

Lecture 4 Assignment

Exercise 1:

The first screenshot shows the source code of a JavaScript program in a Replit editor. The code is as follows:

```
1 const prompt = require("prompt-sync")();
2 function sum() {
3   let n = parseInt(prompt("Enter the number of elements:"));
4   if (isNaN(n) || n <= 0) {
5     console.log("Invalid input. Please enter a positive number.");
6     return;
7   }
8
9   let numbers = []; //the array for the list of nubers inputed.
10  for (let i = 0; i < n; i++) {
11    let num = parseFloat(prompt(`Enter number ${i + 1}:`));
12    if (isNaN(num)) {
13      console.log("Please enter a valid number."); // the output for anything that is NaN.
14      return;
15    }
16    numbers.push(num); // pushes the number to the end.
17  }
18  let sum = 0;
19  for (let i = 0; i < numbers.length; i++) {
20    sum += numbers[i];
21  }
22
23  console.log("The sum of the array is:", + sum ); // adds all the numbers together
24  console.log(numbers); // prints the array
25 }
26 sum();
```

The second screenshot shows the same Replit environment with the "Run" button clicked. The console output is as follows:

```
Enter the number of elements:3
Enter number 1:2
Enter number 2:1
Enter number 3:3
The sum of the array is: 6
[ 2, 1, 3 ]
```

Exercise 2:

The screenshot shows a code editor window titled "Assignment/Lecture 2" with a "CPU/RAM LIMITED" warning. The editor contains a file named "index.js" with the following JavaScript code:

```
1 const prompt= require("prompt-sync")();
2
3 function nthFibonacci(){
4   let fib=[];
5   let x = 0, y = 1, z;
6   fib.push(x,7);
7   let number=prompt("Enter a number:"); // asks user for a number, and will output whatever number they want in the sequence.
8   for(let a = 2; a < number; a++){
9     z = x + y;
10    x = y;
11    y = z;
12    fib.push(z); // pushes last number in the sequence
13  }
14  console.log(fib)
15 }
16 nthFibonacci();
```

Below the code editor, there is a "Console" tab and a "Shell" tab. The "Console" tab is active, showing the output of the code. The output is:

```
Enter a number:10
[
  0, 7, 1, 2, 3,
  5, 8, 13, 21, 34
]
```

Exercise 3:

The image displays two screenshots of a Replit IDE environment, showing a JavaScript file named `index.js` and its execution output.

Top Screenshot: The code editor shows the following JavaScript code:

```
1 const prompt = require("prompt-sync")();
2
3 var instruments=['guitar', 'piano', 'cello', 'bass', 'violin', 'harmonica', 'viola' ]; // original array of instruments
4 console.log(instruments); //will print original list, not updated to show the difference.
5
6 function element(array, index){
7   if(index < 0 || index >= array.length){ //if the index is less than 0, it will print that index isnt in range.
8     console.log("index isnt in range.");
9     return array;
10  }
11  array.splice(index, 1); // if it is in range, print the array removing a element.
12  return array;
13 }
14 var remove= 4 // tells computer which element to remove from the array, based on index.
15 var instrumentsTwo= element(instruments, remove);
16 console.log(instrumentsTwo); // will print the updated array with the removed element.
```

Bottom Screenshot: The console output shows the result of running the code:

```
[ 'guitar', 'piano', 'cello', 'bass', 'violin', 'harmonica', 'viola' ]
[ 'guitar', 'piano', 'cello', 'bass', 'harmonica', 'viola' ]
```

Exercise 4:

The image displays two screenshots of a Replit environment, specifically the 'Assignment/Lecture 2' workspace. The top screenshot shows the code editor with a JavaScript file named 'index.js'. The code defines an array of animals, a function to insert an element at a specific index, and then uses this function to insert 'bear' at index 4. The bottom screenshot shows the same workspace after running the code, with the console output displaying the original array and the updated array with 'bear' inserted at index 4.

```
var animals=['shark', 'elephant', 'lion', 'cheetah', 'dolphin', 'zebra', 'giraffe']; // original array of instruments
console.log(animals); //will print original list, not updated.

function element(array, index){
  if(index < 0 || index >= array.length){ //if the index is less than 0, it will print that index isnt in range.
    console.log("index isnt in range.");
    return array;
  }
  array.splice(index, 0, "bear"); // if it is in range, print the array by moving the index up one, and adding bear in the 4th index.
  return array;
}

var dif= 4 // tells computer which element to move from the array, based on index. In the 4th position, it will move dolphin to 5 to put bear in 4.
var animalsTwo= element(animals, dif);
console.log(animalsTwo); // will print the updated array with the removed element.
```

Run

```
[
  'shark', 'elephant',
  'lion', 'cheetah',
  'dolphin', 'zebra',
  'giraffe'
]
[
  'shark', 'elephant',
  'lion', 'cheetah',
  'bear', 'dolphin',
  'zebra', 'giraffe'
]
```

Exercise 5:

replit.com/@Bspangler7040/AssignmentLecture-2

Assignment/Lecture 2 CPU/RAM LIMITED Run

index.js Console Shell AI +

Show Only Latest Clear History

Run

```
Please put how many grocery items you have 5
please the names of the items:milk
please the names of the items:eggs
please the names of the items:lettuce
please the names of the items:cereal
please the names of the items:yogurt
Grocery list: [ 'milk', 'eggs', 'lettuce', 'cereal', 'yogurt' ]
search for an item in the list or type quit to exit:lettuce
Found
search for an item in the list or type quit to exit:steak
Not found
search for an item in the list or type quit to exit:quit
exiting program
```

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replit.com/@Bspangler7040/AssignmentLecture-2#index.js

Assignment/Lecture 2 CPU/RAM LIMITED Stop

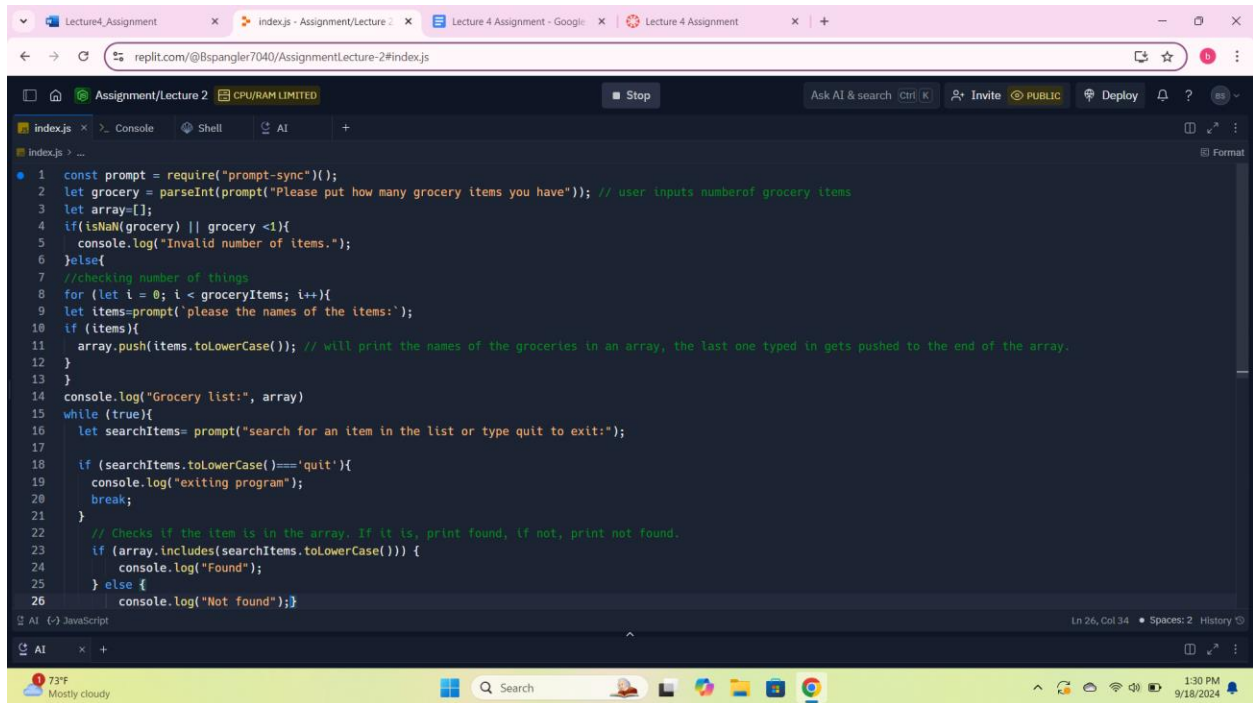
index.js Console Shell AI +

Format

```
1 //set up
2 //checking number of things
3 for (let i = 0; i < groceryItems; i++){
4   let items=prompt('please the names of the items:');
5   if (items){
6     array.push(items.toLowerCase()); // will print the names of the groceries in an array, the last one typed in gets pushed to the end of the array.
7   }
8 }
9 console.log("Grocery list:", array)
10 while (true){
11   let searchItems= prompt("search for an item in the list or type quit to exit:");
12   if (searchItems.toLowerCase()=='quit'){
13     console.log("exiting program");
14     break;
15   }
16   // Checks if the item is in the array. If it is, print found, if not, print not found.
17   if (array.includes(searchItems.toLowerCase())) {
18     console.log("Found");
19   } else {
20     console.log("Not found");
21   }
22 }
23
24
25
26
27
28
29
```

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```
1 const prompt = require("prompt-sync")();
2 let grocery = parseInt(prompt("Please put how many grocery items you have")); // user inputs number of grocery items
3 let array=[];
4 if(isNaN(grocery) || grocery <1){
5   console.log("Invalid number of items.");
6 }else{
7   //checking number of things
8   for (let i = 0; i < grocery; i++){
9     let items=prompt('Please the names of the items:');
10    if (items){
11      array.push(items.toLowerCase()); // will print the names of the groceries in an array, the last one typed in gets pushed to the end of the array.
12    }
13  }
14  console.log("Grocery list:", array)
15  while (true){
16    let searchItems= prompt("search for an item in the list or type quit to exit:");
17
18    if (searchItems.toLowerCase()=='quit'){
19      console.log("exiting program");
20      break;
21    }
22    // Checks if the item is in the array. If it is, print found, if not, print not found.
23    if (array.includes(searchItems.toLowerCase())) {
24      console.log("Found");
25    } else {
26      console.log("Not found");
27    }
28  }
29 }
```

Exercise 6:

replit.com/@Bspangler7040/AssignmentLecture-2#index.js

```
11     array.push(items.toLowerCase()); // store items in lowercase
12   }
13 }
14 console.log("Grocery list:", array);
15
16 while (true) {
17   let searchItems = prompt("Search for an item in the list or type 'quit' to exit: ");
18
19   if (searchItems.toLowerCase() === 'quit') {
20     console.log("Exiting program");
21     break;
22   }
23
24   // Checks and is also case-insensitive
25   if (array.includes(searchItems.toLowerCase())) {
26     console.log("Found");
27   } else {
28     console.log("Not found");
29   }
30 }
31
```

replit.com/@Bspangler7040/AssignmentLecture-2

```
1 const prompt = require("prompt-sync")();
2 let grocery = parseInt(prompt("Please put how many grocery items you have: ")); // user inputs number of grocery items
3 let array = [];
4 if (isNaN(grocery) || grocery < 1) {
5   console.log("Invalid number of items.");
6 } else {
7   // checking number of items
8   for (let i = 0; i < grocery; i++) {
9     let items = prompt("Please enter the names of the items: ");
10    if (items) {
11      array.push(items.toLowerCase()); // store items in lowercase
12    }
13  }
14  console.log("Grocery list:", array);
15
16  while (true) {
17    let searchItems = prompt("Search for an item in the list or type 'quit' to exit: ");
18
19    if (searchItems.toLowerCase() === 'quit') {
20      console.log("Exiting program");
21      break;
22    }
23
24    // Checks and is also case-insensitive
25    if (array.includes(searchItems.toLowerCase())) {
26      console.log("Found");
27    }
28  }
29 }
```

Lecture4_AssignmentAssignment/Lecture 2 - ReplitLecture 4 Assignment - GoogleLecture 4 Assignment

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Assignment/Lecture 2CPU/RAM LIMITEDRun

Ask AI & searchCtrl KInvitePUBLICDeploy?

index.jsConsoleShellAII

RunShow Only LatestClear History

Ask AI33s on 13:38:10, 09/18

Please put how many grocery items you have: 2
Please enter the names of the items: BaNaNa
Please enter the names of the items: YOGurt
Grocery list: ['banana', 'yogurt']
Search for an item in the list or type 'quit' to exit: YOGURT
Found
Search for an item in the list or type 'quit' to exit: QUIT
Exiting program

AI

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Exercise 7:

The top screenshot shows the output of a JavaScript program in a Replit environment. The program prompts the user to enter the number of grocery items, then the names of the items. It then displays the list and allows the user to remove items or quit.

```
Please enter how many grocery items you have: 3
Please enter the name of the item: lettuce
Please enter the name of the item: milk
Please enter the name of the item: CeREAL
Your grocery list:
1. Lettuce
2. Milk
3. Cereal
Enter an item to remove from the list or type 'quit' to exit: leTTUce
LetTUce has been removed.
Updated grocery list:
1. Milk
2. Cereal
Enter an item to remove from the list or type 'quit' to exit: eggs
Item does not exist in the list.
Updated grocery list:
1. Milk
2. Cereal
Enter an item to remove from the list or type 'quit' to exit: quit
Exiting program
```

The bottom screenshot shows the source code of the program in `index.js`:

```
1 const prompt = require("prompt-sync")();
2
3 let groceryCount = parseInt(prompt("Please enter how many grocery items you have: ")); // User inputs number of grocery items
4 let groceryList = [];
5
6 if (isNaN(groceryCount) || groceryCount < 1) {
7   console.log("Invalid number of items.");
8 } else {
9   // Collecting grocery items
10  for (let i = 0; i < groceryCount; i++) {
11    let item = prompt("Please enter the name of item: ");
12    if (item) {
13      groceryList.push(item.toLowerCase()); // Store items in lowercase
14    }
15  }
16  console.log("Your grocery list:");
17  groceryList.forEach((item, index) => {
18    console.log(`${index + 1}. ${item.charAt(0).toUpperCase() + item.slice(1)}`); // Print the list in this form: 1., 2., 3., 4., 5., etc...
19  });
20
21  while (true) {
22    let itemToRemove = prompt("Enter an item to remove from the list or type 'quit' to exit: ");
23
24    if (itemToRemove.toLowerCase() === 'quit') {
25      console.log("Exiting program");
26      break;
27    }
28  }
29 }
```

Lecture4_Assignment x indexjs - Assignment/Lecture 2 x Lecture 4 Assignment - Google x Lecture 4 Assignment x +

replit.com/@Bspangler7040/AssignmentLecture-2#index.js

Assignment/Lecture 2 CPU/RAM LIMITED Run Ask AI & search Ctrl K Invite PUBLIC Deploy ?

index.js x Console Shell AI +

index.js > ...

```
19  });
20
21  while (true) {
22    let itemToRemove = prompt("Enter an item to remove from the list or type 'quit' to exit: ");
23
24    if (itemToRemove.toLowerCase() === 'quit') {
25      console.log("Exiting program");
26      break;
27    }
28    // ensures that the case is insensitive, and wont be affected by lower or upper case.
29
30    const index = groceryList.indexOf(itemToRemove.toLowerCase());
31    if (index !== -1) {
32      groceryList.splice(index, 1); // Remove items from list if already present.
33      console.log(`${itemToRemove.charAt(0).toUpperCase() + itemToRemove.slice(1)} has been removed.`);
34    } else {
35      console.log("Item does not exist in the list.");
36    }
37
38    // Print updated grocery list
39    console.log("Updated grocery list:");
40    groceryList.forEach((item, index) => {
41      console.log(`${index + 1}. ${item.charAt(0).toUpperCase() + item.slice(1)}`);
42    });
43  }
44 }
```

Ln 15, Col 4 Spaces: 2 History

AI x +

74°F Mostly cloudy Search 1:48 PM 9/18/2024

Exercise 8:

The image displays two screenshots of a Replit environment, showing the execution of a JavaScript program to find the maximum value in an array.

Top Screenshot: The console output shows the array of values and the maximum value found.

```
array of the values: [
  77, 1, 109,
  -222, 25, 500,
  1000, -3000
]
maximum value: 1000
```

Bottom Screenshot: The code editor shows the JavaScript code used to find the maximum value.

```
1 const prompt= require("prompt-sync")();
2
3 function max(...num) {
4   let result = -Infinity; // allows smallest numbers possible to be entered
5   for( let number of num){
6     if (number> result) // if current number is greater than current result, output the number.
7       result=number;
8   }
9   return result; // returns maximum value found
10 }
11 let values=[77,1,109,-222, ] // example of defining arrays
12 console.log("array of the values:", values); // prints the original array
13 console.log("maximum value:" , max(...values)); // outputs the greatest number in the bunch
14
```

Exercise 9:

The screenshot displays a Replit workspace for a JavaScript project named "Assignment/Lecture 2". The browser address bar shows the URL `replit.com/@Bspangler7040/AssignmentLecture-2`. The workspace includes a file explorer with `index.js`, a console, a shell, and an AI assistant. The console output shows the result of running the program: `Enter a number:-34` and `Reversed Number: -43`.

The `index.js` file contains the following JavaScript code:

```
1 const prompt= require("prompt-sync")();
2
3 function reverseNum(num){
4   const str = num.toString(); // converts the number to a string
5
6   if (str[0] === '-'){ // checks if the number is negative
7     return '-' + str.slice(1).split('').reverse().join(''); // reverse the string bt leave the negative sign.
8   }
9   else{
10    return str.split('').reverse().join(''); // even if not negative, reverse the string
11  }
12 }
13 const userInput = prompt("Enter a number:"); //allows user input and outputs the numbers reversed.
14 const reverse= reverseNum(userInput);
15 console.log(`Reversed Number: ${reverse}`)
```

The bottom of the screenshot shows the Windows taskbar with the system clock at 12:35 PM on 9/18/2024.

Exercise 10:

The screenshot shows a Replit IDE interface with a browser window at the top and a code editor below. The browser window displays the URL `replit.com/@Bspangler7040/AssignmentLecture-2` and the output `HELLO WORLD`. The code editor shows a JavaScript file named `index.js` with the following code:

```
1 const prompt = require("prompt-sync")();
2
3 function convert(str){ //function to convert the words from lower to uppercase
4   const lower = ['a','b','c','d','e','f','g','h','i','j','k','l','m','n','o','p','q','r','s','t','u','v','w','x','y','z'];
5   const upper = ['A','B','C','D','E','F','G','H','I','J','K','L','M','N','O','P','Q','R','S','T','U','V','W','X','Y','Z'];
6
7   let result = "";
8
9   for(let i=0; i<str.length; i++){ // if the character is found in the lowercase array...
10    const character = str[i]; // gets the current character
11    const index = lower.indexOf(character); // find the index of the letters in the lowercase array
12    if(index != -1){
13      result += upper[index]; // convert to uppercase and add to result
14    }
15    else{
16      result += character; //if not a lowercase, leave character as is
17    }
18  }
19
20  return result;
21 }
22 console.log(convert("hello world")); // prints the words in all caps.
23
24
25
```

The code editor also shows a status bar at the bottom indicating the file is `index.js` and the language is `JavaScript`. The browser window at the bottom shows the URL `replit.com/@Bspangler7040/AssignmentLecture-2#index.js` and the output `HELLO WORLD`.

Exercise 11:

The screenshot shows a Replit environment with a JavaScript file named `index.js`. The code defines a function `invert(str)` that takes a string and returns its inverse. It uses two arrays, `lowercase` and `uppercase`, to map characters to their corresponding indices. The function iterates over each character in the input string and appends the mapped character to the result string. The console output shows the result of calling `invert("BanAna")`, which is `baNanA`.

```
1 function invert(str){
2   const lowercase = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n', 'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z'];
3   const uppercase = ['A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z'];
4   let result= "";
5   for (let i = 0; i < str.length; i++) {
6     const character = str[i];
7
8     if (lowercase.includes(character)) { // check if character is lowercase
9
10      const index = lowercase.indexOf(character); //find index in lowercase array
11      result += uppercase[index]; // prints the result in uppercase
12    } else if (uppercase.includes(character)) { // check if character is uppercase
13
14      const index = uppercase.indexOf(character); // find the index in uppercase
15      result += lowercase[index]; // prints the result in lowercase
16    } else {
17      result += character; // if character is neight, print result as is
18    }
19  }
20 }
21 return result; // return final inverted string
22 }
23 console.log(invert("BanAna")); // prints the inverse of whatever is inputed.
```

The console output is:

```
baNanA
```