

Problem 1: Word Frequency Counter

Function name: `wordFrequency(sentence)`

Statement: Count how many times each word appears in a sentence and return the result as an object.

Rules:

- Ignore case differences
- Ignore extra spaces

Test case 1

Input: "I love JS and I love coding and JS is fun"

Output: `{ i: 2, love: 2, js: 2, and: 2, coding: 1, is: 1, fun: 1 }`

Test case 2

Input: "Hello hello HELLO "

Output: `{ hello: 3 }`

Problem 2: Student Marks Analyzer

Function name: `analyzeMarks(marksObj)`

Statement:

Return total marks, average marks, highest scoring subject, and lowest scoring subject.

Test case 1

Input: `{ math: 78, english: 65, physics: 88, bangla: 55 }`

Output: { total: 286, average: 71.5, highest: "physics", lowest: "bangla" }

Test case 2

Input: { ict: 90, biology: 90, chemistry: 70 }

Output: { total: 250, average: 83.33, highest: "ict", lowest: "chemistry" }

Problem 3: Password Strength Checker

Function name: `checkPassword(password)`

Rules:

- Length must be at least 8
- Must contain at least 1 number
- Must contain at least 1 uppercase letter
- Must not contain spaces

Test case 1

Input: "helloWorld"

Output:

{ valid: false, reasons: ["missing number"] }

Test case 2

Input: "Hello123"

Output: { valid: true, reasons: [] }

Problem 4: Shopping Bill Calculator

Function name: `calcBill(prices, items)`

Statement: Calculate total bill amount and count how many times each item appears.

Test case 1

Input:

```
prices = { rice: 70, oil: 180, egg: 12, sugar: 90 };

items = ["egg", "egg", "rice", "oil", "egg", "sugar"];
```

Output:

```
{
  total: 376,
  itemCount: { egg: 3, rice: 1, oil: 1, sugar: 1 }
}
```

Test case 2

Input:

```
prices = { pen: 10, book: 50 };

items = ["pen", "pen", "book", "pen"];
```

Output:

```
{
  total: 80,
  itemCount: { pen: 3, book: 1 }
}
```

Problem 5: Remove Duplicates From Array

Function name: `removeDuplicates(arr)`

Statement:

Return a new array where duplicate values are removed, keeping the original order.

Test case 1

Input:

`[5, 3, 5, 2, 3, 9, 2, 7]`

Output:

`[5, 3, 2, 9, 7]`

Test case 2

Input:

`[1, 1, 1, 1]`

Output:

`[1]`

Problem 6: Phonebook Prefix Search

Function name: `searchByPrefix(phonebook, prefix)`

Statement:

Return an array of names that start with the given prefix.

Test case 1

Input:

```
phonebook = { rahim: "0181", karim: "0172", rafi: "0193" };  
prefix = "ra";
```

Output:

```
[ "rahim", "rafi" ]
```

Test case 2

Input:

```
phonebook = { mina: "013", mim: "014", rina: "015" };
prefix = "mi";
```

Output:

```
[ "mina", "mim" ]
```

Problem 7: Text Stats Generator

Function name: `textStats(text)`

Statement:

Return an object containing:

- Characters count excluding spaces
- Words count
- Vowels count
- Consonants count

Test case 1

Input:

```
"JavaScript is fun to learn"
```

Output:

```
{ characters: 22, words: 5, vowels: 8, consonants: 14 }
```

Test case 2

Input:

" I am OK "

Output:

{ characters: 5, words: 3, vowels: 3, consonants: 2 }