Lecture Exercise 3 (4/18)

Submit your team number

Question *Submitted Apr 18th 2023 at 4:57:34 pm*

Please enter your team number.

12

1. Import D3.js it to your html document (create one as “exercise3.html”)

In this lecture exercise, we will help you to get familar with D3.js, a powerful JavaScript library for **data visualization.**

First of all, create your HTML document and name it as "**exercise3.html**". Make sure your HTML file has `<head>` and `<body>` tags.

We will be using D3 v7 for this class. Add D3 into the `<head>` of your HTML by including this line of code

```
<script src="https://d3js.org/d3.v7.min.js"></script>
```

Question *Submitted Apr 18th 2023 at 4:59:21 pm*

I have created my "**exercise3.html**" and import D3 v7 to my HTML.

- (●) True
- ( ) False

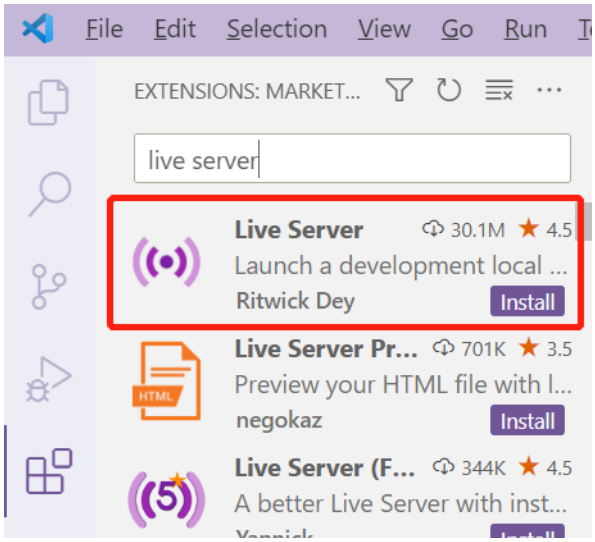
2. (Refresher) Render your HTML document through a web server

If you already know how to use **Run and Debug** button on VS Code, you can skip this slide!

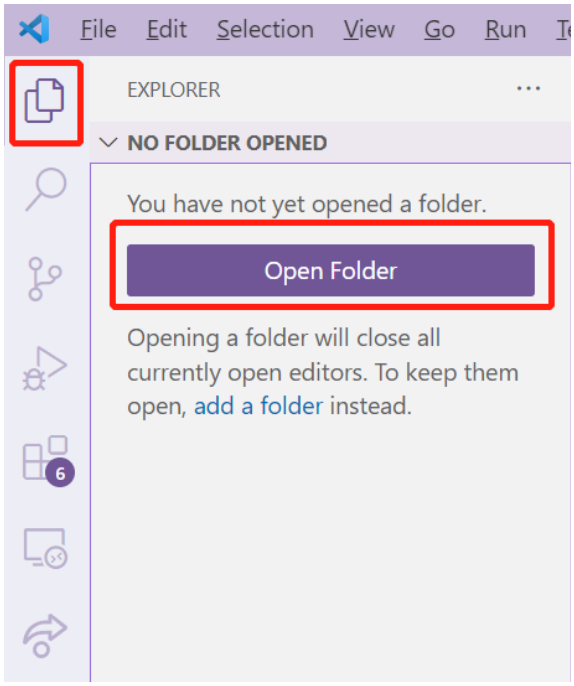
Just running the html might pop up an error. You need to start a server to be able to read local files. There are **two** ways you can get a server running .

Wait, but why do I need to load my html through a Server? When the document includes Javascript code or other data like 'csv's, web browsers may prevent loading the document. It is for safety purposes, as this html file was never approved by any web-publisher. To avoid such a problem, it's conventional to render your html document through a *mock* web server, often called as a local server which asks your computer to *pretend* to be a server for your html.

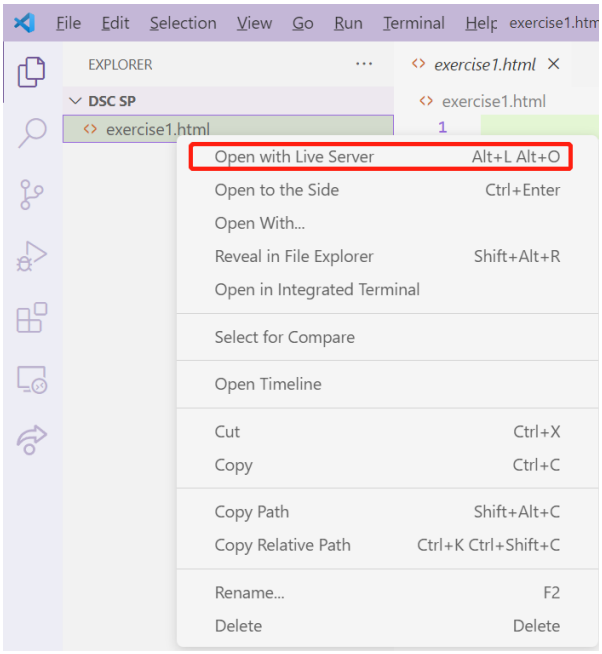
1. **VSCode (recommended)**
    - Install "Live Server" extension



    - Open the **folder** with your saved HTML file



- Right click on .html file in the **Explorer** and select open with live server



2. **Terminal (a more general but complex method)**
    1. Open your terminal (if you have Anaconda installed, you can use Anaconda prompt)
    2. Navigate to the directory which has your .html file
    3. Run the following command:

    ```
    python3 -m http.server 8888 &.
    ```

    4. The following variation also works (depending on what version of python you have). You can also change the port number to be 8000, if the port 8888 is already assigned for other courses.

```
python -m http.server 8888 &.
```

5. Open http://localhost:8888/ on your web browser

3. Edit exercise3.html using D3 library methods

Question 1 *Submitted Apr 18th 2023 at 5:00:18 pm*

Before we add some D3 code to exercise3.html, let's figure out what the method chain below does.

```
// adding a new "p" element using d3
d3.select("body").append("p").text("New <p> added on the HTML file");
```

What does the method above below do? Describe it in plain English.

You can refer to the "Fundamental Components of D3.js" and "DOM Manipulation with D3" section in this tutorial to look up the `append()` and `attr()` method.

The method selects the body tag and adds a `p` element at the bottom of the tree. In addition inside the `p` element, text is inserted .

Question 2 *Submitted Apr 18th 2023 at 5:06:04 pm*

On your exercise3.html, copy/paste the code in Question 1 inside a `<script>` block under <body>. If your code doesn't have one, feel free to create one.

Then modify the code above so that the generated `<p>` element has the **id of p1**. **Copy/paste your corresponding code below.**

```
d3.select("body").append("p").text("New <p> added on the HTML file").attr("id", "p1");
```

Question 3 *Submitted Apr 18th 2023 at 5:10:45 pm*

Draw at least **two** SVG shapes dynamically with D3 methods. You can start with the below lines of code. It creates a <svg>, a drawing canvas, with a specific width and height. You can add the shapes and styles according to your preference using D3.

```
let svg = d3.select("body").append("svg")
                .attr("width","500")
                .attr("height","500");
```

Copy/paste your corresponding code below.

```
svg.append("rect")
    .attr("width", "100")
    .attr("height", "200")
    .attr("style", "fill:rgb(0,255,0);")
svg.append("circle")
    .attr("cx", "100")
    .attr("cy", "100")
    .attr("r", "50")
    .attr("style", "fill:rgb(255,255,0);")
```

Question 4 *Submitted Apr 18th 2023 at 5:13:48 pm*

Add the block of code below in <script> under <body>. This draws two circles on your <svg>.

```
svg.append("circle")
            .attr("cx", 100)
            .attr("cy", 100)
            .attr("r", 50)
            .attr("fill", "green")
            .attr("id", "greencircle");

        svg.append("circle")
            .attr("cx", 300)
            .attr("cy", 300)
            .attr("r", 80)
            .attr("fill", "blue")
            .attr("id", "bluecircle");
```

Write D3 code which draws a 5px wide orange borderline around the blue circle. Copy/paste the code as your answer.

i The tutorial of <circle> lists the relevant attributes.

```
svg.append("circle")
            .attr("cx", 300)
            .attr("cy", 300)
            .attr("r", 80)
            .attr("fill", "blue")
            .attr("id", "bluecircle")
            .attr("stroke", "orange")
            .attr("stroke-width", "5");
```

Question 5 *Submitted Apr 18th 2023 at 5:16:07 pm*

Add the block of code below in <script> under <body>. This draws two circles on your <svg>.

```
svg.append("circle")
```

```
            .attr("cx", 100)
            .attr("cy", 100)
            .attr("r", 50)
            .attr("fill", "green")
            .attr("id", "greencircle");

        svg.append("circle")
            .attr("cx", 300)
            .attr("cy", 300)
            .attr("r", 80)
            .attr("fill", "blue")
            .attr("id", "bluecircle");
```

Write D3 code which sets the opacity of both circles to 0.5, at once. Copy/paste the code as your answer.

```
d3.selectAll("circle").attr("opacity", "0.5")
```

4. More Exercises on Selection

Question 1 *Submitted Apr 18th 2023 at 5:33:29 pm*

On top of the current exercise3.html, append the code snippet below in <script> under <body>.

```
const arr = [50, 40, 30, 20, 10];

// selection of <p>s in the current document
let ps = d3.select("body").selectAll("p").data(arr);
```

How many data items will the "update", "enter", and "exit" selection have respectively?

0, 5, 0 respectively

Question 2 *Submitted Apr 18th 2023 at 5:34:55 pm*

Write the code that removes the existing <p> from the current html. Refer to this link.

```
document.getElementById("p1").remove()
```

Question 3 *Submitted Apr 18th 2023 at 5:37:29 pm*

Now you actually have lost your selection information!

Let's redefine the selection then copy/paste the following code block:

```
ps = d3.select("body").selectAll("p").data(arr);
ps.enter().append("p").text(d=> "the number is " + d);
```

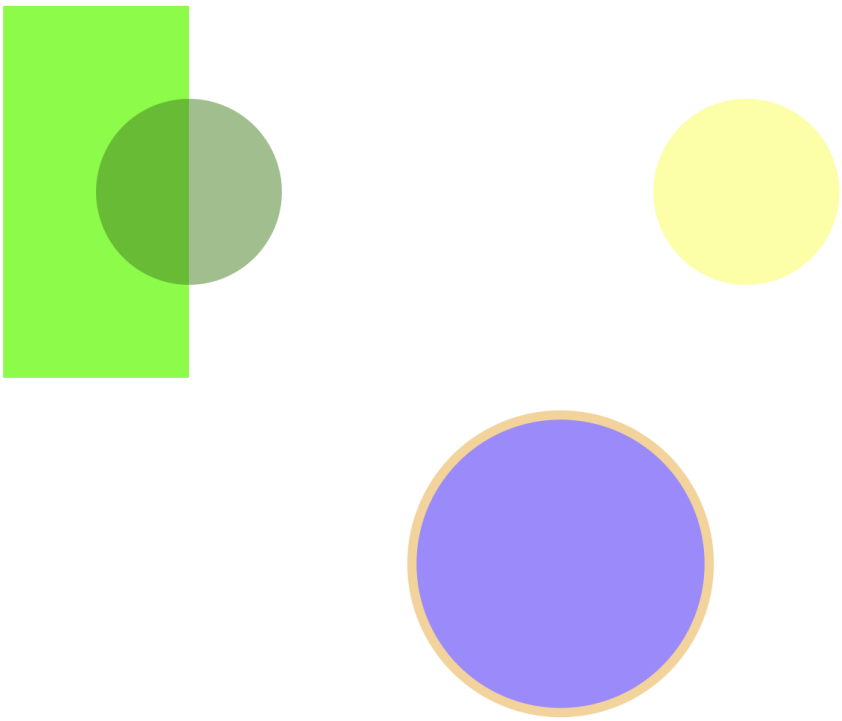
Briefly describe what happened on the resulting html.

The code block above creates a p element for each of the items in the data array and also includes the number data.

Upload Your Files

Question 1 *Submitted Apr 18th 2023 at 5:37:51 pm*

Upload the screenshot of your resulting webpage. You will need to click the "image" button to upload a file into the Answer box.



the number is 50

the number is 40

the number is 30

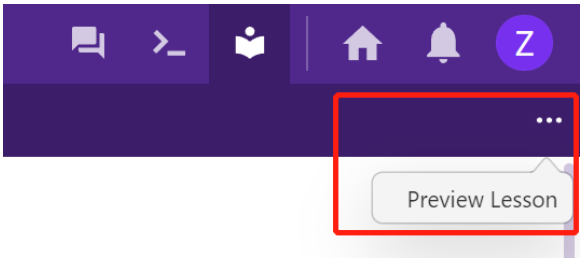
the number is 20

the number is 10

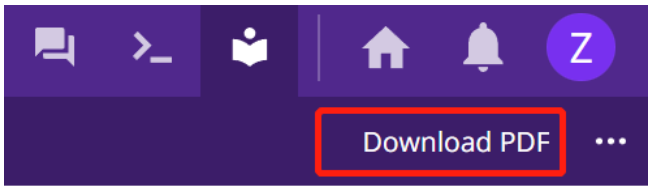
Question 2 *Submitted Apr 18th 2023 at 5:37:57 pm*

You need to download the PDF of lecture exercise 3 and upload it with other files to the Gradescope. Follow the instructions on how to download PDF file:

1. Click on the ellipsis button and the Preview Lesson.



2. After that, click on the Download PDF button.



- (●) PDF downloaded!
- ( ) Haven't done yet!

Question 3 *Submitted Apr 18th 2023 at 5:37:59 pm*

Upload the following files to Gradescope. You need to make **a group submission,adding all present members in your team**, so that the present members get the participation credit.

Files to upload:

- exercise3.html
- PDF you downloaded as Q2

- (●) Our team uploaded the the files on gradescope!
- ( ) Oops, our team did not upload the files on gradescope!

Feedback

Question

Was the activity today clear? If not, please share how the course can improve it. Your comments will help us design future lab content (and also future students).

No response