Coding Interview for Graduates

Coding Challenge

Using <https://api.publicapis.org/> complete the following tasks in any language/server.

1. Create an API that lists the title, description based on the category passed as an input parameter.

Ans.

<?php

$category = $\_GET['category'];

$url = "https://api.publicapis.org/entries?category=$category";

$data = json\_decode(file\_get\_contents($url), true);

foreach ($data['entries'] as $entry) {

echo $entry['API'] . ": " . $entry['Description'] . "<br>";

}

?>

1. Create an API that would save a new entry with all the relevant properties which retrieves values from the endpoint GET /entries.

Ans. <?php

$url = "https://api.publicapis.org/entries";

$api\_response = file\_get\_contents($url);

$api\_data = json\_decode($api\_response);

$new\_entry = array(

"API" => $\_POST['API'],

"Description" => $\_POST['Description'],

"Auth" => $\_POST['Auth'],

"HTTPS" => $\_POST['HTTPS'],

"Cors" => $\_POST['Cors'],

"Link" => $\_POST['Link'],

"Category" => $\_POST['Category']

);

array\_push($api\_data['entries'], $new\_entry);

// Save the new data to a file or database

echo "New entry successfully added.";

?>

1. Question: what are the key things you would consider when creating/consuming an API to ensure that it is secure and reliable?

**Ans.**

Using HTTPS to encrypt data in transit and prevent eavesdropping

Implementing authentication and authorization to ensure only authorized users can access the API

Using CORS headers to control which domains are able to access the API

Regularly updating and patching the API for security vulnerabilities

Implementing rate limiting to prevent excessive usage and potential DDoS attacks

Performing regular testing and monitoring to ensure the API is functioning as expected and quickly address any issues that arise.

Theoretical Challenge

Suppose you have a CSV file with the data below.

A1: 5, A2: 7, A3: 9, B1: 3, B2: 8, B3: =4+5, C1: =5+A1, C2: =A2+B2, C3: =C2+B3

This can be represented in an excel sheet below:

|  |  |  |  |
| --- | --- | --- | --- |
|  | A | B | C |
| 1 | 5 | 3 | =5+A1 |
| 2 | 7 | 8 | =A2+B2 |
| 3 | 9 | =4+5 | =C2+B3 |

I want a program that will take the CSV input above and produce CSV output with the results. If it is a value, then return a value. If it is a formula then calculate the formula and return the value of that formula.

1. How will you tackle the challenge above?

Ans.

To tackle this challenge, I would first read the CSV file and parse the data into a 2D array. Then, I would iterate through each cell in the array and check if it is a value or a formula. If it is a value, I would simply store the value in the corresponding cell in the output array. If it is a formula, I would use the built-in eval() function to calculate the formula and store the result in the corresponding cell in the output array. Finally, I would write the output array to a new CSV file.

1. What type of errors you would you check for?

Ans.

I would check for several types of errors:

Syntax errors in the formulas, such as missing operators or parentheses

Reference errors, such as referring to a non-existent cell in a formula

Type errors, such as trying to add a string to a number

Security errors, such as preventing the use of malicious formulas that could execute harmful code.

1. How might a user break your code?

Ans.

A user could potentially break the code by:

Inputting a formula with syntax errors

Inputting a formula that references non-existent cells

Inputting a formula that tries to execute harmful code

Inputting a formula that performs an infinite loop

Attempting to overwrite the original CSV file

Attempting to access the program without proper authorization

Attempting to access the program using a malicious script

Attempting to access the program using a large number of requests in a short period of time.