

Lab 8

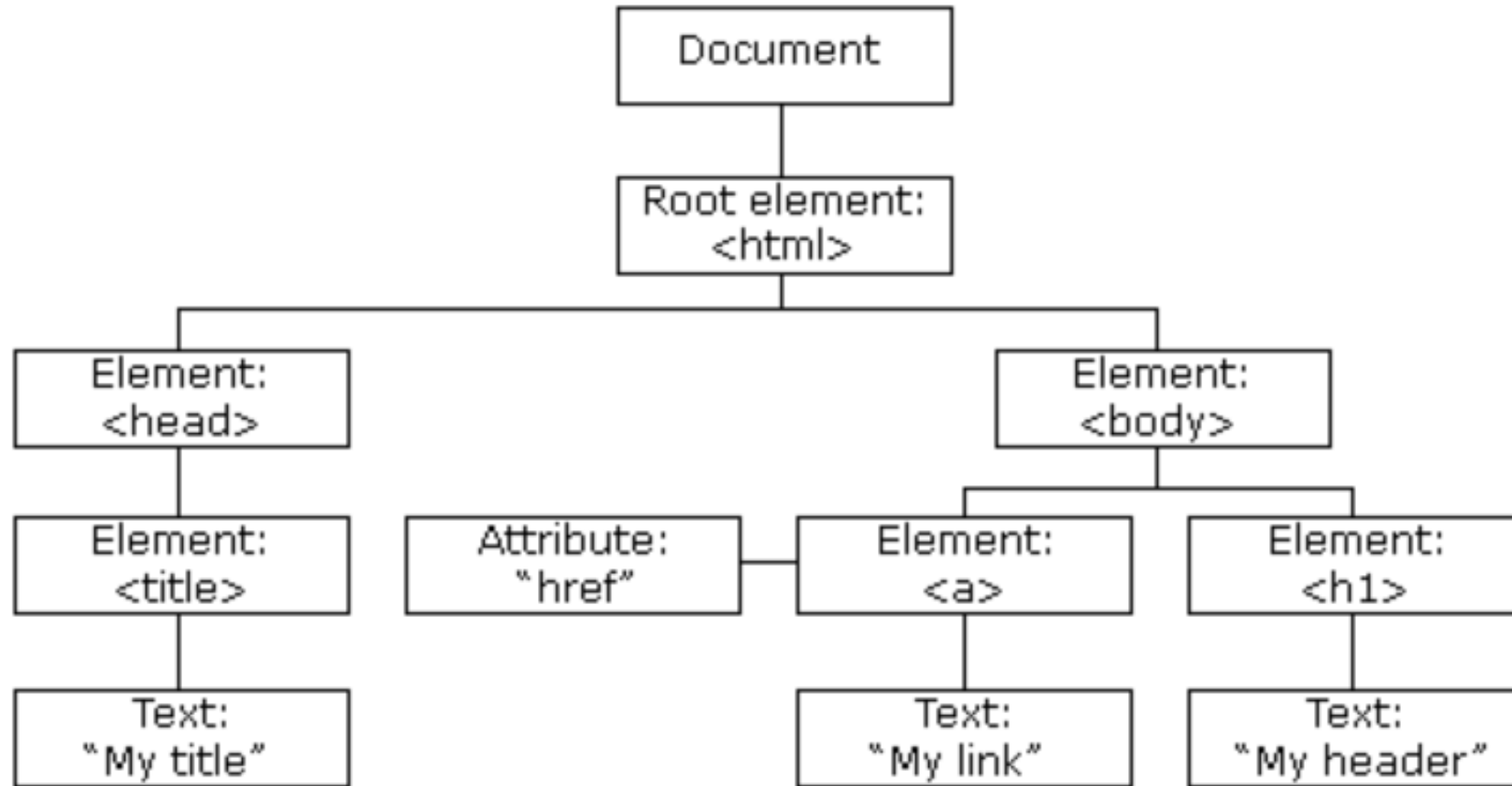
web 2

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DOM (Document Object Model)



getElementById()

```
<> domlab.html > html > body > button
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <meta charset="UTF-8">
5      <meta name="viewport" content="width=device-width, initial-scale=1.0">
6      <title>Document</title>
7      <script>
8          function myFunction() {
9              document.getElementById("demo").innerHTML = "Paragraph changed.";
10         }
11     </script>
12
13 </head>
14 <body>
15     <h2>Demo JavaScript in Head</h2>
16     <p id="demo">A Paragraph</p>
17     <button onclick="myFunction()">Try it</button>
18
19 </body>
20 </html>
```

Demo JavaScript in Head

A Paragraph

Try it

Demo JavaScript in Head

Paragraph changed.

Try it

getElementById()

```
<> domlab.html > html > body > script > myFunction
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <meta charset="UTF-8">
5      <meta name="viewport" content="width=device-width, initial-scale=1.0">
6      <title>Document</title>
7
8
9  </head>
10 <body>
11     <h2>Demo JavaScript in Body</h2>
12     <p id="demo">A Paragraph</p>
13     <button onclick="myFunction()">Try it</button>
14     <script>
15         function myFunction() {
16             document.getElementById("demo").innerHTML = "Paragraph changed.";
17         }
18     </script>
19
20 </body>
21 </html>
```

Demo JavaScript in Body

A Paragraph

Try it

Demo JavaScript in Body

Paragraph changed.

Try it

JavaScript Display Possibilities

JavaScript can "display" data in different ways:

- ❑ Writing into an HTML element, **using `innerHTML`**.
- ❑ Writing into the HTML output using **`document.write()`**.
- ❑ Writing into an alert box, using **`window.alert()`**.
- ❑ Writing into the browser console, using **`console.log()`**.

innerHTML

<> domlab.html > ...

```
1  <!DOCTYPE html>
2  <html>
3  <body>
4      <h1>My First Web Page</h1>
5      <p>My First Paragraph</p>
6      <p id="demo"></p>
7
8      <script>
9          document.getElementById("demo").innerHTML = 5 + 6;
10     </script>
11 </body>
12 </html>
13
```

My First Web Page

My First Paragraph

11

document.write()

```
<> domlab.html > ...
1  <!DOCTYPE html>
2  <html>
3  <body>
4      <h1>My First Web Page</h1>
5      <p>My first paragraph.</p>
6
7      <script>
8          document.write(5 + 6);
9      </script>
10 </body>
11 </html>
12
```

My First Web Page

My first paragraph.

11

document.write().

<> domlab.html > ...

```
1  <!DOCTYPE html>
2  <html>
3  <body>
4
5  <h1>My First Web Page</h1>
6  <p>My first paragraph.</p>
7
8  <button onclick="document.write(5 + 6)">Try it</button>
9
10 </body>
11 </html>
12
```

My First Web Page

My first paragraph.

Try it

11

document.write()

<> domlab.html > ...

1 <!DOCTYPE html>

2 <html>

3 <body>

4

5 <script src="main.js"></script>

6

7 </body>

8 </html>

9

JS main.js

1 document.write("<h1>Hello Page</h1>");

2

Hello Page

window.alert()

```
<> domlab.html > ...
1  <!DOCTYPE html>
2  <html>
3  <body>
4
5  <h1>My First Web Page</h1>
6  <p>My first paragraph.</p>
7
8  <script>
9  window.alert(5 + 6);
10 </script>
11
12 </body>
13 </html>
14
```

This page says

11

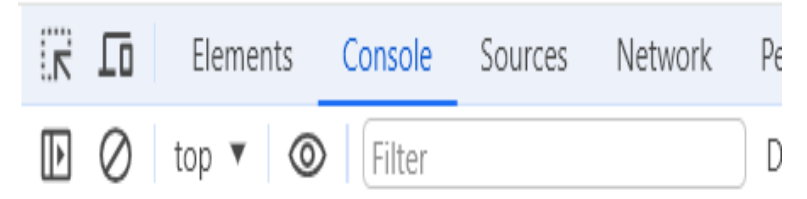
OK

My First Web Page

My first paragraph.

Console.log()

```
<> domlab.html > html > body
1  <!DOCTYPE html>
2  <html>
3  <body>
4
5  <h1>My First Web Page</h1>
6  <p>My first paragraph.</p>
7
8  <script>
9      console.log(5 + 6);
10 </script>
11
12
13
14 </body>
15 </html>
16
```



11

>

Window.print()

<> domlab.html > html > body

```
1  <!DOCTYPE html>
2  <html>
3  <body>
4
5  <h1>My First Web Page</h1>
6  <p>My first paragraph.</p>
7  <button onclick="window.print()">Print this page</button>
8
9  </body>
10 </html>
11
```

My First Web Page

My first paragraph.

Print this page

4/28/2024, 2:27 PM

My First Web Page

My first paragraph.

Print this page

domlab.html

Print

1 sheet of paper

Destination

Microsoft Print to PDF

Pages

All

Layout

Portrait

Color

Color

More settings

Print

Cancel

DOM

Document Object Model.

The HTML DOM is a standard object model and programming interface for HTML. It defines:

- ❑ The **HTML elements** as **objects**
- ❑ The **properties** of all HTML elements
- ❑ The **methods** to access all HTML elements
- ❑ The **events** for all HTML elements

In other words: The HTML DOM is a standard for how to get, change, add, or delete HTML elements.

<> domlab.html > ...

1<!DOCTYPE html>

2<html>

3<head>

4<title>Learn Javascript</title>

5</head>

6<body>

7My span

8<p>Hello paragraph 1</p>

9<p>Hello paragraph 2</p>

10<div id="my-div">Hello div</div>

11<form action="">

12<input type="text" name="one" value="Hello">

13</form>

14<form action="">

15<input type="text" name="two" value="Hello">

16</form>

17Google

18Facebook

19<script src="main.js"></script>

20</body>

21</html>

22

My span

Hello paragraph 1

Hello paragraph 2

Hello div

Hello

Hello

GoogleFacebook

ElementsConsoleSourcesNe

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<div id="my-div">Hello div</div>

>

JS main.js > ...

1let myIdElement = document.getElementById("my-div");

2

3console.log(myIdElement);

4

<> domlab.html > ...

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title>Learn Javascript</title>
5    </head>
6    <body>
7      <span class="my-span">My span</span>
8      <p>Hello paragraph 1</p>
9      <p>Hello paragraph 2</p>
10     <div id="my-div">Hello div</div>
11     <form action="">
12       <input type="text" name="one" value="Hello">
13     </form>
14     <form action="">
15       <input type="text" name="two" value="Hello">
16     </form>
17     <a href="https://google.com">Google</a>
18     <a href="https://facebook.com">Facebook</a>
19     <script src="main.js"></script>
20   </body>
21 </html>
22
```

JS main.js > ...

```
1  let myIdElement = document.getElementById("my-div");
2  let myTagElement = document.getElementsByTagName("p");
3
4  console.log(myIdElement);
5  console.log(myTagElement);
6
```



Elements

Console

Sources



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Filter

<div id="my-div">Hello div</div>

▼ HTMLCollection(2) [p, p] ⓘ

▶ 0: p

▶ 1: p

length: 2

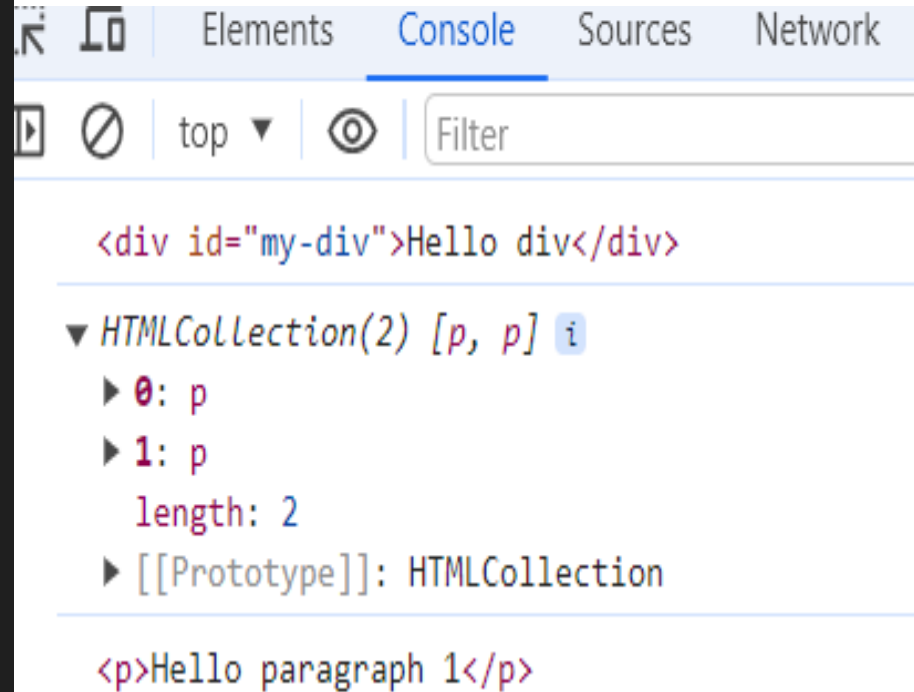
▶ [[Prototype]]: HTMLCollection



myTagElement[0]

JS main.js > ...

```
1 let myIdElement = document.getElementById("my-div");
2 let myTagElement = document.getElementsByTagName("p");
3
4 console.log(myIdElement);
5 console.log(myTagElement);
6 console.log(myTagElement[0]);
7
```



The screenshot shows a web browser's developer console with the 'Console' tab selected. The console displays the output of the JavaScript code: a div element with id 'my-div' containing the text 'Hello div', followed by an HTMLCollection of 2 paragraph elements. The first element of the collection is expanded, showing it is a paragraph element containing the text 'Hello paragraph 1'.

Elements Console Sources Network

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<div id="my-div">Hello div</div>

▼ HTMLCollection(2) [p, p] i

- ▶ 0: p
- ▶ 1: p
- length: 2
- ▶ [[Prototype]]: HTMLCollection

<p>Hello paragraph 1</p>

JS main.js > ...

```
1 let myIdElement = document.getElementById("my-div");
2 let myTagElement = document.getElementsByTagName("p");
3
4 console.log(myIdElement);
5 console.log(myTagElement);
6 console.log(myTagElement[0]);
7 myTagElement[0].innerHTML="Test";
8
```

My span

Test

Hello paragraph 2

Hello div

Hello

Hello

[Google](#) [Facebook](#)

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<div id="my-div">Hello div</div>

▶ HTMLCollection(2) [p, p]

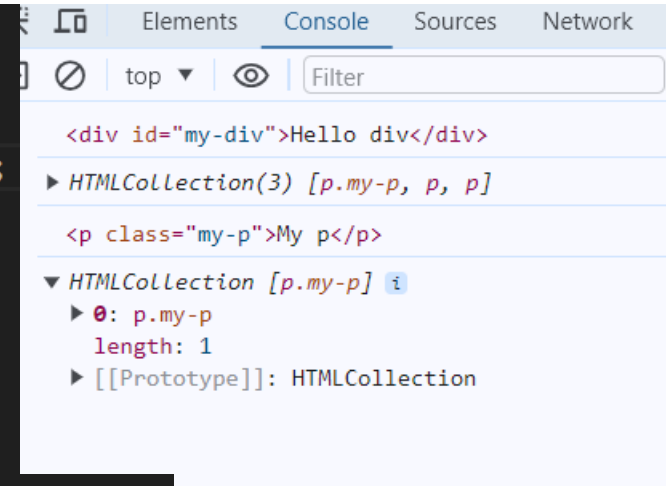
<p>Test</p>

>

getElementsByClassName

```
JS main.js > [🔗] myClassElement
1 let myIdElement = document.getElementById("my-div");
2 let myTagElement = document.getElementsByTagName("p");
3 let myClassElement = document.getElementsByClassName("my-p");
4
5 console.log(myIdElement);
6 console.log(myTagElement);
7 console.log(myTagElement[0]);
8 console.log(myClassElement);
9
```

```
<!DOCTYPE html>
<html>
  <head>
    <title>Learn Javascript</title>
  </head>
  <body>
    <p class="my-p">My p</p>
    <p>Hello paragraph 1</p>
    <p>Hello paragraph 2</p>
```



Elements Console Sources Network

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<div id="my-div">Hello div</div>

▶ HTMLCollection(3) [p.my-p, p, p]


<p class="my-p">My p</p>

▼ HTMLCollection [p.my-p] ⓘ

- ▶ 0: p.my-p
- length: 1
- ▶ [[Prototype]]: HTMLCollection

querySelector()

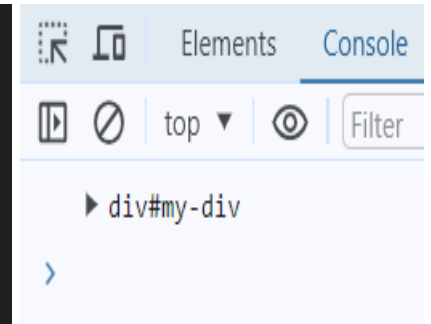
```
1  <!DOCTYPE html>
2  <html>
3  |   <head>
4  | |   <title>Learn Javascript</title>
5  | |   </head>
6  | |   <body>
7  | | |   <span class="special">My span</span>
JS main.js > ...
1
2  let myQueryElement = document.querySelector(".special");
3
4  console.log(myQueryElement);
5
```



The screenshot shows a web browser's developer console with the 'Console' tab selected. The console displays the HTML structure of a page, including a title 'Learn Javascript' and a span element with the class 'special' containing the text 'My span'. The span element is highlighted in the console output.

querySelector()

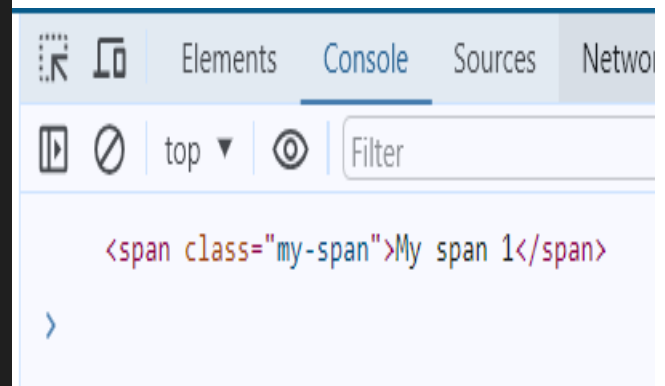
```
<> domlab.html > html > body
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title>Learn Javascript</title>
5      </head>
6      <body>
7          <div id="my-div">Hello div</div>
8
JS main.js > ...
1  let myQueryElement = document.querySelector("#my-div");
2
3  console.log(myQueryElement);
4
```



querySelector()

```
<head>
  <title>Learn Javascript</title>
</head>
<body>
  <span class="my-span">My span 1</span>

```



JS main.js > ...

```
1 let myQueryElement = document.querySelector(".my-span");
2
3 console.log(myQueryElement);
4
```

```
<> domlab.html > html > body
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title>Learn Javascript</title>
5    </head>
6    <body>
7      <span class="my-span special">My span 1</span>
8      <span class="my-span">My span 2</span>
9
10     <script src="main.js"></script>
11   </body>
12 </html>
13
```

```
▼ NodeList(2) [span.my-span.special, span.my-span] ⓘ
  ▶ 0: span.my-span.special
  ▶ 1: span.my-span
    length: 2
  ▶ [[Prototype]]: NodeList
```

```
JS main.js > ...
```

```
1  let myQueryElement = document.querySelectorAll(".my-span");
2
3  console.log(myQueryElement);
4
```

Find Element By Collection

➤ **Title**

➤ **Body**

➤ **Images**

➤ **Forms**

➤ **Links**

Title

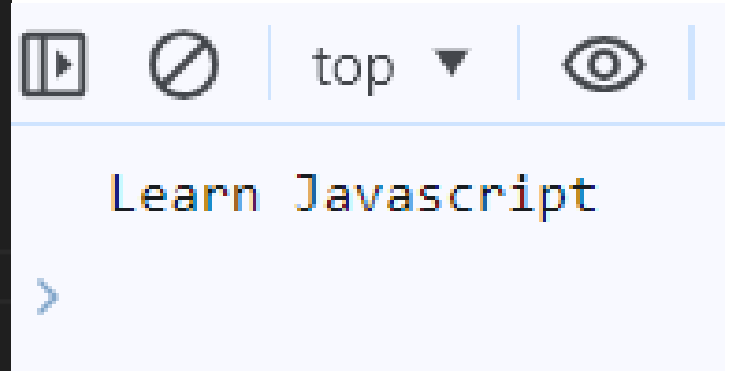
<> domlab.html > html > head

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title>Learn Javascript</title>
5
6    </head>
7    <body>
8      <span class="my-span special">My span 1</span>
9      <span class="my-span">My span 2</span>
10
11      <script src="main.js"></script>
12    </body>
13  </html>
```

JS main.js

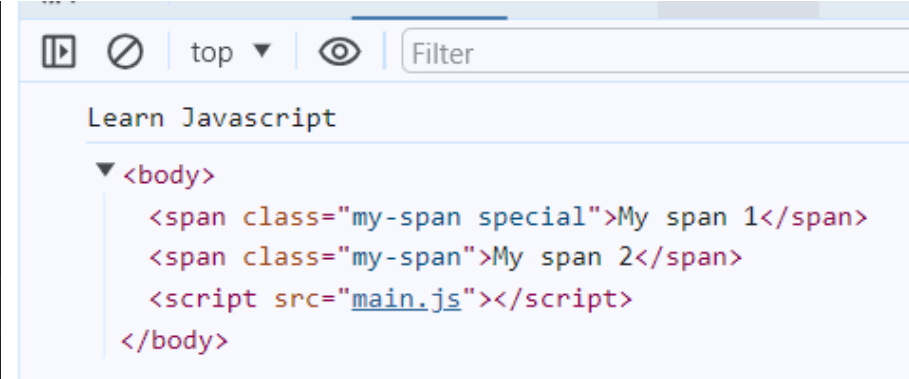
```
1  console.log(document.title);
```

```
2
```



body

```
<> domlab.html > html > head
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title>Learn Javascript</title>
5    </head>
6    <body>
7      <span class="my-span special">My span 1</span>
8      <span class="my-span">My span 2</span>
9
10     <script src="main.js"></script>
11   </body>
12 </html>
13
JS main.js
1  console.log(document.title);
2  console.log(document.body);
3
```



```

<> domlab.html > ...
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title>Learn Javascript</title>
5      </head>
6      <body>
7          <span class="my-span special">My span 1</span>
8          <span class="my-span">My span 2</span>
9          <p>Hello paragraph 1</p>
10         <p>Hello paragraph 2</p>
11         <div id="my-div">Hello div</div>
12         <form action="">
13             <input type="text" name="one" value="Hello">
14         </form>
15         <form action="">
16             <input type="text" name="two" value="Hello">
17         </form>
18         <a href="https://google.com">Google</a>
19         <a href="https://facebook.com">Facebook</a>
20         <script src="main.js"></script>
21     </body>
22 </html>
23

```

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Learn Javascript

```

<body>
  <span class="my-span special">My span 1</span>
  <span class="my-span">My span 2</span>
  <p>Hello paragraph 1</p>
  <p>Hello paragraph 2</p>
  <div id="my-div">Hello div</div>
  <form action=""></form>
  <form action=""></form>
  <a href="https://google.com">Google</a>
  <a href="https://facebook.com">Facebook</a>
  <script src="main.js"></script>
</body>

```

HTMLCollection(2) [form, form] i

- 0: form
- 1: form
- length: 2
- [[Prototype]]: HTMLCollection

Hello

HTMLCollection(2) [a, a] i

- 0: a
- 1: a
- length: 2
- [[Prototype]]: HTMLCollection

<https://google.com/>

>

JS main.js

```

1  console.log(document.title);
2  console.log(document.body);
3  console.log(document.forms);
4  console.log(document.forms[0].one.value);
5  console.log(document.links);
6  console.log(document.links[0].href);
7

```

Try

- Try to create a div with id =“div_1” and change the div content by using JS.
- Print div content in console.