SOLVING TRICKY PROBLEMS

Presto REACTO!

SOME FACTS

◎ **The FSA Admissions exam assesses for two things:**

- Knowledge of fundamental JS
- Problem solving ability

◎ ***How do Engineers solve tricky problems?***

PROBLEM SOLVING

- Identify the problem
- Brainstorm solutions
- Implement one
- Evaluate it

R estate

E xamples

A pproach

C ode

Notice how far down this is

T est

O ptimize

RESTATE

- Rephrase in your own words (diagram if useful)
- Make sure you fully understand the problem
- Leads very naturally into…

EXAMPLES

- Representative input and output

- Consider edge cases

- Consider errors

- Write them down

APPROACH

◉ **Come up with at least one *conceptual* solution**

◉ **Don't code yet!**

◉ **Make some comments in your code file**

CODE

- **Translate your *Approach* into working JS**
- **FSA Admissions Team will even give partial credit for a solid approach (*even if the code isn't complete*)**
- **Make sure include all those edge cases!**

TEST

◎ **Use Examples in the test specs to hone your solution**

◎ **Ensure your Code works for all Examples**

◎ **Debug as necessary**

OPTIMIZE

◎ **The final (and least important) step!**

◎ **Only if your code works and you have plenty of time**

◎ **Is there a more concise way to write this code?**

◎ **Are there built-in methods that can help?**

◎ **Did I document my code so it is easy to understand?**

EXAMPLE

◉ *"Create a function* `vowelCount()` *that takes a string as an argument. The function should return the total number of vowels in the string"*

RESTATE

◉ *"I want to return the total number of vowels in a string argument".*

● *Do I include 'y'?*

● *Is it case sensitive?*

● *What if I get an empty string?*

EXAMPLES

◉ *vowelCount('hello') => 2*

◉ *vowelCount('Yummy Food') => 5*

◉ *vowelCount('') => 0*

APPROACH

◉ *I will loop over every character in the string.*

◉ *For each character, I will convert to Lower Case, and check if it exists in a string of vowels.*

◉ *If it does, I will increment my vowelCount*

◉ *After my loop, I will return the total vowelCount*

CODE / TEST

```javascript
function vowelCount(str){
    var vowels = 'aeiouy';
    var vowelCount = 0;
    for(var i = 0; i < str.length; i++){
        var char = str[i].toLowerCase();
        for(var j = 0; j < vowels.length; j++){
            var vowel = vowels[j];
            if(vowel === char) {
                vowelCount++
                break;
            }
        }
    }

    return vowelCount
}
```

OPTIMIZE

```javascript
function vowelCount(str){
    var vowels = 'aeiouy'; // string of vowels
    var vowelCount = 0; // initialize vowel count
    for(var i = 0; i < str.length; i++){ // loop over string
        var char = str[i].toLowerCase();
        if(vowels.indexOf(char) >= 0) { // if character is in vowels
          vowelCount++ // increment vowelCount
        }
    }

    return vowelCount // return total vowels
}
```

TODAY'S PROBLEM

- **Today you will build a *Caesar Cypher,*** an encryption scheme favored by the Ancient Romans

- Your function will take a string, and a number of characters. It should shift each character in the string by that number of letters

- Example: "dog" shifted by 4 => "hsk"

ET TU REACTO?

R estate

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