

Section 1

Please answer all questions.

You could answer and copy your codes for the answers to this document and then send the file back to reviewer.

Question 1

Assuming <http://codequiz.azurewebsites.net/data> returns an object {data: 10}.
Below function doesn't work correctly.

```
function thisIsSyncFunction() {
  let result = 0;

  fetch('https://codequiz.azurewebsites.net/data').then(res => res.json()).then((response) =>
  {
    result = response.data;
  });
  return result;
}

const number1 = thisIsSyncFunction()
const calculation = number1 * 10;
console.log(calculation);
```

1.1 Please correct the code, so it really prints out the expected result (100). You can fix it anyway you like but it still has to call fetch as the source of data.

```
const asyncFunction = async() => {
  let result = 0;

  await fetch('http://localhost:4000/api/data')
  .then(res => {
    return res.json();
  })
  .then(response =>{
    result = response.data
  })
  return result
}

const calculation = async () => {
  const number1 = await asyncFunction()
  console.log(number1 * 10)
}

calculation()
```

1.2 Is there a way to make **thisIsSyncFunction** really synchronous, so number1 has the value 10 before it is used for the calculation on the next line.

Question 2

From this code <https://codepen.io/domrongpon-tanpaibul/pen/ExgVrPJ>, please provide the CSS that move the start to the middle of the box.

```
.star {  
  margin: 0;  
  position: absolute;  
  top: 50%;  
  left: 50%;  
  transform: translate(-50%, -50%);  
}
```

Question 3

From this code, <https://codepen.io/domrongpon-tanpaibul/pen/YzGyBZq?editors=1010>, please make the box not close when click close button. You should not modify the DOM elements in this page, but rather achieve this by handling the event.

Note that you can only add code inside Quiz block in JS section but can't modify class MyDlg.

```
closeBtn.addEventListener('click', () => {  
  if (this.dispatchEvent(new CustomEvent('close-dlg', {cancelable: true}))) {  
    div.style.display = "inline-block";  
  }  
})
```

Question 4

From this code, <https://codepen.io/domrongpon-tanpaibul/pen/zYKvboB>, please write code to show RGB code that users clicked inside the answer box. Please consider the efficiency of the code as well.

```
const getRandomRGB = () => {
  const r = Math.floor(Math.random() * Math.floor(255));
  const g = Math.floor(Math.random() * Math.floor(255));
  const b = Math.floor(Math.random() * Math.floor(255));
  return `rgb(${r},${g},${b})`;
};

const btnEvent = (id, rgb_code) => {
  document.getElementById(id).addEventListener("click", () => {
    document.getElementById("answerBox").innerHTML = rgb_code;
  });
};

const colorPicker = document.getElementById('colorPicker');

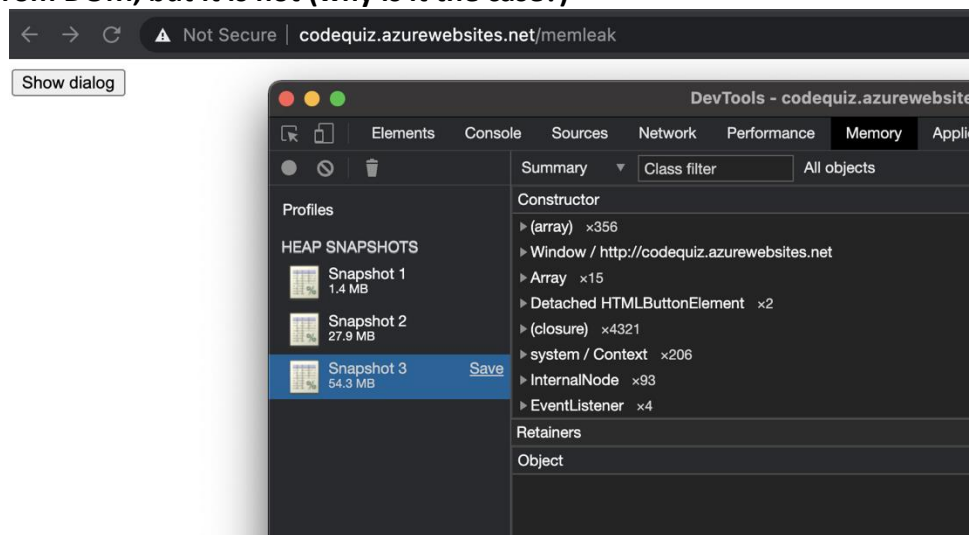
for (let i=0; i<10000; ++i) {
  const btn = document.createElement('button');
  const rgb = getRandomRGB();
  btn.id = rgb;
  btn.textContent = rgb;
  btn.style.backgroundColor = rgb;
  colorPicker.appendChild(btn);
  btnEvent(btn.id, rgb);
}
```

Question 5

Find the memory leak in this application <http://codequiz.azurewebsites.net/memleak>
When ever user open a dialog, and close it, a memory will keep increased around 25 MBs per round. Please identify what is causing the memory leak, and how to fix it and describe how you investigate it.

**** Please note that the big array in the code was added intentionally, to make it easier to see the leak.**

This array should be cleared by browser GC when the dialog is closed, and element is removed from DOM, but it is not (why is it the case?)



Step 1 :

right click to open inspect and select performance tab

from the picture below you can see most of the time app consumed is from JS Heap

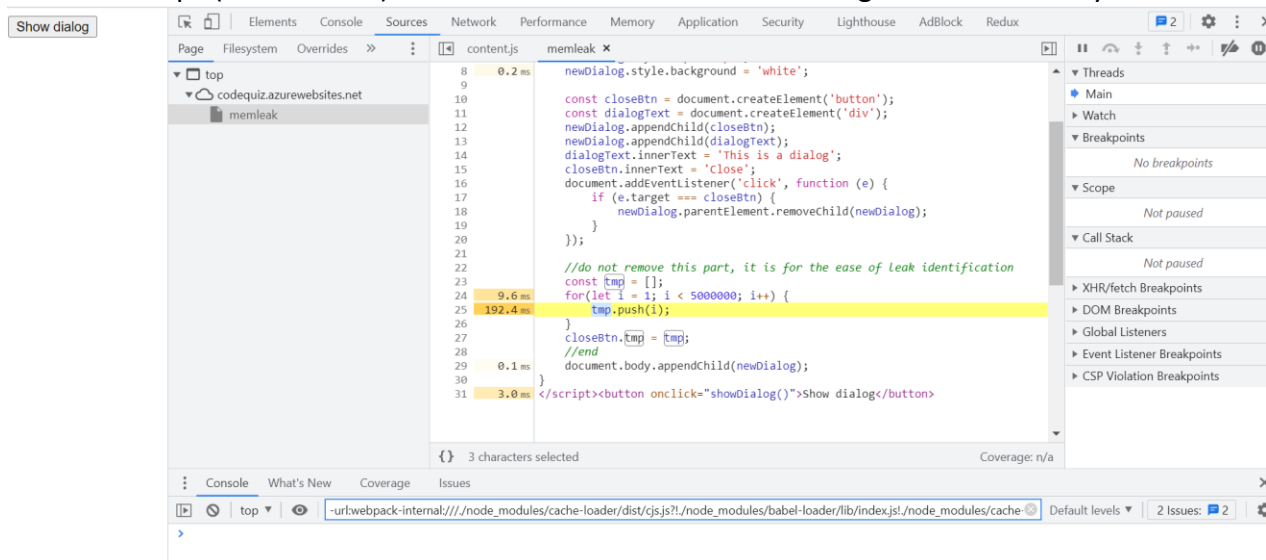


Step 2 :

Go to source tab to see javascript code

the picture below shows that every time you click show dialog button

5000000 loops (line 24 – 26) is executed so it takes a time leading to cause memory leak



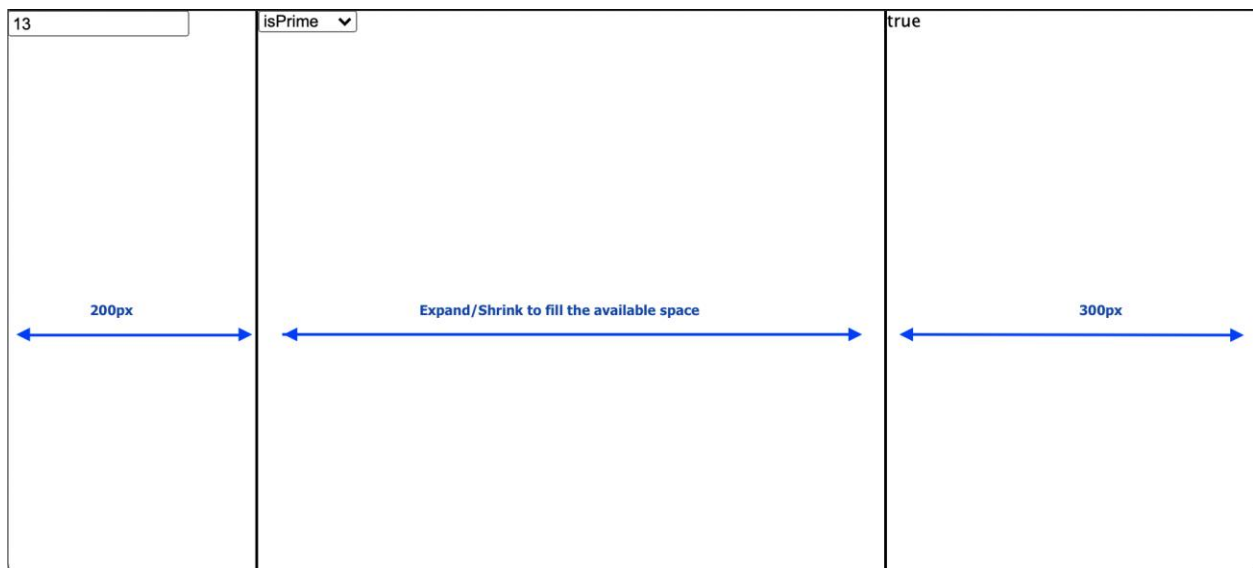
Section 2

Please commit the codes to your personal git repository and send the links to the git repositories back to the reviewer.

Question 1

Please create a web application following below specs.

- Angular framework is preferred, but you can also use your preferred framework, or pure javascript/HTML5
- Page consist of 3 columns, first column has fixed width of 200px, last column has fixed width of 300px, the middle column expand/shrink to fill the remaining space of the page, and should be at least 100px. If window is smaller than 600px, show the scrollbar.
- In the first column, create an input field, where user can enter any number. If the value entered by users are not integer, round it to the nearest integer. If user enter negative values, replace it with 1.
- In the second column, show a drop down, which user can choose what calculation between "isPrime" and "isFibonacci" he wants to calculate, default the value to isPrime.
 - isPrime: calculate whether the input is a prime number, show true in Col3 if the number is prime, and false in the other case
 - IsFibonacci: calculate whether the input is a fibonacci number, show true in Col3 if the number is a fibonacci number, and false in the other case.
- Whenever the value in input box in column1, or the dropdown in column2 changes, execute the calculation accordingly, and show the result in column 3.



Question 2

Create a web app with an input for using as filter and a table for display the result. The app need to get data from <https://api.publicapis.org/categories> for using for displaying in the result table.

Result table

- By default display all data from categories

Filtering

- When user type any text in the input box, the result table should be filter to display only the result that contains the text.

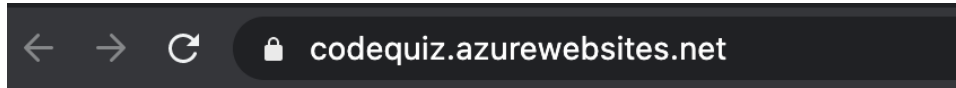
NOTE

- The app could created with any framework but Angular is preferred

Question 3

Write a node.js code that retrieve NAV (Net Asset Value) of a Fund from this website <https://codequiz.azurewebsites.net/>

The code should be in a single js file, and can be run using “node yourfile.js FUNDCODE” using node 12. After running “node yourfile.js BEQSSF” we should get BEQSSF nav print out in the console (11.247), similary running “node yourfile.js BM70SSF” should print out 9.9774 .



Code Quiz

Welcome to Code Quiz

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Code Quiz

Funds NAV

Fund Name	Nav	Bid	Offer	Change
B-INCOMESSF	10.0548	10.0549	10.0548	0.0107
BM70SSF	9.9774	9.9775	9.9774	0.0927
BEQSSF	11.247	11.2471	11.247	0.1319
B-FUTURESSF	11.443	11.4431	11.443	0.1488

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