NAME: SHREYA GHOLASE
PRN NO:23070521145
B2

Practical 4 Final Task B2

You are hired as a JavaScript developer for a Digital Locker System company. The company wants you to build a prototype program that secures user data (like PIN, secret notes), validates input, and provides some useful utility functions (like palindrome checks for secure PINs). The manager gave you the following requirements:

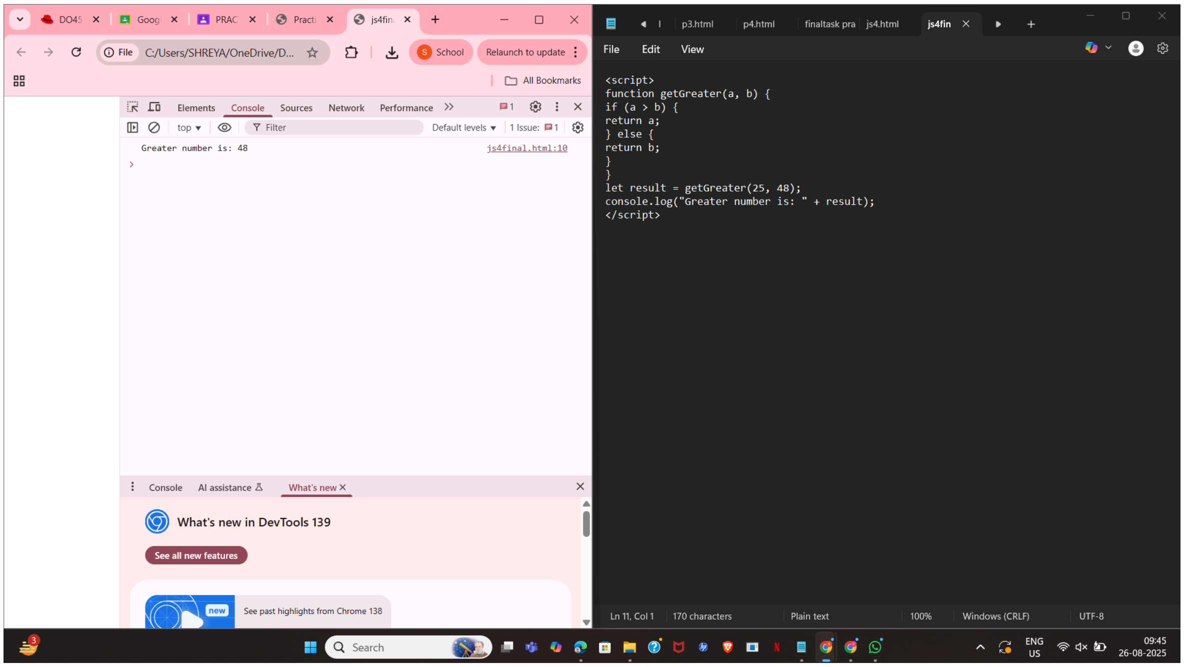
Part 1 – Functions, Scope, and Closures

1. Function Declarations

   -Write a function getGreater(a, b) that takes two numbers and returns the greater number.

   -This will be used to compare two entered PIN attempts and select the stronger one.

   Input: getGreater(25, 48)
   Output: 48



```
Greater number is: 48                                    js4final.html:10
```

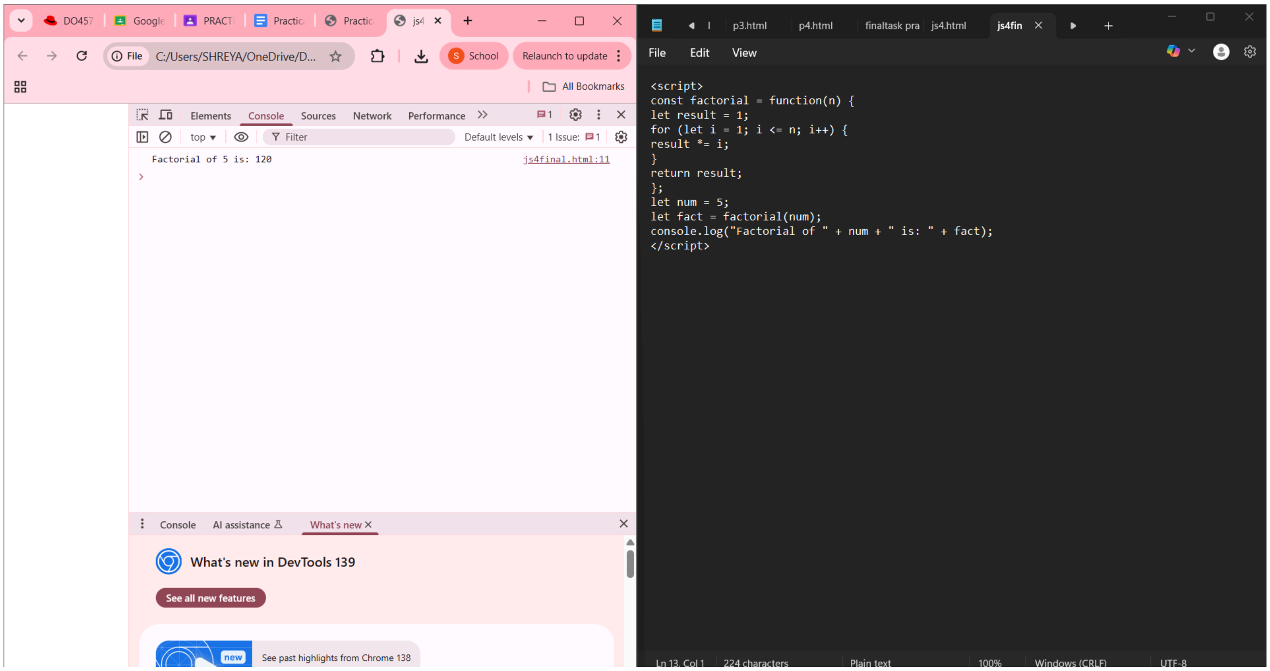
```
<script>
function getGreater(a, b) {
if (a > b) {
return a;
} else {
return b;
}
}
let result = getGreater(25, 48);
console.log("Greater number is: " + result);
</script>
```

2. Function Expressions

-Write a function expression factorial that calculates the factorial of a given number.

-The factorial will be used to generate a unique hash code for secret storage.

Input: factorial(5)
Output: 120



```
Factorial of 5 is: 120                                   js4final.html:11
```

```
<script>
const factorial = function(n) {
let result = 1;
for (let i = 1; i <= n; i++) {
result *= i;
}
return result;
};
let num = 5;
let fact = factorial(num);
console.log("Factorial of " + num + " is: " + fact);
</script>
```

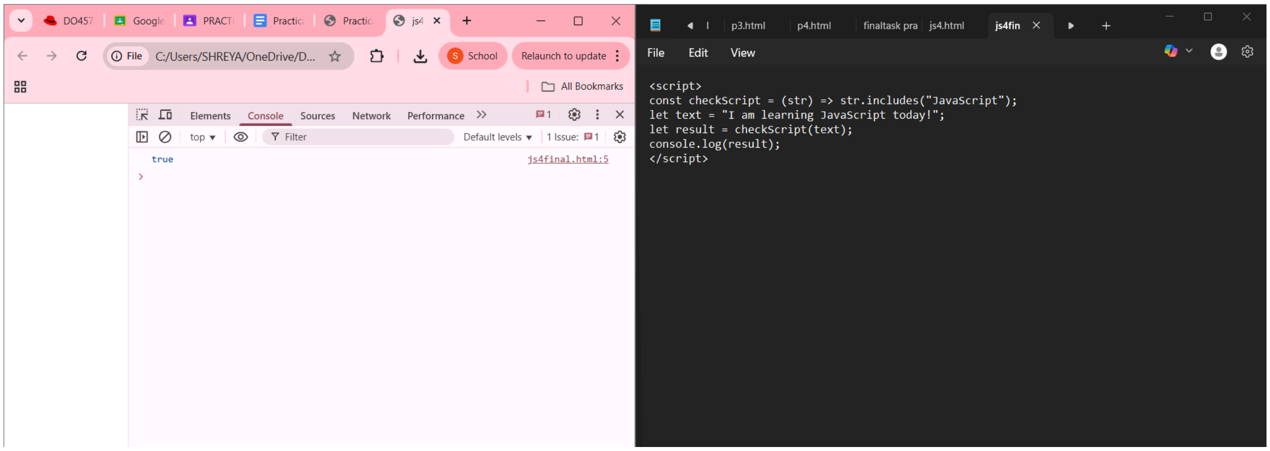
3. Arrow Functions

-Create an arrow function checkScript(str) that checks if a given string contains the word "JavaScript".

-The Digital Locker will reject notes if they don’t mention JavaScript at least once.

Input: checkScript("I am learning JavaScript today!")

Output: true



```
true                                                     js4final.html:5
```

```
<script>
const checkScript = (str) => str.includes("JavaScript");
let text = "I am learning JavaScript today!";
let result = checkScript(text);
console.log(result);
</script>
```

4. Closures

-Create a closure secureMessage(password) that stores a secret message.

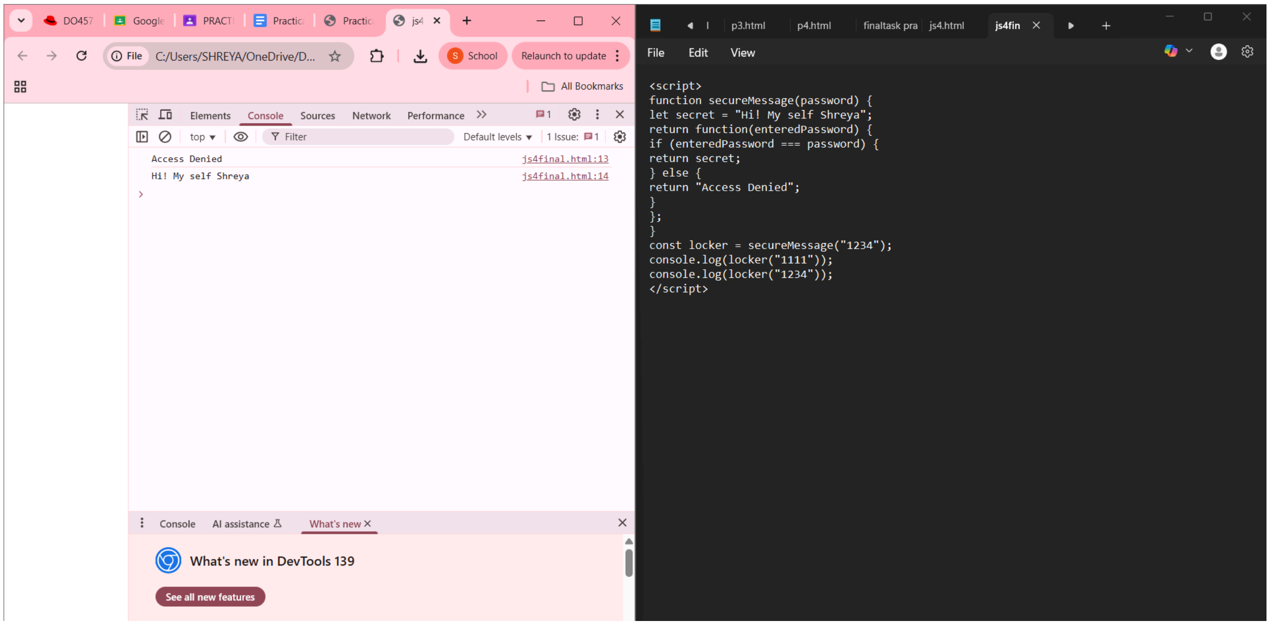
-The inner function should return the message only if the given password matches; otherwise, return "Access Denied".

Input:

```
const locker = secureMessage("1234");
console.log(locker("1111"));
console.log(locker("1234"));
```

Output:

```
Access Denied
(Your secret message here)
```

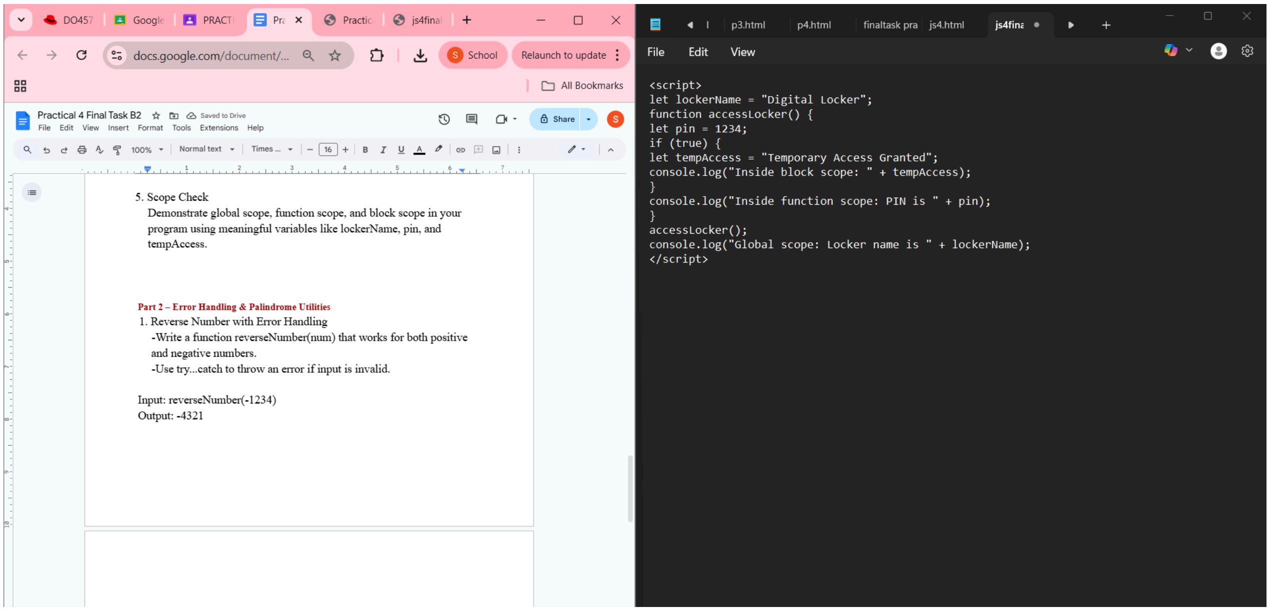


```
Access Denied          js4final.html:13
Hi! My self Shreya     js4final.html:14
```

```
<script>
function secureMessage(password) {
let secret = "Hi! My self Shreya";
return function(enteredPassword) {
if (enteredPassword === password) {
return secret;
} else {
return "Access Denied";
}
};
}
const locker = secureMessage("1234");
console.log(locker("1111"));
console.log(locker("1234"));
</script>
```

5. Scope Check

Demonstrate global scope, function scope, and block scope in your program using meaningful variables like lockerName, pin, and tempAccess.



5. Scope Check
Demonstrate global scope, function scope, and block scope in your program using meaningful variables like lockerName, pin, and tempAccess.

Part 2 – Error Handling & Palindrome Utilities

1. Reverse Number with Error Handling
-Write a function reverseNumber(num) that works for both positive and negative numbers.
-Use try...catch to throw an error if input is invalid.

Input: reverseNumber(-1234)
Output: -4321

```
<script>
let lockerName = "Digital Locker";
function accessLocker() {
let pin = 1234;
if (true) {
let tempAccess = "Temporary Access Granted";
console.log("Inside block scope: " + tempAccess);
}
console.log("Inside function scope: PIN is " + pin);
}
accessLocker();
console.log("Global scope: Locker name is " + lockerName);
</script>
```

Part 2 – Error Handling & Palindrome Utilities

1. Reverse Number with Error Handling

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    -Use try...catch to throw an error if input is invalid.

Input: reverseNumber(-1234)
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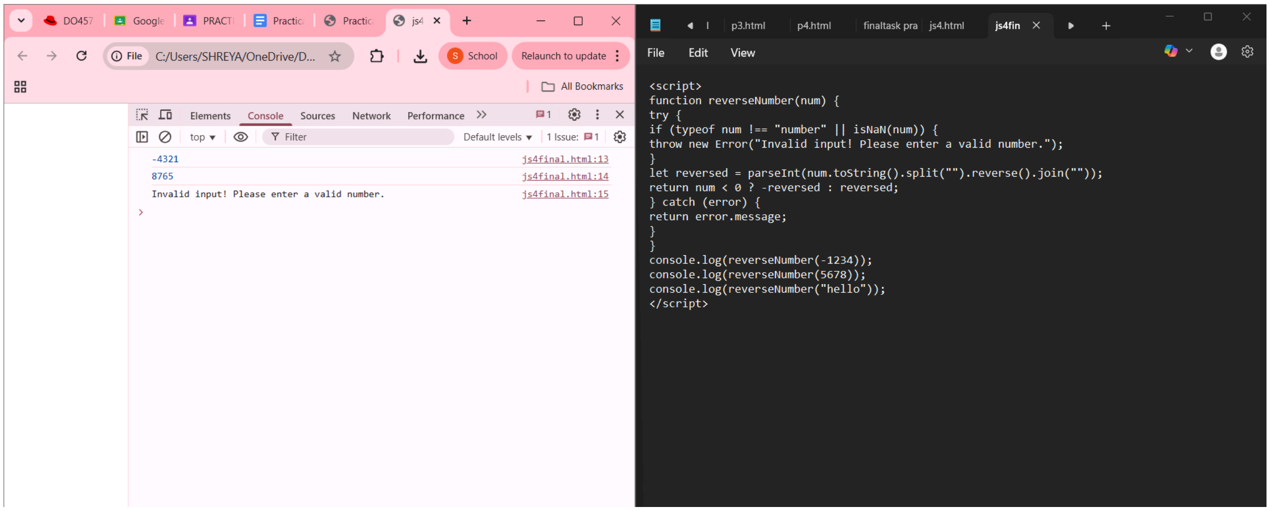


```
-4321                                             js4final.html:13
8765                                              js4final.html:14
Invalid input! Please enter a valid number.       js4final.html:15
```

```
<script>
function reverseNumber(num) {
try {
if (typeof num !== "number" || isNaN(num)) {
throw new Error("Invalid input! Please enter a valid number.");
}
let reversed = parseInt(num.toString().split("").reverse().join(""));
return num < 0 ? -reversed : reversed;
} catch (error) {
return error.message;
}
}
console.log(reverseNumber(-1234));
console.log(reverseNumber(5678));
console.log(reverseNumber("hello"));
</script>
```

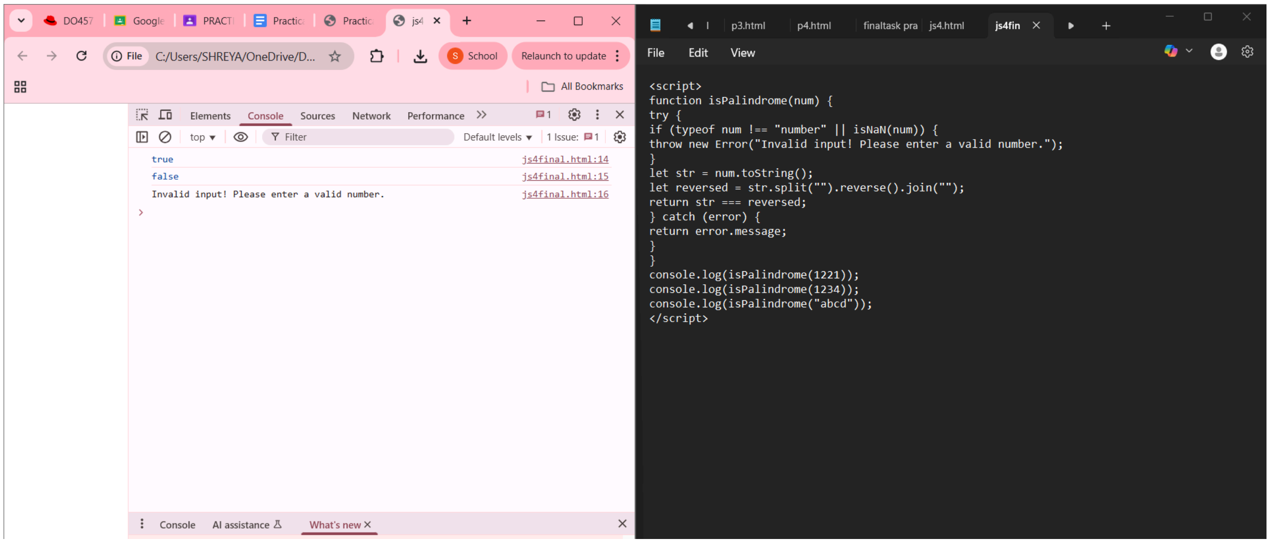
2. Palindrome PIN Check

-Write a function isPalindrome(num) that checks whether a number is a palindrome.

-Use it to validate if a user’s PIN is secure (palindromes are considered secure).

Input: isPalindrome(1221)

Output: true



```
true                                              js4final.html:14
false                                             js4final.html:15
Invalid input! Please enter a valid number.       js4final.html:16
```

```
<script>
function isPalindrome(num) {
try {
if (typeof num !== "number" || isNaN(num)) {
throw new Error("Invalid input! Please enter a valid number.");
}
let str = num.toString();
let reversed = str.split("").reverse().join("");
return str === reversed;
} catch (error) {
return error.message;
}
}
console.log(isPalindrome(1221));
console.log(isPalindrome(1234));
console.log(isPalindrome("abcd"));
</script>
```

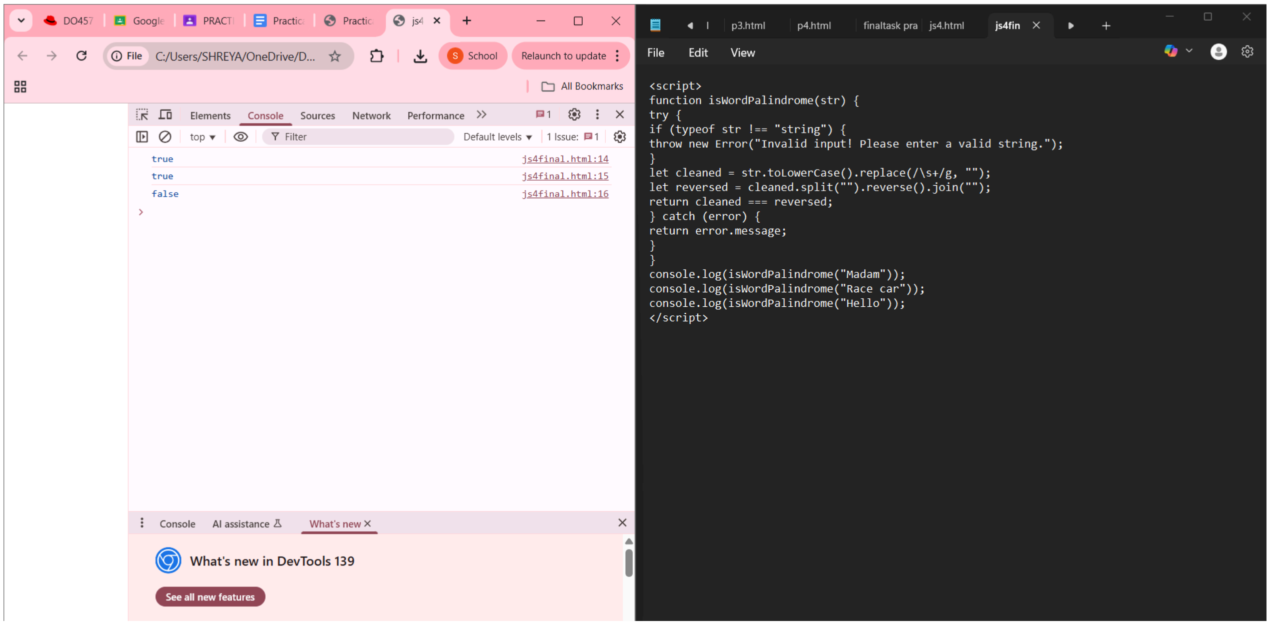
3. Word Palindrome Check

-Extend functionality: accept a string input from the user and check if it is a palindrome (word-based).

-Ignore case and spaces (e.g., "Race car" → palindrome).

Input: "Madam"

Output: true



```
true                                                  js4final.html:14
true                                                  js4final.html:15
false                                                 js4final.html:16
>
```

```
<script>
function isWordPalindrome(str) {
try {
if (typeof str !== "string") {
throw new Error("Invalid input! Please enter a valid string.");
}
let cleaned = str.toLowerCase().replace(/\s+/g, "");
let reversed = cleaned.split("").reverse().join("");
return cleaned === reversed;
} catch (error) {
return error.message;
}
}
console.log(isWordPalindrome("Madam"));
console.log(isWordPalindrome("Race car"));
console.log(isWordPalindrome("Hello"));
</script>
```

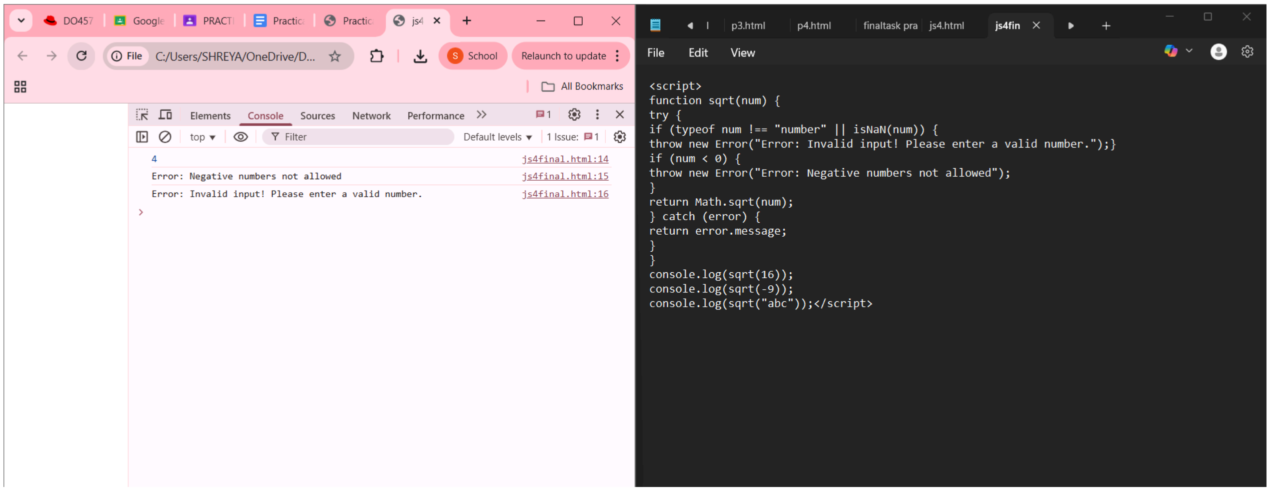
4. Square Root with Error Handling

-Write a function that takes a number and returns its square root.

-If input is invalid or negative, throw an error and handle it with try...catch.

Input: sqrt(-9)

Output: "Error: Negative numbers not allowed"



```
4                                                   js4final.html:14
Error: Negative numbers not allowed                 js4final.html:15
Error: Invalid input! Please enter a valid number.  js4final.html:16
```

```
<script>
function sqrt(num) {
try {
if (typeof num !== "number" || isNaN(num)) {
throw new Error("Error: Invalid input! Please enter a valid number.");}
if (num < 0) {
throw new Error("Error: Negative numbers not allowed");
}
return Math.sqrt(num);
} catch (error) {
return error.message;
}
}
console.log(sqrt(16));
console.log(sqrt(-9));
console.log(sqrt("abc"));</script>
```

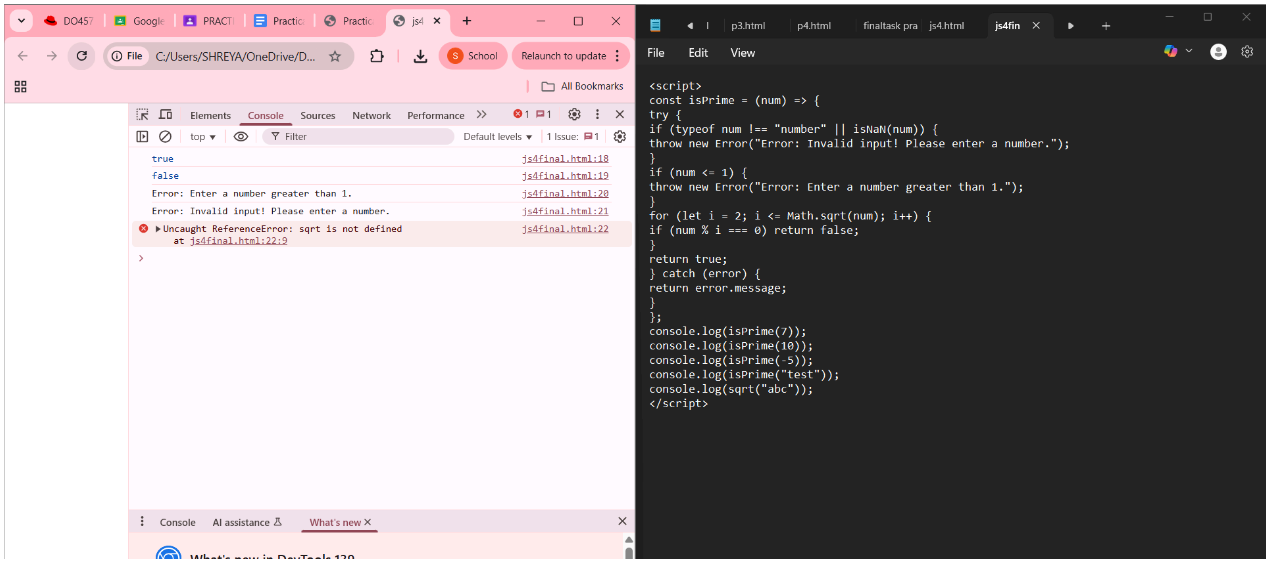
5. Prime Number Checker with Arrow Function

-Create an arrow function isPrime(num) that checks whether a number is prime.

-Use try...catch to handle invalid inputs (e.g., strings or negative numbers).

Input: isPrime(7)

Output: true



```
true                                            js4final.html:18
false                                           js4final.html:19
Error: Enter a number greater than 1.           js4final.html:20
Error: Invalid input! Please enter a number.    js4final.html:21
▶Uncaught ReferenceError: sqrt is not defined   js4final.html:22
    at js4final.html:22:9
```

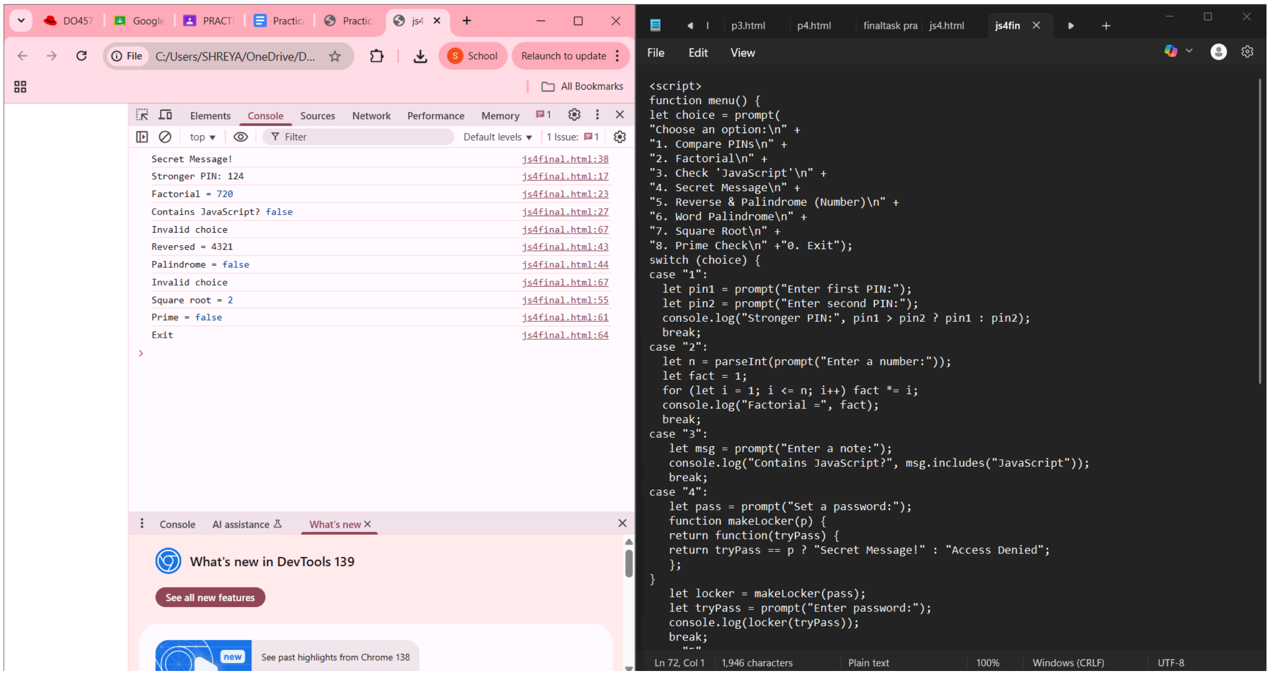
```
<script>
const isPrime = (num) => {
try {
if (typeof num !== "number" || isNaN(num)) {
throw new Error("Error: Invalid input! Please enter a number.");
}
if (num <= 1) {
throw new Error("Error: Enter a number greater than 1.");
}
for (let i = 2; i <= Math.sqrt(num); i++) {
if (num % i === 0) return false;
}
return true;
} catch (error) {
return error.message;
}
};
console.log(isPrime(7));
console.log(isPrime(10));
console.log(isPrime(-5));
console.log(isPrime("test"));
console.log(sqrt("abc"));
</script>
```

Final Integration Challenge

Put it all together in a menu-driven program simulation (console-based). The program should ask the user to choose an option:

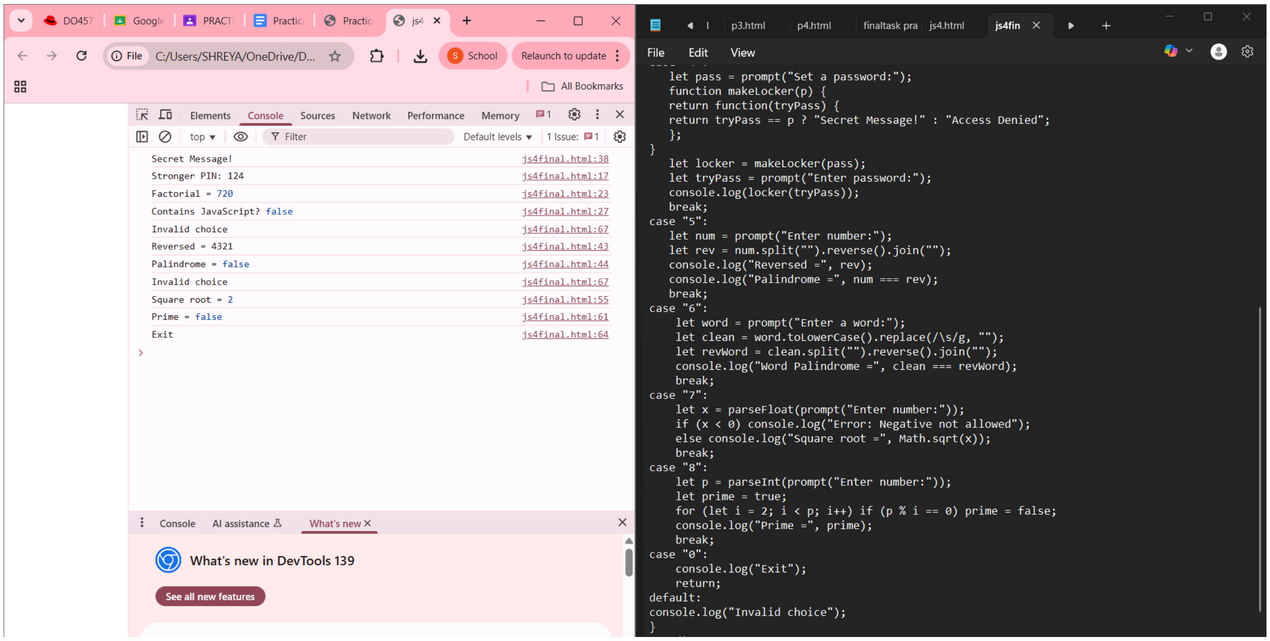
1. Compare two PINs and show the stronger one.
2. Generate a factorial hash for a number.
3. Check if a message contains “JavaScript”.
4. Store and access a secret message (closure).
5. Reverse a number and check if it’s a palindrome.
6. Check if a word is a palindrome.
7. Find square root with error handling.
8. Check if a number is prime.

For each option, display proper input prompts, error handling, and results.



```
Secret Message!                       js4final.html:38
Stronger PIN: 124                     js4final.html:17
Factorial = 720                       js4final.html:23
Contains JavaScript? false            js4final.html:27
Invalid choice                        js4final.html:67
Reversed = 4321                       js4final.html:43
Palindrome = false                    js4final.html:44
Invalid choice                        js4final.html:67
Square root = 2                       js4final.html:55
Prime = false                         js4final.html:61
Exit                                  js4final.html:64
```

```
<script>
function menu() {
let choice = prompt(
"Choose an option:\n" +
"1. Compare PINs\n" +
"2. Factorial\n" +
"3. Check 'JavaScript'\n" +
"4. Secret Message\n" +
"5. Reverse & Palindrome (Number)\n" +
"6. Word Palindrome\n" +
"7. Square Root\n" +
"8. Prime Check\n" +"0. Exit");
switch (choice) {
case "1":
  let pin1 = prompt("Enter first PIN:");
  let pin2 = prompt("Enter second PIN:");
  console.log("Stronger PIN:", pin1 > pin2 ? pin1 : pin2);
  break;
case "2":
  let n = parseInt(prompt("Enter a number:"));
  let fact = 1;
  for (let i = 1; i <= n; i++) fact *= i;
  console.log("Factorial =", fact);
  break;
case "3":
   let msg = prompt("Enter a note:");
   console.log("Contains JavaScript?", msg.includes("JavaScript"));
   break;
case "4":
   let pass = prompt("Set a password:");
   function makeLocker(p) {
   return function(tryPass) {
   return tryPass == p ? "Secret Message!" : "Access Denied";
   };
}
   let locker = makeLocker(pass);
   let tryPass = prompt("Enter password:");
   console.log(locker(tryPass));
   break;
```



```
Secret Message!                         js4final.html:38
Stronger PIN: 124                       js4final.html:17
Factorial = 720                         js4final.html:23
Contains JavaScript? false              js4final.html:27
Invalid choice                          js4final.html:67
Reversed = 4321                         js4final.html:43
Palindrome = false                      js4final.html:44
Invalid choice                          js4final.html:67
Square root = 2                         js4final.html:55
Prime = false                           js4final.html:61
Exit                                    js4final.html:64
>
```

```
   let pass = prompt("Set a password:");
   function makeLocker(p) {
   return function(tryPass) {
   return tryPass == p ? "Secret Message!" : "Access Denied";
   };
}
   let locker = makeLocker(pass);
   let tryPass = prompt("Enter password:");
   console.log(locker(tryPass));
   break;
case "5":
   let num = prompt("Enter number:");
   let rev = num.split("").reverse().join("");
   console.log("Reversed =", rev);
   console.log("Palindrome =", num === rev);
   break;
case "6":
    let word = prompt("Enter a word:");
    let clean = word.toLowerCase().replace(/\s/g, "");
    let revWord = clean.split("").reverse().join("");
    console.log("Word Palindrome =", clean === revWord);
    break;
case "7":
    let x = parseFloat(prompt("Enter number:"));
    if (x < 0) console.log("Error: Negative not allowed");
    else console.log("Square root =", Math.sqrt(x));
    break;
case "8":
    let p = parseInt(prompt("Enter number:"));
    let prime = true;
    for (let i = 2; i < p; i++) if (p % i == 0) prime = false;
    console.log("Prime =", prime);
    break;
case "0":
    console.log("Exit");
    return;
default:
console.log("Invalid choice");
}
```

Do NOT copy code directly from examples above.

You must adapt logic, rename variables, and integrate into the scenario.

If your code looks copy-pasted, it will not be accepted.