

## Question 1:

Use **Java**, do this coding test & print out the results in terminal:

- Variable “arrayA” is a string array of car brands: ["Honda", "Toyota", "Proton"]
- Add "Nissan" to it. Print it out.
- Add "Mazda" as the first element within the string array. Print it out.
- Now make a new variable “arrayB” which is a string array of animals. Combine both arrays into variable “arrayA”. Print it out.
- Variable “mapC” & “mapD” are both separate Map[String, String] objects of employee IDs and employee names, where:
  - mapC → ["123": "Justin", "456": "Owen", "789": "Hugo"]
  - mapD → ["123": "George", "555": "Jack", "888": "Julian"]
- Combine them both into the variable “mapC” and print it out.
- Print out the reason why the result no longer has the value "Justin"?
- Return values in “mapC” where key contains "5"
- Remove map entries where the value contains the "o" character in “mapC”. (ignore case)
- I have a string variable “str” of "111222888222555". Reverse this string and assign it back to variable “str”. Print it out.
- Then, replace the last occurrence of "222" in variable “str” with "aaa" and assign it back to variable “str”. Print it out.

**Code:**

```
import java.util.*;

public class Main {
    public static void main(String[] args) {
        // Step 1: Initialize arrayA
        List<String> arrayA = new ArrayList<>(Arrays.asList("Honda",
        "Toyota", "Proton"));

        // Step 2: Add "Nissan" to arrayA and print it
        arrayA.add("Nissan");
        System.out.println("After adding 'Nissan': " + arrayA);

        // Step 3: Add "Mazda" as the first element and print it
        arrayA.add(0, "Mazda");
        System.out.println("After adding 'Mazda' as the first element: "
        + arrayA);

        // Step 4: Create arrayB and combine with arrayA
        List<String> arrayB = Arrays.asList("Cat", "Dog", "Elephant");
        arrayA.addAll(arrayB);
```

```

System.out.println("Combined arrayA: " + arrayA);

// Step 5: Initialize mapC and mapD
Map<String, String> mapC = new HashMap<>();
mapC.put("123", "Justin");
mapC.put("456", "Owen");
mapC.put("789", "Hugo");

Map<String, String> mapD = new HashMap<>();
mapD.put("123", "George");
mapD.put("555", "Jack");
mapD.put("888", "Julian");

// Step 6: Combine mapD into mapC and print it
mapC.putAll(mapD);
System.out.println("Combined mapC: " + mapC);

// Step 7: Explain why "Justin" is no longer in mapC
System.out.println("Reason: The key '123' in mapC was
overwritten by the value from mapD.");

// Step 8: Return values in mapC where the key contains "5"
System.out.println("Values where key contains '5':");
mapC.forEach((key, value) -> {
    if (key.contains("5")) {
        System.out.println("Key: " + key + ", Value: " + value);
    }
});

// Step 9: Remove entries where the value contains "o" (ignore
case)
mapC.entrySet().removeIf(entry ->
entry.getValue().toLowerCase().contains("o"));

// Step 10: Reverse the string and assign it back to str
String str = "111222888222555";
String reversedStr = new
StringBuilder(str).reverse().toString();
System.out.println("Reversed string: " + reversedStr);

// Step 11: Replace the last occurrence of "222" with "aaa"
final String TARGET_SUBSTRING = "222"; // The substring to
find and replace
final String REPLACEMENT_SUBSTRING = "aaa"; // The substring to
replace with
final int SUBSTRING_LENGTH = TARGET_SUBSTRING.length(); //

```

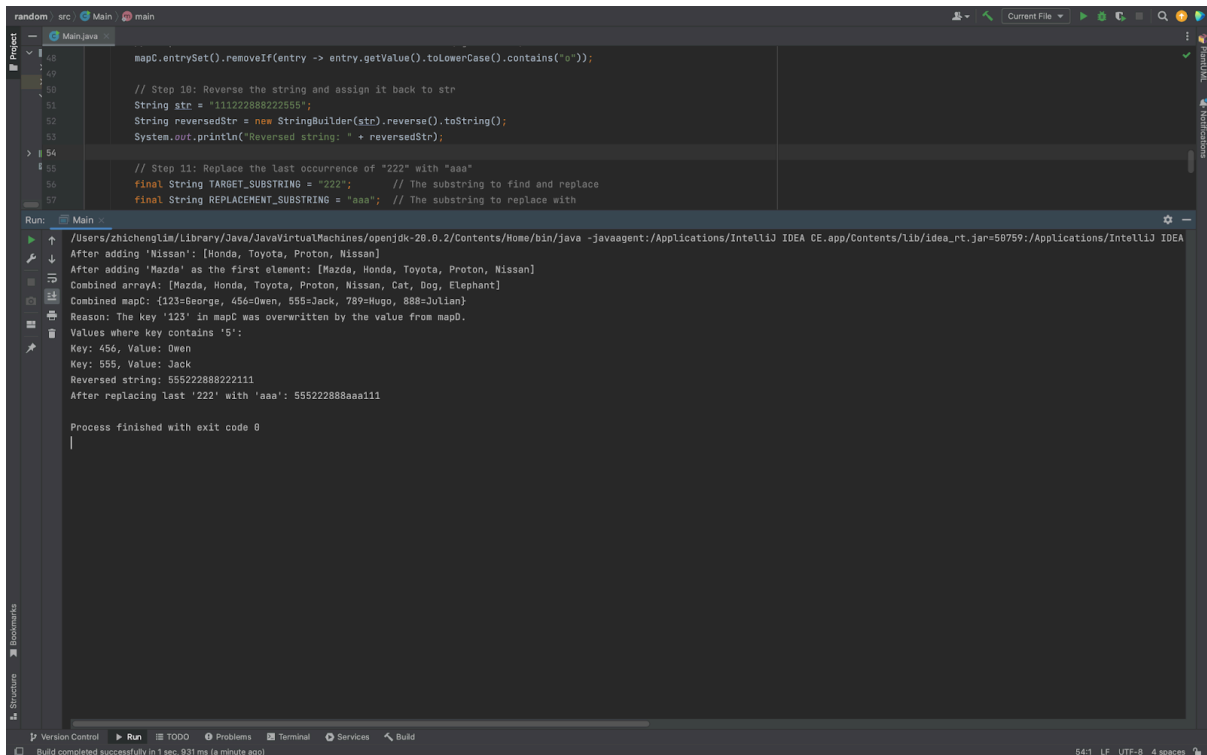
Length of the target substring

```
int lastIndex = reversedStr.lastIndexOf(TARGET_SUBSTRING);

// Check if "222" exists in the string
if (lastIndex != -1) {
    str = reversedStr.substring(0, lastIndex)
        + REPLACEMENT_SUBSTRING
        + reversedStr.substring(lastIndex +
SUBSTRING_LENGTH);
}

System.out.println("After replacing last '" + TARGET_SUBSTRING +
"' with '" + REPLACEMENT_SUBSTRING + "': " + str);
}
```

Results in terminal:



The screenshot shows an IDE with a Java file named 'Main.java' and a terminal window. The code in 'Main.java' includes a map, a reversed string, and a replacement operation. The terminal output shows the execution of the code, including the reversed string and the result of the replacement.

```
random | src | Main | main
Main.java
48 mapC.entrySet().removeIf(entry -> entry.getValue().toLowerCase().contains("o"));
49
50 // Step 10: Reverse the string and assign it back to str
51 String str = "111222888222555";
52 String reversedStr = new StringBuilder(str).reverse().toString();
53 System.out.println("Reversed string: " + reversedStr);
54
55 // Step 11: Replace the last occurrence of "222" with "aaa"
56 final String TARGET_SUBSTRING = "222"; // The substring to find and replace
57 final String REPLACEMENT_SUBSTRING = "aaa"; // The substring to replace with

Run: Main
/Users/zhichenglin/Library/Java/JavaVirtualMachines/openjdk-20.0.2/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar=50759:/Applications/IntelliJ IDEA
After adding 'Nissan': [Honda, Toyota, Proton, Nissan]
After adding 'Mazda' as the first element: [Mazda, Honda, Toyota, Proton, Nissan]
Combined arrayA: [Mazda, Honda, Toyota, Proton, Nissan, Cat, Dog, Elephant]
Combined mapC: {123=George, 456=Deen, 555=Jack, 789=Hugo, 888=Julian}
Reason: The key '123' in mapC was overwritten by the value from mapD.
Values where key contains '5':
Key: 456, Value: Deen
Key: 555, Value: Jack
Reversed string: 555222888222111
After replacing last '222' with 'aaa': 555222888aaa111

Process finished with exit code 0
```

## Question 2:

Using **Javascript**. Create an array of 10 random integer numbers between 1 - 1000 and use `console.log()` to display each of the numbers in the array and the sum of the array.

### Code:

```
const randomNumbers = Array.from({ length: 10 }, () =>
Math.floor(Math.random() * 1000) + 1);

randomNumbers.forEach((num, index) => console.log(`Number ${index + 1}:
${num}`));

let sum = 0;
for (let i = 0; i < randomNumbers.length; i++) {
  sum += randomNumbers[i];
}

console.log("Sum of the array:", sum);
```

### Results in console:

```
> const randomNumbers = Array.from({ length: 10 }, () => Math.floor(Math.random() * 1000) + 1);
randomNumbers.forEach((num, index) => console.log(`Number ${index + 1}: ${num}`));
let sum = 0;
for (let i = 0; i < randomNumbers.length; i++) {
  sum += randomNumbers[i];
}
console.log("Sum of the array:", sum);
Number 1: 191
Number 2: 43
Number 3: 388
Number 4: 796
Number 5: 588
Number 6: 752
Number 7: 73
Number 8: 5
Number 9: 947
Number 10: 781
Sum of the array: 4388
< undefined
>
```

Console Issues +

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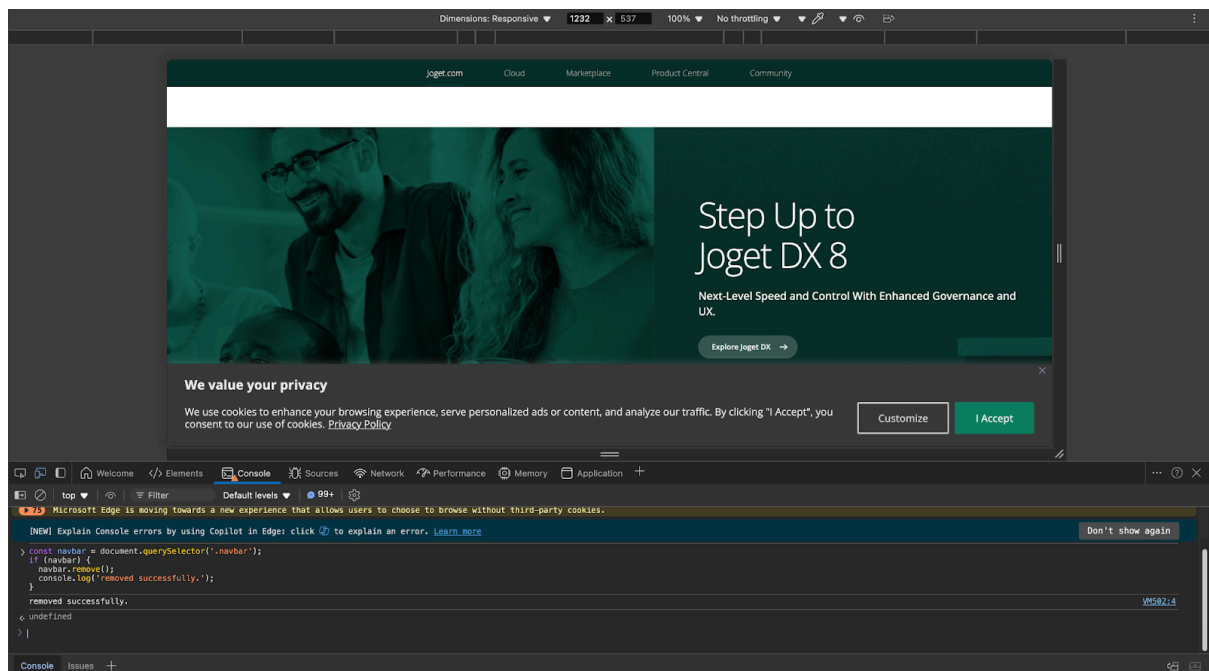
### Question 3:

Go to <https://www.joget.com/>, use **Javascript** to make the nav bar disappear. Send us the code.

#### Code:

```
const navbar = document.querySelector('.navbar');
if (navbar) {
  navbar.remove();
  console.log('removed successfully.');
```

#### Screenshot:



## Question 4:

Using **HTML** and **CSS**, create a simple webpage layout with a header, footer, and main content section. The header should have a background color of blue and contain a centered Joget logo and a navigation menu with links to Home, About, and Contact pages. The main content section should have a white background and contain a heading and a paragraph of text. The footer should have a gray background and contain copyright information and a link to a privacy policy page.

Link to the Web page: [click here](#)

Github Repo (code can be found here): [click here](#)

### HTML screenshot:

```
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>Simple Webpage</title>
7      <link rel="stylesheet" href="style.css">
8  </head>
9  <body>
10     <header>
11         <div class="logo">
12             
13         </div>
14         <nav class="nav-menu">
15             <ul>
16                 <li><a href="#">Home</a></li>
17                 <li><a href="#">About</a></li>
18                 <li><a href="#">Contact</a></li>
19             </ul>
20         </nav>
21     </header>
22
23     <main>
24         <h1>Welcome to Our Website</h1>
25         <p>This is a simple webpage layout with a header, footer, and main content section.</p>
26     </main>
27
28     <footer>
29         <p>&copy; 2024 Joget Inc. | <a href="#">Privacy Policy</a></p>
30     </footer>
31 </body>
32 </html>
33
```

## CSS screenshot:

```
1
2  ~ * {
3      margin: 0;
4      padding: 0;
5      box-sizing: border-box;
6  }
7
8  /* Flexbox layout for body */
9  ~ body {
10     display: flex;
11     flex-direction: column;
12     min-height: 100vh;
13  }
14
15  /* Header styles */
16  ~ header {
17     background-color: blue;
18     color: white;
19     padding: 10px 20px;
20     display: flex;
21     justify-content: space-between;
22     align-items: center;
23  }
24
25  ~ header .logo img {
26     height: 50px;
27  }
28
29  ~ header .nav-menu ul {
30     list-style: none;
31     display: flex;
32     gap: 15px;
33  }
34
35  ~ header .nav-menu ul li a {
36     color: white;
37     text-decoration: none;
38     font-weight: bold;
39  }
40
41  /* Main content */
42  ~ main {
43     background-color: white;
44     padding: 20px;
45     text-align: center;
46  }
47
```

```
48  /* Footer styles */
49  ~ footer {
50     background-color: gray;
51     color: white;
52     text-align: center;
53     padding: 10px 0;
54     margin-top: auto;
55  }
56
57  ~ footer a {
58     color: white;
59     text-decoration: underline;
60  }
61 |
```

Web Page Screenshot:

