

Web Application Development Lab

Assignment - 4

Introduction to JavaScript, Date, String, Array, Objects, Callbacks

1. Create a function `gradeCalculator(score)` that takes a score (0-100) and returns the corresponding grade: "A" for 90-100, "B" for 80-89, "C" for 70-79, "D" for 60-69, and "F" for anything below 60.
2. Write a function `sumOfDigit(num)` which will return sum of digits of a given number.
3. Create a function `isPrime(num)` that returns true if the number is prime and false otherwise.
4. Create a function `arraySum(arr)` that takes an array of numbers and returns the sum of all its elements.
5. Create a function `countVowels(str)` that counts the number of vowels in a given string and returns the count.
6. Write a JS function that generates a random integer between two given numbers (inclusive).
7. Write a function that returns the current date and time in the format "DD/MM/YYYY HH:mm AM/PM"
8. Take a date of birth of an user in MM/DD/YYYY format and display the age in year, month and days.
9. Create a function that checks if a given string is a palindrome.
10. Write a JS function that takes an array and returns a new array with duplicate values removed.
11. Create a student object with roll, name, mobile, and email. Display the student details. Write code to update the mobile number of the student and display again. Write code to add a key value payer for spga which contains an array of SGPA's of four semesters. Calculate the CGPA of the student and display it.
12. Consider the array of objects and answer the following questions.

```
[
  { title: "The Power of Now", author: "Eckhart Tolle", price: 499, rating: 4.3 },
  { title: "A New Earth: Awakening to Your Life's Purpose", author: "Eckhart Tolle", price: 599,
    rating: 4.5 },
  { title: "Atomic Habits: An Easy & Proven Way to Build Good Habits & Break Bad Ones", author:
    "James Clear", price: 799, rating: 4.8 },
  { title: "The 5 AM Club: Own Your Morning, Elevate Your Life", author: "Robin Sharma", price:
    650, rating: 4.4 },
  { title: "Wings of Fire", author: "A. P. J. Abdul Kalam", price: 199, rating: 4.6 }
]
```

- i. Log all the book details in the format = "A. P. J. Abdul Kalam wrote the book Wings of Fire has a rating 4.6 and costs 199."
- ii. Display all the book names with rating greater than or equals to 4.5.
- iii. Display the book details with the longest title
- iv. Write a function which will take the array and a price and will return an array with all the books having price less than or equals to the given price. Display the book details. If no book is available display that as well.

- v. Write a function which will take the array and an author name and will return an array with all the books written by that author. Display the book details. If no book is available display that as well.

13. Use the following students object and answer the following questions.

```
const students = [  
  { name: "Bob", age: 22, grade: "B" },  
  { name: "David", age: 21, grade: "C" },  
  { name: "Charlie", age: 23, grade: "A" },  
  { name: "Alice", age: 20, grade: "A" }  
]
```

- i. Write a function that takes an array of student objects and a grade (e.g., "A"). It should return a new array containing only the students who have that grade.
 - ii. Create a function that calculates the average age of the students in the given array of objects.
 - iii. Create a function that takes an array of student objects and returns an object with the count of students for each grade.
 - iv. Write a function that takes an array of student objects and sorts them by their names in alphabetical order.
14. Write a function `calculate(num1, num2, operation)` that takes two numbers and a callback function representing the operation (addition, subtraction, etc.). Call the operation and return the result.
15. Create a function named `transformArray` that accepts an array and a callback function. It should apply the callback function to each element of the array and return a new array with the transformed elements. The callback function will multiply 10 if the number is even else multiply 5.