JAVASCRIPT ASSIGNMENT – 3

1.) Write a function that prints the multiplication table for a given number up to 10.

```
14  // 1.) Write a function that prints the multiplication table for a given number up to 10.
15  function multiplicationTable(num){
16      for(let i=1; i<=10; i++){
17          console.log(`${num} * ${i} = ${num*i}`);
18      }
19  }
20
21  multiplicationTable(9);
```

```
PROBLEMS  OUTPUT  TERMINAL  PORTS  DEBUG CONSOLE

PS D:\AchieversIT-JFS\AIT_B_UIR_10-7-2024\Assignments\9-9-24\JS> node .\script.js
9 * 1 = 9
9 * 2 = 18
9 * 3 = 27
9 * 4 = 36
9 * 5 = 45
9 * 6 = 54
9 * 7 = 63
9 * 8 = 72
9 * 9 = 81
9 * 10 = 90
```

2.) Write a function to reverse an array without using the built-in reverse method.

```
12  // 2.) Write a function to reverse an array without using the built-in reverse method.
13
14  function revArr(arr){
15      let newArr = [];
16      for(let i=arr.length-1; i>=0; i--){
17          newArr.push(arr[i]);
18      }
19      console.log(newArr);
20  }
21
22  let arr = [1,2,3,4,5];
23  revArr(arr);
```

```
PROBLEMS  OUTPUT  TERMINAL  PORTS  DEBUG CONSOLE

PS D:\AchieversIT-JFS\AIT_B_UIR_10-7-2024\Assignments\9-9-24\JS> node .\script.js
[ 5, 4, 3, 2, 1 ]
```

3.) Write a function that prints all prime numbers up to a given number N.

```
28  function prime(num){
29      let prime = [];
30      if(num == 0 || num == 1) {
31          console.log(null);
32          return;
33      }
34      for(let i=2; i<=num; i++){
35          let flag = true;
36          for( let j=2; j<+(i/2)+1; j++){
37              if(i%j == 0){
38                  flag = false;
39                  break;
40              }
41          }
42          if(flag) prime.push(i);
43      }
44      console.log(prime);
45
46  }
47  prime(99);
```

```
PROBLEMS   OUTPUT   TERMINAL   PORTS   DEBUG CONSOLE

PS D:\AchieversIT-JFS\AIT_B_UIR_10-7-2024\Assignments\9-9-24\JS> node .\script.js
[
   2,  3,  5,  7, 11, 13, 17, 19,
  23, 29, 31, 37, 41, 43, 47, 53,
  59, 61, 67, 71, 73, 79, 83, 89,
  97
]
```

4.) Write a function to calculate the factorial of a given number using a loop.

```
52  function factorial(num){
53      let itr = num;
54      while(itr>1){
55          itr--;
56          num *= itr;
57      }
58      return num;
59  }
60
61  console.log(factorial(6));
62  console.log(factorial(10));
```

```
PROBLEMS   OUTPUT   TERMINAL   PORTS   DEBUG CONSOLE

PS D:\AchieversIT-JFS\AIT_B_UIR_10-7-2024\Assignments\9-9-24\JS> node .\script.js
720
3628800
```

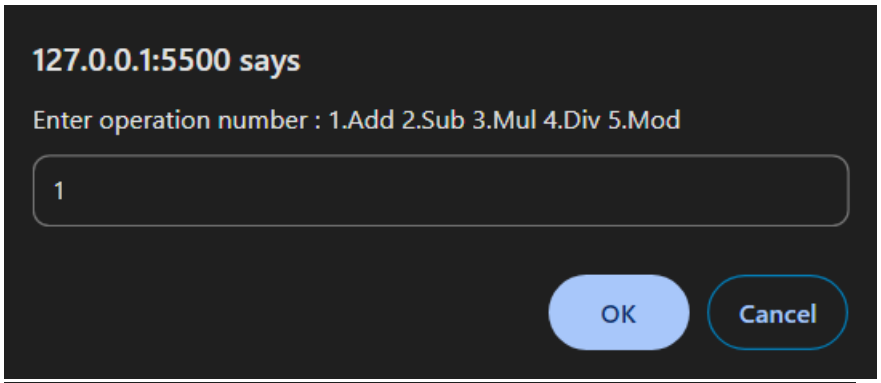
5.) Write a function that prints numbers from 1 to 100. For multiples of 3, print "Fizz", for multiples of 5 print "Buzz", and for multiples of both 3 and 5, print "FizzBuzz".

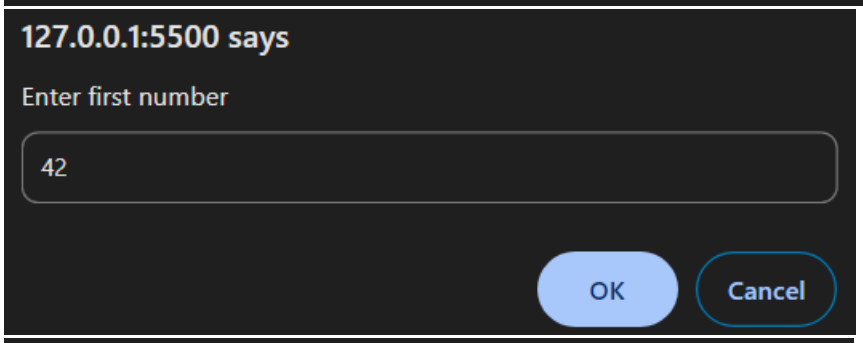
```
65  // 5.) Write a function that prints numbers from 1 to 100. For multiples of 3, print "Fizz",
66  // for multiples of 5 print "Buzz", and for multiples of both 3 and 5, print "FizzBuzz".
67
68  function print(){
69      let arr = [];
70      for(let i=1; i<=100; i++){
71          if(i%3==0 && i%5==0) arr.push('FizzBuzz');
72          else if(i%3 == 0) arr.push('Fizz');
73          else if(i%5 == 0) arr.push('Buzz');
74          else arr.push(i);
75      }
76      console.log(arr);
77  }
78
79  print();
```

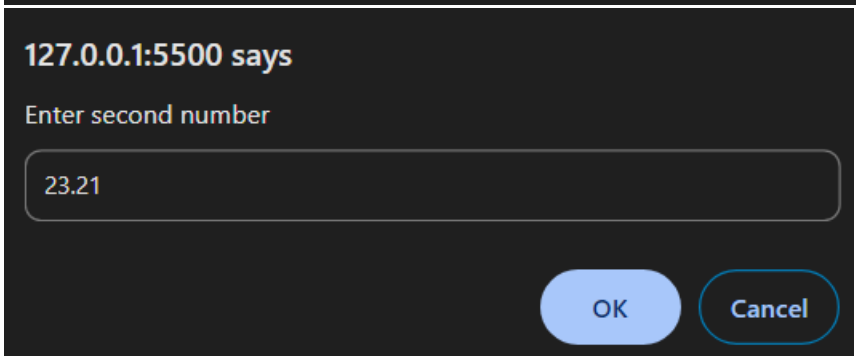
```
PROBLEMS  OUTPUT  TERMINAL  PORTS  DEBUG CONSOLE

PS D:\AchieversIT-JFS\AIT_B_UIR_10-7-2024\Assignments\9-9-24\JS> node .\script.js
[
  1,      2,      'Fizz',     4,      'Buzz', 'Fizz',
  7,      8,      'Fizz',     'Buzz', 11,     'Fizz',
  13,     14,     'FizzBuzz', 16,     17,     'Fizz',
  19,     'Buzz', 'Fizz',     22,     23,     'Fizz',
  'Buzz', 26,     'Fizz',     28,     29,     'FizzBuzz',
  31,     32,     'Fizz',     34,     'Buzz', 'Fizz',
  37,     38,     'Fizz',     'Buzz', 41,     'Fizz',
  43,     44,     'FizzBuzz', 46,     47,     'Fizz',
  49,     'Buzz', 'Fizz',     52,     53,     'Fizz',
  'Buzz', 56,     'Fizz',     58,     59,     'FizzBuzz',
  61,     62,     'Fizz',     64,     'Buzz', 'Fizz',
  67,     68,     'Fizz',     'Buzz', 71,     'Fizz',
  73,     74,     'FizzBuzz', 76,     77,     'Fizz',
  79,     'Buzz', 'Fizz',     82,     83,     'Fizz',
  'Buzz', 86,     'Fizz',     88,     89,     'FizzBuzz',
  91,     92,     'Fizz',     94,     'Buzz', 'Fizz',
  97,     98,     'Fizz',     'Buzz'
]
```

6.) Write a function that performs basic arithmetic operations (add, subtract, multiply, divide) based on user input.

```
function arith(){
    const operation = prompt('Enter operation number : 1.Add 2.Sub 3.Mul 4.Div 5.Mod');
    const num1 = +prompt('Enter first number');
    const num2 = +prompt('Enter second number');

    if(operation === '1') document.write(`<h1>Addition of ${num1} & ${num2} = ${num1 + num2}</h1>`);
    else if(operation === '2') document.write(`<h1>Subtraction of ${num1} & ${num2} = ${num1 - num2}</h1>`);
    else if(operation === '3') document.write(`<h1>Multiplication of ${num1} & ${num2} = ${num1 * num2}</h1>`);
    else if(operation === '4') document.write(`<h1>Division of ${num1} & ${num2} = ${num1 / num2}</h1>`);
    else if(operation === '5') document.write(`<h1>Modulus of ${num1} & ${num2} = ${num1 % num2}</h1>`);
    else document.write(`<h1>Invalid Input</h1>`);
}

arith();
```







Addition of 42 & 23.21 = 65.21000000000001

7.) Write a function to count the number of vowels in a given string

```
105  function countVowels(str){
106      str = str.toLowerCase();
107      let vowels = ['a', 'e', 'i', 'o', 'u'];
108      let count = 0;
109      for(let i=0 ; i<str.length; i++){
110          for (vowel of vowels){
111              if(vowel === str[i]) count+=1;
112          }
113      }
114      console.log('Number of vowels = ',count);
115  }
116
117  countVowels('Welcome to Javascript');
```

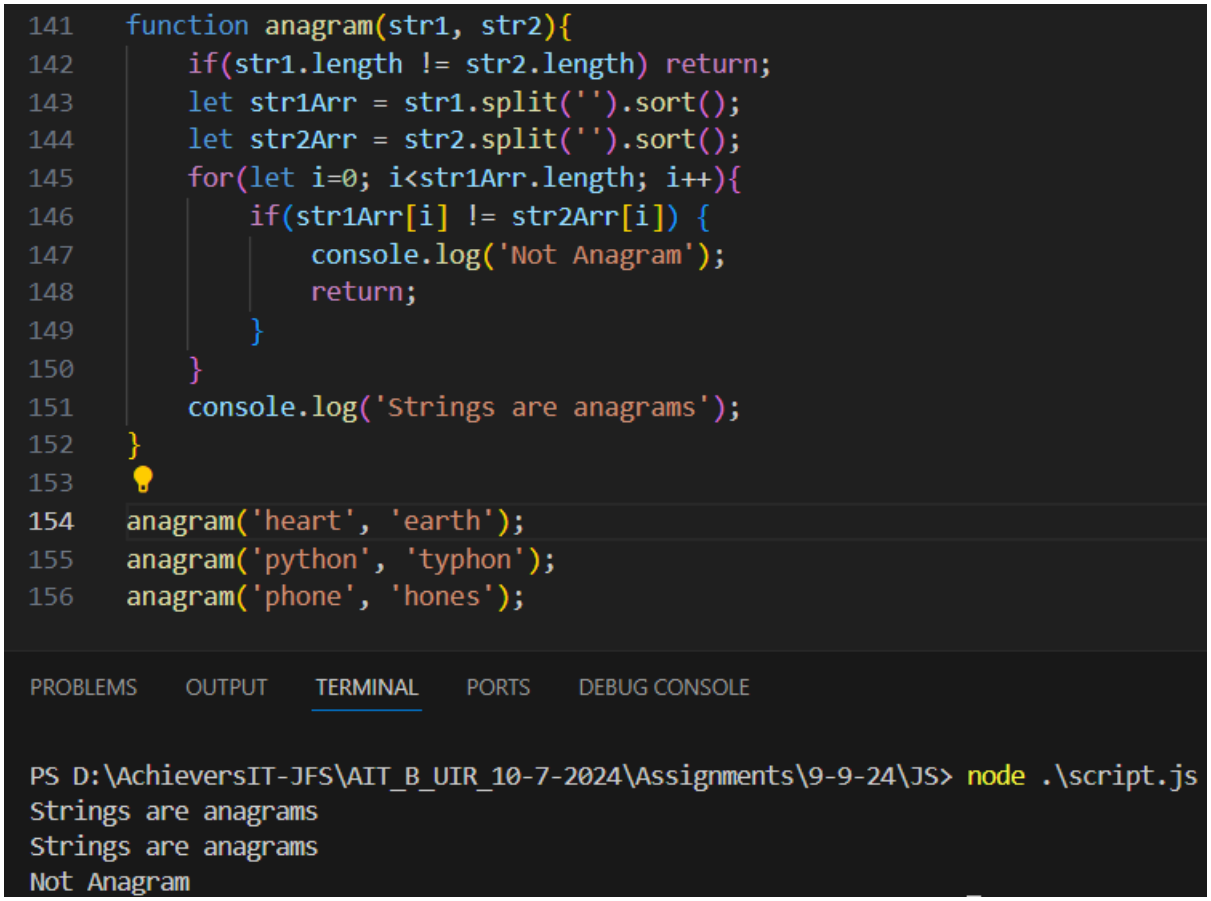
```
PROBLEMS  OUTPUT  TERMINAL  PORTS  DEBUG CONSOLE

PS D:\AchieversIT-JFS\AIT_B_UIR_10-7-2024\Assignments\9-9-24\JS> node .\script.js
Number of vowels =  7
```

8.) Write a function to split an array into chunks of a specified size.

```
123  function splitArr(arr, size){
124      let splitArr = [];
125      for(let i=0; i<arr.length; i+=size){
126          splitArr.push(arr.slice(i,i+size))
127      }
128      console.log(splitArr);
129  }
130
131  let arr = [1,2,3,4,5,6,7,8,9,0];
132  let size = 2;
133  splitArr(arr, size);
134  size = 3;
135  splitArr(arr, size);
```

```
PROBLEMS  OUTPUT  TERMINAL  PORTS  DEBUG CONSOLE

PS D:\AchieversIT-JFS\AIT_B_UIR_10-7-2024\Assignments\9-9-24\JS> node .\script.js
[ [ 1, 2 ], [ 3, 4 ], [ 5, 6 ], [ 7, 8 ], [ 9, 0 ] ]
[ [ 1, 2, 3 ], [ 4, 5, 6 ], [ 7, 8, 9 ], [ 0 ] ]
```

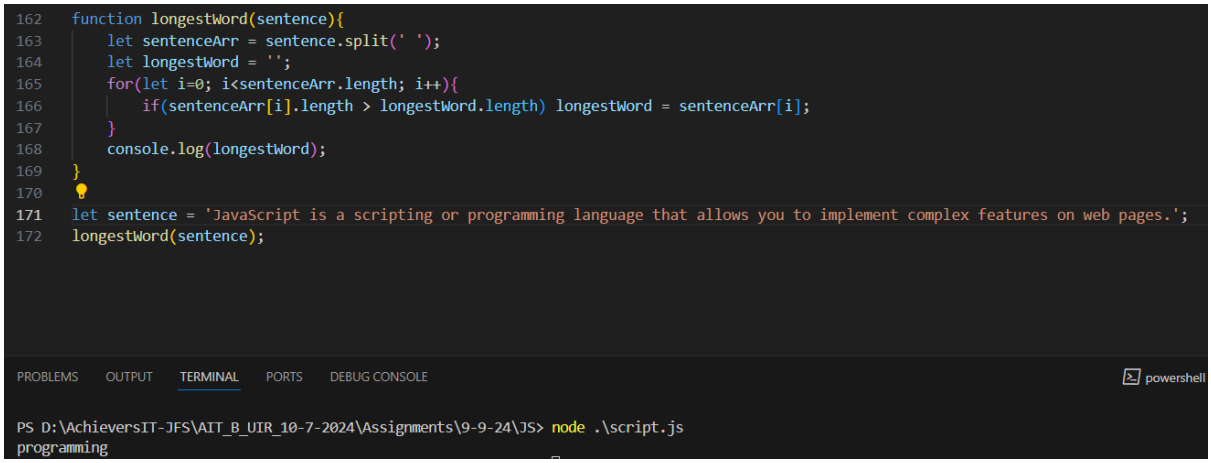
9.) Write a function to check if two strings are anagrams of each other.



```
function anagram(str1, str2){
    if(str1.length != str2.length) return;
    let str1Arr = str1.split('').sort();
    let str2Arr = str2.split('').sort();
    for(let i=0; i<str1Arr.length; i++){
        if(str1Arr[i] != str2Arr[i]) {
            console.log('Not Anagram');
            return;
        }
    }
    console.log('Strings are anagrams');
}

anagram('heart', 'earth');
anagram('python', 'typhon');
anagram('phone', 'hones');
```

```
PROBLEMS  OUTPUT  TERMINAL  PORTS  DEBUG CONSOLE

PS D:\AchieversIT-JFS\AIT_B_UIR_10-7-2024\Assignments\9-9-24\JS> node .\script.js
Strings are anagrams
Strings are anagrams
Not Anagram
```

10.) Write a function to find the longest word in a given sentence.



```
function longestWord(sentence){
    let sentenceArr = sentence.split(' ');
    let longestWord = '';
    for(let i=0; i<sentenceArr.length; i++){
        if(sentenceArr[i].length > longestWord.length) longestWord = sentenceArr[i];
    }
    console.log(longestWord);
}

let sentence = 'JavaScript is a scripting or programming language that allows you to implement complex features on web pages.';
longestWord(sentence);
```

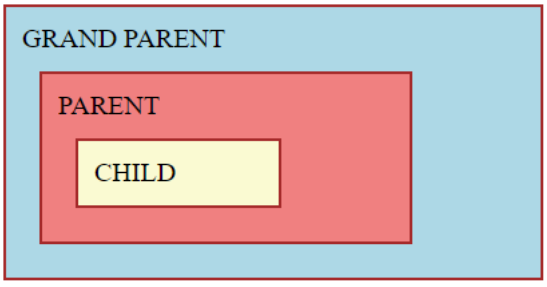
```
PROBLEMS  OUTPUT  TERMINAL  PORTS  DEBUG CONSOLE  powershell

PS D:\AchieversIT-JFS\AIT_B_UIR_10-7-2024\Assignments\9-9-24\JS> node .\script.js
programming
```

11.) Difference between Event bubbling and Event capturing? Write an example.

```css
<style>
    div{
        width: 300px;
        border: 2px solid brown;
        padding: 10px;
        margin: 10px;
        background-color: lightblue;
    }
    div div{
        width: 200px;
        background-color: lightcoral;
    }
    div div div{
        width: 100px;
        background-color: lightgoldenrodyellow;
    }
</style>
```

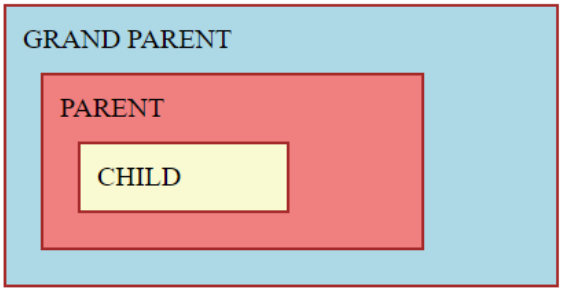
```html
<div id="gp">
    GRAND PARENT
    <div id="p">
        PARENT
        <div id="c">
            CHILD
        </div>
    </div>
</div>
<p></p>
```

```js
// Event Capturing : The event starts from the root of the DOM, and starts traversing down the tree until it finds the element that triggered the event.
// Event Bubbling : The event starts from the element that dispatched the event, and starts traversing up the tree and finish on DOM's root element.

const gp = document.getElementById('gp');
const p = document.getElementById('p');
const c = document.getElementById('c');
const para = document.getElementsByTagName('p')[0];
let arr = [];

gp.addEventListener('click', (e) => {
    arr.push('GP was clicked');
    para.innerHTML = arr.toString();
},true);
p.addEventListener('click', (e) => {
    arr.push('P was clicked');
    para.innerHTML = arr.toString();
},true);
c.addEventListener('click', (e) => {
    arr.push('C was clicked');
    para.innerHTML = arr.toString();
},true);
```



GP was clicked,P was clicked,C was clicked

Capturing



C was clicked,P was clicked,GP was clicked

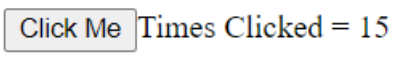
Bubbling

12.) How do you create and remove an element in dom?

```
205   // create element using DOM method - createElement();
206   // remove element using DOM method - remove(); or removeChild()
207
208   const div = document.createElement('div');//creates a div element
209   const body = document.getElementsByTagName('body')[0];
210
211   div.innerHTML = `<h1>Hello</h1>`; // set the content of div
212   body.appendChild(div); // append the created element to body
213
214   // body.removeChild(div); // removes the div element
215   div.remove(); // removes the div element
```

13.) Create a button that counts the number of times it has been clicked. Display the counter in a element.

```
222   const button = document.createElement('button');
223   button.innerHTML = 'Click Me';
224   const body = document.getElementsByTagName('body')[0];
225   body.appendChild(button);
226   const span = document.createElement('span');
227   body.appendChild(span);
228
229   let count = 0;
230   button.addEventListener('click', () => {
231       count++;
232       span.innerHTML = `Times Clicked = ${count}`;
233   })
```



14.) Detect and display the key that the user presses on the keyboard.

```
240  window.addEventListener('keydown', (e) => {
241      console.log(`key pressed = ${e.key}`);
242  })
```

```
key pressed = a                                    script.js:241
key pressed = Shift                                script.js:241
key pressed = A                                    script.js:241
key pressed = Shift                                script.js:241
key pressed = !                                    script.js:241
key pressed = Control                              script.js:241
key pressed = Alt                                  script.js:241
key pressed = ArrowRight                           script.js:241
key pressed = Tab                                  script.js:241
key pressed = 2                                    script.js:241
```

15.) Track and display the mouse's current X and Y coordinates as the user moves the mouse over a .

```
249  const div = document.createElement('div');
250  div.style.width = '500px';
251  div.style.height = '300px';
252  div.style.border = '4px solid red';
253  const body = document.getElementsByTagName('body')[0];
254  body.appendChild(div);
255
256  div.addEventListener('mousemove', (e) => {
257      console.log(e.x, e.y);
258  })
```

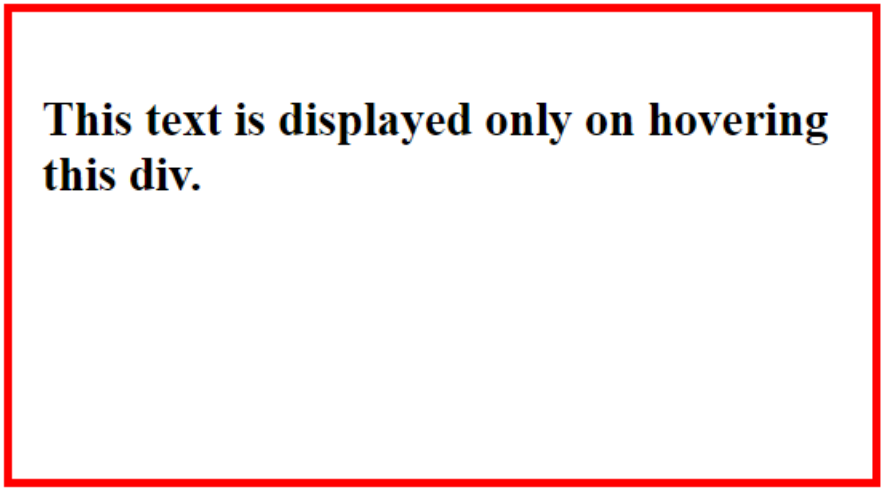
```
11 16                                              script.js:257
11 15                                              script.js:257
11 14                                              script.js:257
11 13                                              script.js:257
11 12                                              script.js:257
11 11                                              script.js:257
10 11                                              script.js:257
9 11                                               script.js:257
8 10                                               script.js:257
8 9                                                script.js:257
```

16.) Change the background color of a when it's double-clicked.

```
264  const div = document.createElement('div');
265  div.style.width = '500px';
266  div.style.height = '300px';
267  div.style.border = '4px solid red';
268  const body = document.getElementsByTagName('body')[0];
269  body.appendChild(div);
270
271  div.addEventListener('dblclick', (e) => {
272      let rx = Math.floor(Math.random() * 255);
273      let ry = Math.floor(Math.random() * 255);
274      let rz = Math.floor(Math.random() * 255);
275      div.style.background = `rgb(${rx},${ry},${rz})`;
276  })
```

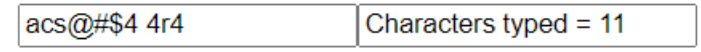
17.) When the user hovers over a , display some hidden text. Hide the text when the user stops hovering.

```
283   const div = document.createElement('div');
284   div.style.width = '400px';
285   div.style.height = '200px';
286   div.style.border = '4px solid red';
287   div.style.padding = '15px';
288   const body = document.getElementsByTagName('body')[0];
289   body.appendChild(div);
290   const p = document.createElement('p');
291   p.innerHTML = 'This text is displayed only on hovering this div.'
292   p.style.visibility = 'hidden';
293   p.style.fontWeight = '800';
294   p.style.fontSize = '24px';
295   div.appendChild(p);
296
297   div.addEventListener('mouseover', () => {
298       p.style.visibility = 'visible';
299   })
300   div.addEventListener('mouseout', () => {
301       p.style.visibility = 'hidden';
302   })
```

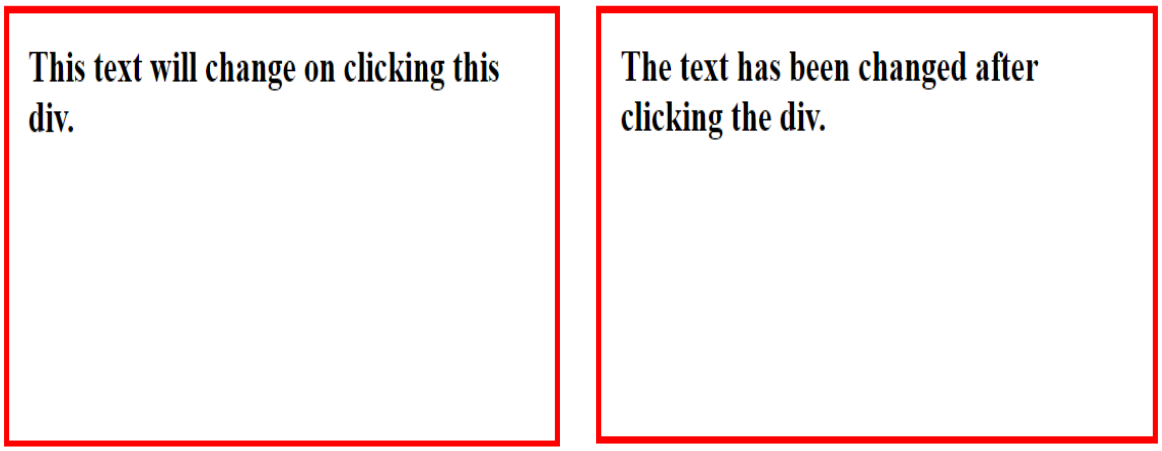


18.) Create an input field that displays how many characters the user has typed.

```
const input1 = document.createElement('input');
input1.setAttribute('placeholder', 'Enter anything here');
const input2 = document.createElement('input');
input2.setAttribute('placeholder', 'Shows total chars entered');
const body = document.getElementsByTagName('body')[0];
body.appendChild(input1);
body.appendChild(input2);

input1.addEventListener('keypress', () => {
    input2.value = `Characters typed = ${input1.value.length+1}`;
})
```

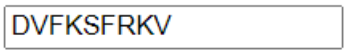


19.) When the user clicks on a , change the text inside it.



20.) When the user types in an input field, automatically convert the text to uppercase.

```
const input1 = document.createElement('input');
input1.setAttribute('placeholder', 'Enter anything here');
const body = document.getElementsByTagName('body')[0];
body.appendChild(input1);

input1.addEventListener('keyup', () => {
    input1.value = input1.value.toUpperCase();
})
```

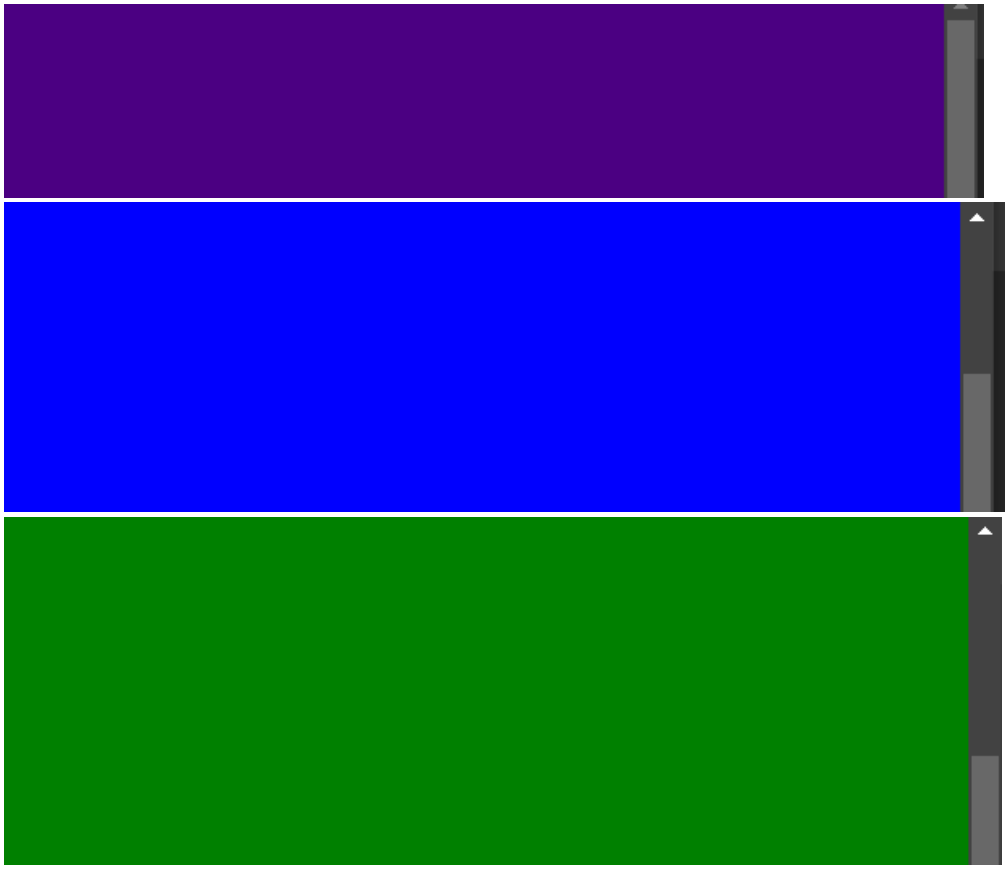


21.) Change an image to another when the user hovers over it and revert to the original image when the user stops hovering.

```
359  const img = document.createElement('img');
360  img.style.width = '400px';
361  img.style.height = '300px';
362  img.setAttribute('src','https://images.unsplash.com/photo-1516147697747-02adcafd3fda?w=500&auto=format&fit=crop&q=60&ixlib=rb-4.0.3&
     ixid=M3wxMjA3fDB8MHxwaG90by1yZWxhdGVkfDN8fHxlbnwwfHx8fHw%3D');
363  const body = document.getElementsByTagName('body')[0];
364  body.appendChild(img);
365
366  img.addEventListener('mouseenter', () => {
367      img.setAttribute('src', 'https://images.unsplash.com/photo-1486425091969-f62210f08a26?w=500&auto=format&fit=crop&q=60&ixlib=rb-4.0.
     3&ixid=M3wxMjA3fDB8MHxwaG90by1yZWxhdGVkfDJ8fHxlbnwwfHx8fHw%3D');
368  })
369  img.addEventListener('mouseleave', () => {
370      img.setAttribute('src', 'https://images.unsplash.com/photo-1516147697747-02adcafd3fda?w=500&auto=format&fit=crop&q=60&ixlib=rb-4.0.
     3&ixid=M3wxMjA3fDB8MHxwaG90by1yZWxhdGVkfDN8fHxlbnwwfHx8fHw%3D');
371  })
```

22.) Change the background color of the page when the user scrolls past a certain point.

```
const body = document.getElementsByTagName('body')[0];
body.style.height = '1000px';

window.addEventListener('scroll', (e) => {
    if(window.scrollY > 50){
        body.style.background = 'indigo';
    }
    if(window.scrollY > 100){
        body.style.background = 'blue';
    }
    if(window.scrollY > 150){
        body.style.background = 'green';
    }
    if(window.scrollY > 200){
        body.style.background = 'yellow';
    }
    if(window.scrollY > 250){
        body.style.background = 'orange';
    }
})
```



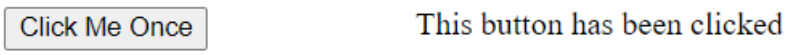
23.) Create a button that, when the button is clicked, Add a new list item to an unordered list.

```
406  const body = document.getElementsByTagName('body')[0];
407  const button = document.createElement('button');
408  body.appendChild(button);
409  const ul = document.createElement('ul');
410  body.appendChild(ul);
411  button.innerHTML = 'Click to Add to List';
412
413  button.onclick = function(){
414      const li = document.createElement('li');
415      li.innerHTML = 'new item';
416      ul.appendChild(li);
417  }
```

- new item
- new item
- new item
- new item
- new item
- new item
- new item
- new item

24.) Once the user clicks a button, disable it and display a message that the button has been clicked.

```
425  const body = document.getElementsByTagName('body')[0];
426  const button = document.createElement('button');
427  button.innerHTML = 'Click Me Once';
428  body.appendChild(button);
429  const p = document.createElement('p');
430  body.appendChild(p);
431
432  button.onclick = () => {
433      // button.setAttribute('disabled', 'true');
434      button.disabled = true;
435      p.innerHTML = 'This button has been clicked';
436  }
```



25.) Write a program that detects when the user copies text from a <textArea> and displays a message.

```
444   const body = document.getElementsByTagName('body')[0];
445   const textArea = document.createElement('textarea');
446   body.appendChild(textArea);
447   const p = document.createElement('p');
448   body.appendChild(p);
449   textArea.innerHTML = 'Welcome to JS';
450
451   textArea.addEventListener('copy', (e) => {
452       p.innerHTML = 'text is copied from the textArea';
453   })
```

Welcome to JS

Welcome to JS

text is copied from the textArea