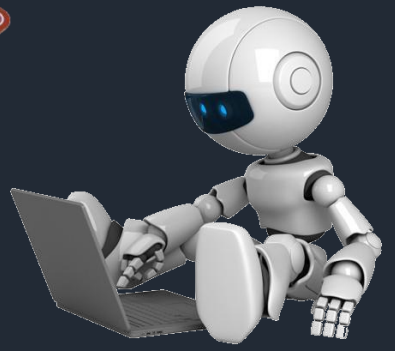

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King Mongkut's University of Technology Thonburi, **KMUTT**