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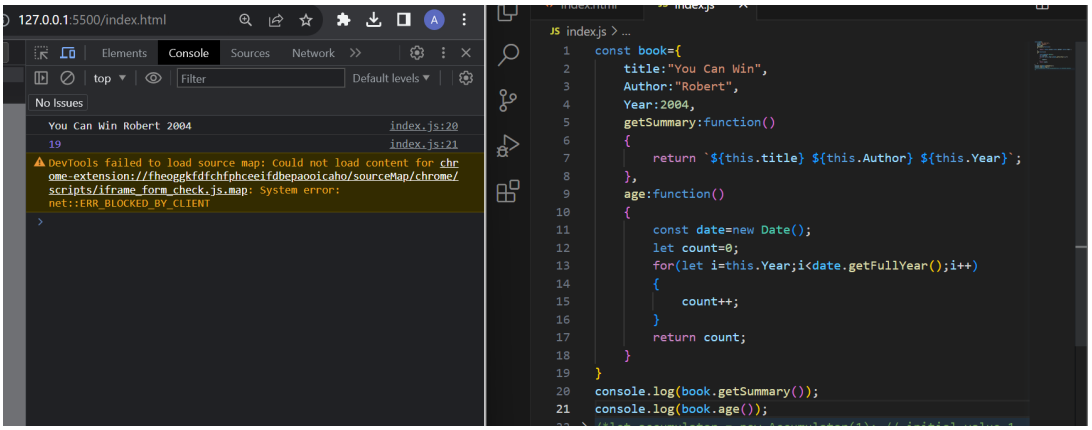
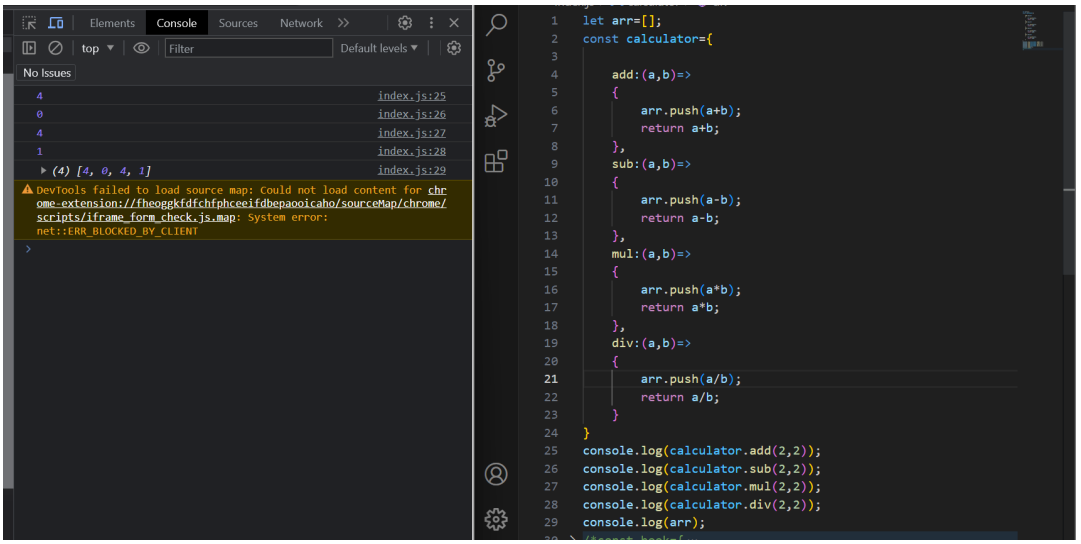
Week 2:

1. Objects and methods, “this”:
Task 1: Create an object named book with properties: title, author, and yearPublished. Add a method named getSummary that returns a string summarizing the book
Task 2: Modify the book object to include a method named age that calculates how old the book is based on its publication year.



Task 3: Create an object calculator with methods add(), subtract(), multiply(), and divide(). Use the this keyword to refer to the object’s properties within these methods. Task 4: Extend the calculator object to include a history array. Each time a calculation is made, store the operation and result in this array



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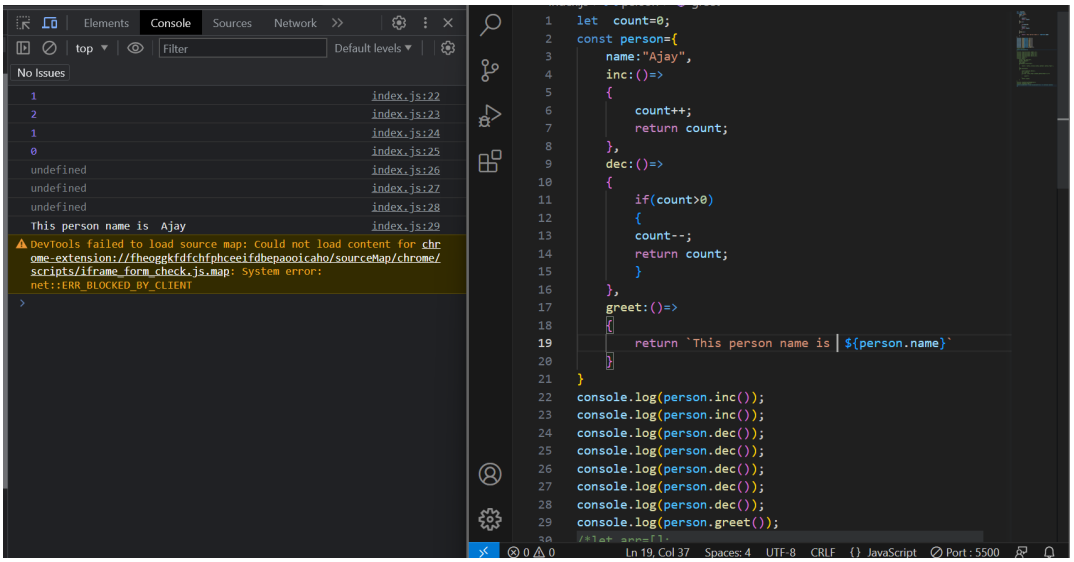
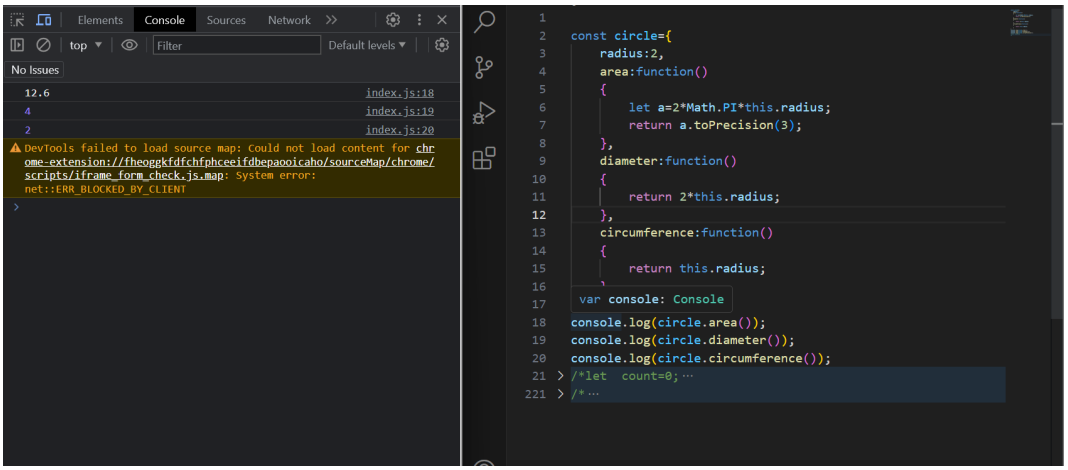
Task 5: Create an object representing a person. Add methods to increase and decrease their age property. Ensure the age doesn't go below 0. Task 6: For the person object, add a method named greet that uses the this keyword to greet with the person's name.



Task 7: Design a circle object with properties radius and a method to calculate its area using this.radius. Task 8: Extend the circle object with methods to calculate its diameter and circumference



Task 9: Create an object account with properties: name, balance and methods: deposit, withdraw. Use the this keyword appropriately. Task 10: For the account object, ensure that the balance can't go negative using the this keyword.

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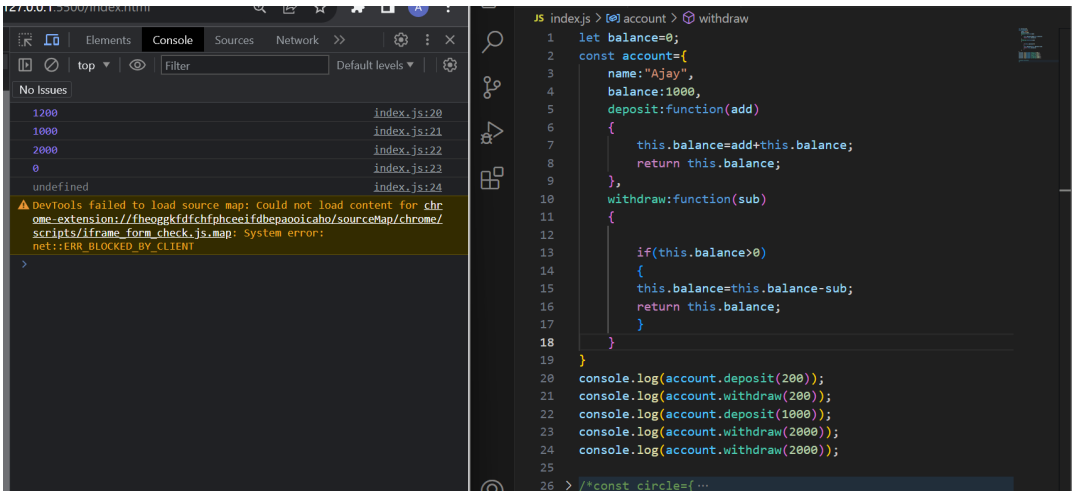
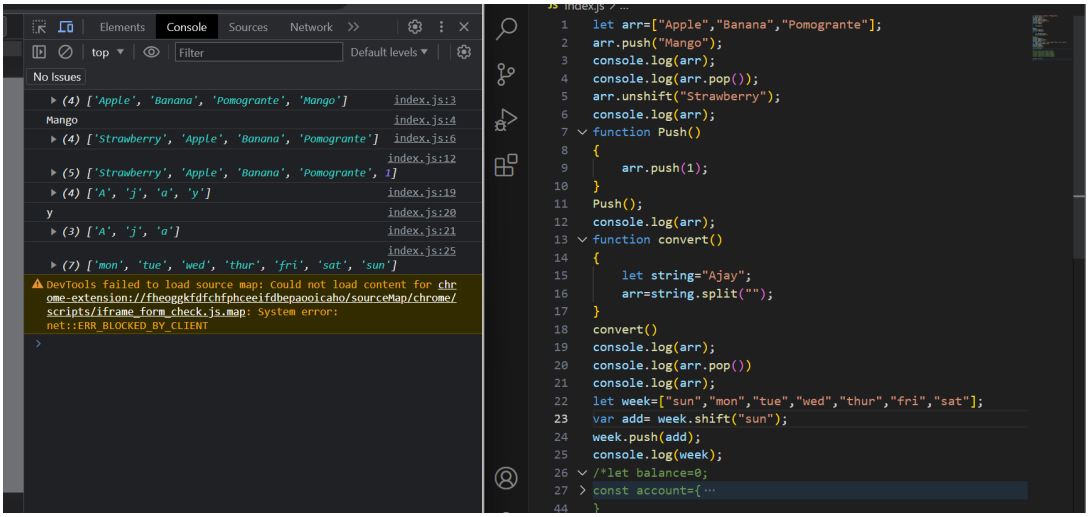
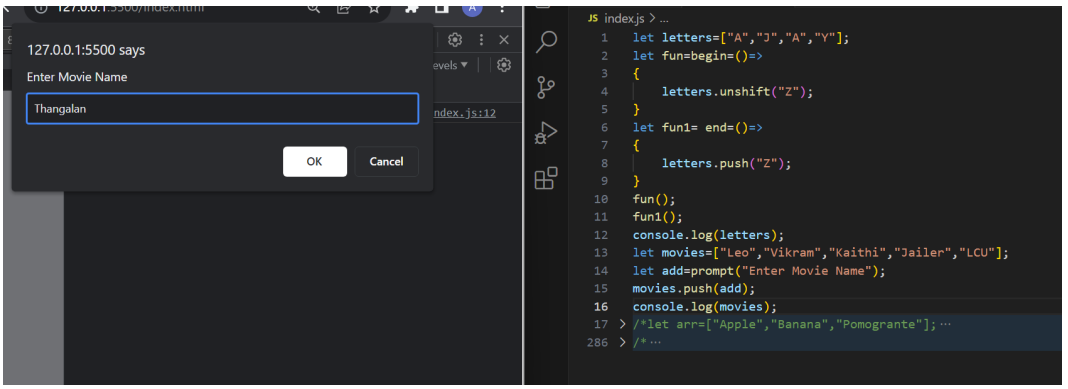


2. Arrays, Array methods (push, pop, shift, unshift)

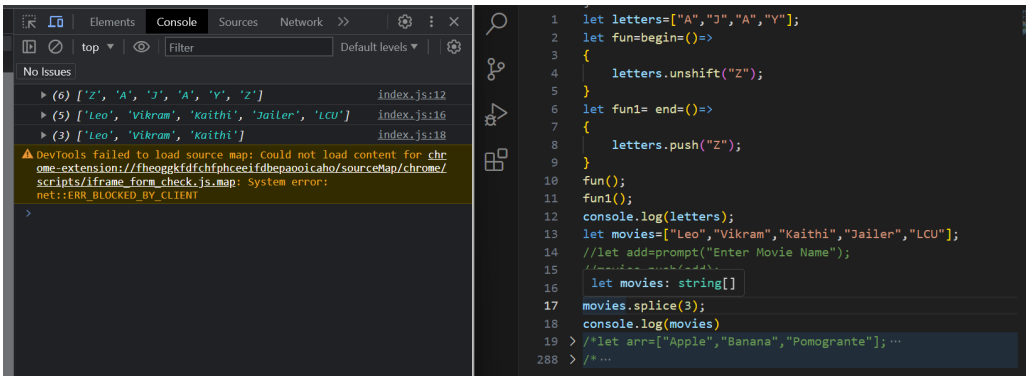
Task 1: Initialize an array of your favorite fruits. Add “Mango” to the end of the array using push(). Task 2: Remove the last fruit from the array using pop(). Task 3: Add “Strawberry” to the beginning of the fruits array using unshift(). Task 4: Remove the first fruit from the array using shift(). Task 5: Create a function that accepts an array of numbers and uses push() to add the number 7 to it. Task 6: Write a function that accepts a string. Convert the string to an array of words and remove the last word using pop(). Task 7: Create an array of days of the week. Using shift() and unshift(), move Sunday to the end of the array.



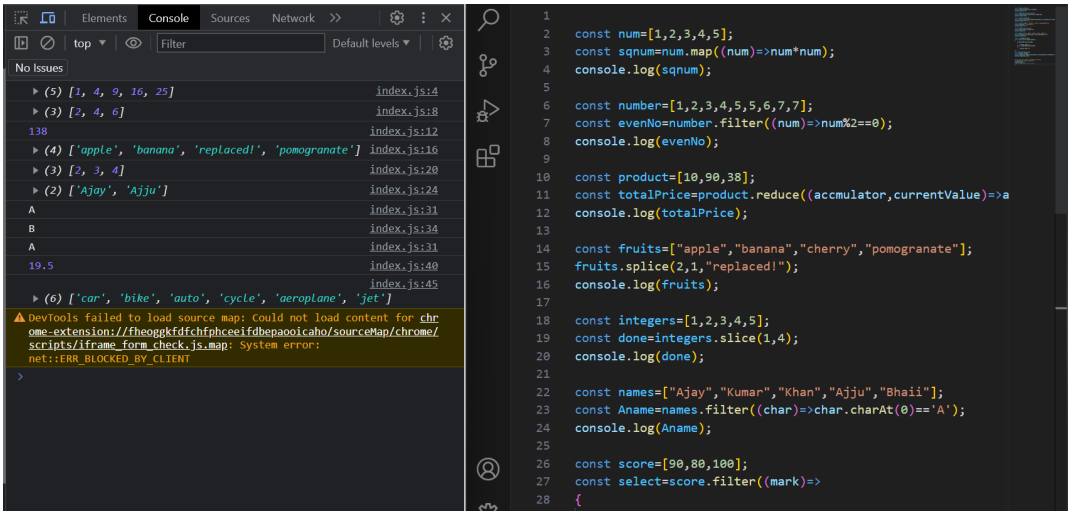
Task 8: Given an array of letters, write a function that adds a letter ‘Z’ at the beginning and end of the array. Task 9: Initialize an array with five movie names. Ask the user for another movie name and add it to the end of the array.



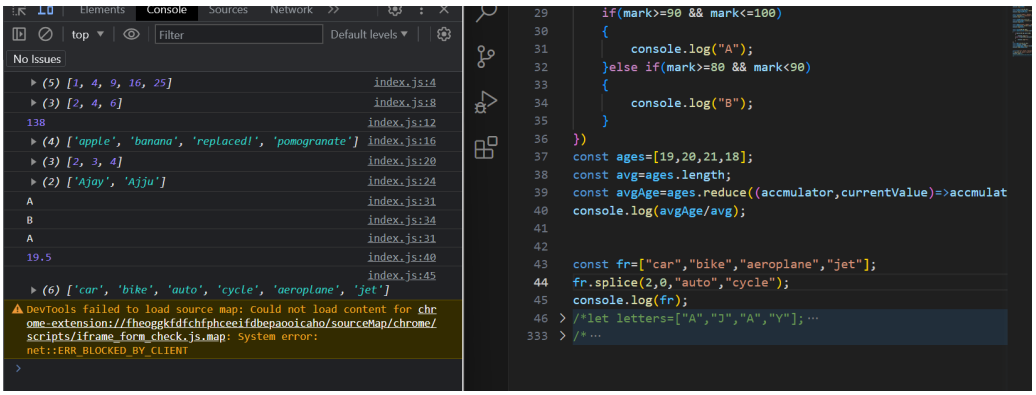
Task 10: Remove the third item from the movie array



3. Additional methods: map(), filter(), reduce(), slice(), splice()
Task 1: Create an array of numbers. Use map() to create a new array with each number squared. Task 2: Use filter() on an array of numbers to get a new array with only even numbers. Task 3: Create an array of product prices. Use reduce() to find the total price. Task 4: For an array of strings, use map() to create a new array that contains the length of each string. Task 5: Use splice() to remove the third item of an array and replace it with the string “replaced!”. Task 6: For an array of integers, use slice() to get a new array containing the 2nd, 3rd, and 4th elements. Task 7: Create an array of names. Use filter() to produce a new array that contains names starting with the letter ‘A’.



Task 8: For an array of scores (out of 100), use map() to grade each score (e.g., 90-100 = ‘A’, 80-89 = ‘B’). Task 9: Given an array of ages, use reduce() to find the average age. Task 10: Use splice() to insert two new fruits after the second fruit in an array of fruits.



Mini Project: "Personal Library"

1. Define the Book Object with methods

```
///Create a Book Object
const Book={
    title:"You Can Win",
    author:"Robert",
    year:2004,
    readStatus:"yes",
    toggleRead:function()
    {
        return `Nice One!`
    },
    toggleReadStatus:function()
    {
        if(this.readStatus=="yes")
```

```
        {
            return "no";
        }
        else{
            return "yes";
        }
    }
}
const Book1={
    title:"Meg",
    author:"Willaim",
    year:2003,
    readStatus:"no",
    toggleRead:function()
    {
        return `Not Bad!`
    },
    toggleReadStatus:function()
    {
        if(this.readStatus=="yes")
        {
            return "no";
        }
        else{
            return "yes";
        }
    }
}
const Book2={
    title:"Veeran",
    author:"Henry",
    year:2002,
    readStatus:"no",
    toggleRead:function()
    {
        return `Not Bad!`
    },
    toggleReadStatus:function()
    {
        if(this.readStatus=="yes")
        {
            return "no";
        }
```

```
        else{
            return "yes";
        }
    }
}

const Book4={
    title:"Mass",
    author:"Khan",
    year:2004,
    readStatus:"yes",
    toggleRead:function()
    {
        return `Not Bad!`
    },
    toggleReadStatus:function()
    {
        if(this.readStatus=="yes")
        {
            return "no";
        }
        else{
            return "yes";
        }
    }
}
```

2. Books Collection (Array)

```
//Initailixe Array Lib
const Library=[];
Library.push(Book);
Library.push(Book1);
Library.push(Book2);
Library.push(Book4);
```

3. Array Methods:

```
//Array Methods
//addBook
function addBook(book)
{
    Library.push(book);
}
addBook("Escape");
```

```
addBook("Thriller");

//removeLast
function removeLastBook()
{
    Library.pop();
}
removeLastBook();

//addBookFront
function addBookToFront(book)
{
    Library.unshift(book);
}
addBookToFront("Game Of Thrones");
addBookToFront("Money Hiest");

//removeFirst
function removeFirstBook()
{
    Library.shift();
}
removeFirstBook();
console.log(Library);
```

4. Additional Methods:

```
/Additional Methods

function getAllTitles()
{
    Library.map((e)=>
    {
        console.log(`The Titles of the book is ${e.title}`);
    });
}
getAllTitles();

function getBooksByAuthor(a)
{
    const getAut=Library.filter((val)=>val.author==a);
    console.log(getAut);
}
```

```
getBooksByAuthor("Robert");

function getTotalBooksPublished(value)
{
    const
getYear=Library.filter((y)=>y.year<value).reduce((acc,cuu)=>acc+1,0);
    console.log(getYear);
}
getTotalBooksPublished(2002);

function removeBookByTitle(tit)
{
    let ind=Library.findIndex((index)=>
    {
        if(index.title==tit)
        {
            return true;
        }
    });
    const rem=Library.splice(ind,1);
    console.log(rem);
}
removeBookByTitle("Meg");

function getBookByReadStatus(s)
{
    const ad=Library.filter((y)=>y.readStatus==s)
    console.log(ad);
}
getBookByReadStatus("no");

function getSubLibrary(start,end)
{
    const subli=Library.slice(start,end);
    console.log(subli);
}
getSubLibrary(0,3)
```

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OUTPUT: