

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 e s t a t e

E x a m p l e s

A p p r o a c h

C o d e

T e s t

O p t i m i z e

Notice how far down this is

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

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

OPTIMIZE

```
function vowelCount(str) {  
  let vowels = 'aeiouy';  
  let vowelCount = 0;  
  for (let i = 0; i < str.length; i++) {  
    let char = str[i].toLowerCase();  
    if (vowels.indexOf(char) >= 0) {  
      vowelCount++;  
    }  
  }  
  return vowelCount;  
}
```


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?

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E x a m p l e s

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O p t i m i z e

