Question1 : Write API:
Using Python Flask or ExpressJS, Write a REST API that reads the body and returns JSON.

# API Method POST
# URL : /find_symbols_in_names

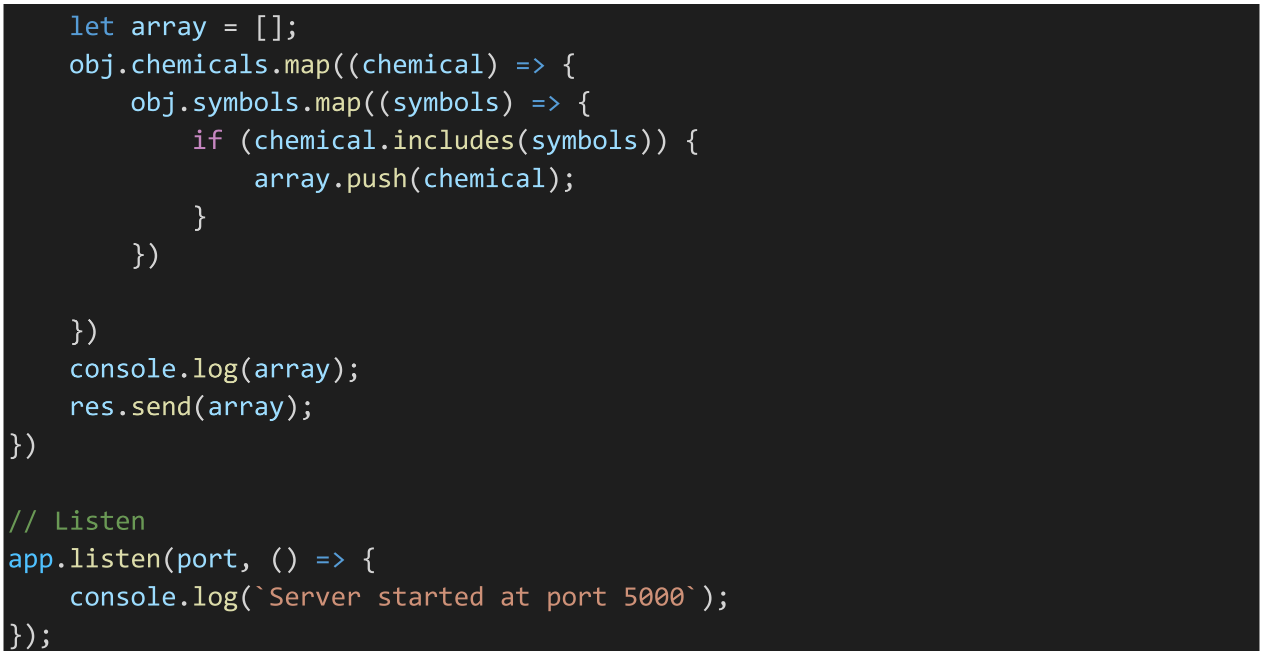
# Input JSON Body of the API:
{
    "chemicals": ['Amazon', 'Microsoft', 'Google'],
    "symbols": ['I', 'Am', 'cro', 'Na', 'le', 'abc']
}

# Output: display the chemical names with their symbol surrounded by square brackets:
{
    "result": "[Am]azon, Mi[cro]soft, Goog[le]"
}

Solution:

Index.js

```
const express = require('express');
const app = express();
const bodyParser = require('body-parser');
const cors = require("cors");
const { json } = require('body-parser');

// Port
let port = process.env.PORT || 5000;

// Take the permission from express for json data (postman)
app.use(express.json());

// Use bodyParser
app.use(bodyParser.urlencoded({ extended: true }));

// to avoid cors header error
app.use(cors());

app.get('/find_symbols_in_names', (req, res) => {

    // let obj = (req.body); // frontend data

    let obj = {
        chemicals: ['Amazon', 'Microsoft', 'Google'],
        symbols: ['I', 'Am', 'cro', 'Na', 'le', 'abc']
    };
```



```
    let array = [];
    obj.chemicals.map((chemical) => {
        obj.symbols.map((symbols) => {
            if (chemical.includes(symbols)) {
                array.push(chemical);
            }
        })

    })
    console.log(array);
    res.send(array);
})

// Listen
app.listen(port, () => {
    console.log(`Server started at port 5000`);
});
```

Question 2:
Given two arrays, write a function to compute their intersection.
Example 1:
Input: nums1 = [1,2,2,1], nums2 = [2,2]
Output: [2]

Example 2:
Input: nums1 = [4,9,5], nums2 = [9,4,9,8,4]
Output: [9,4]
Note:
Each element in the result must be unique.
The result can be in any order.

Solution:

```
public int[] intersect(int[] nums1, int[] nums2) {

  List<Integer> list = new ArrayList<Integer>();

  for (Integer n : nums2) {

    list.add(n);

  }



  int[] output = new int[list.size()];
  int i = 0;

  for (Integer s : nums1) {

    if (list.contains(s)) {

      output[i++] = s;

      list.remove(list.indexOf(s));

    }

  }

  // Initially we have taken result array size as list.size(). We are returning copy of array because the

  // result array size can be smaller than list.size().

  return Arrays.copyOf(output, i);

}
```

Question 3:

Given a string containing just the characters '(', ')', '{', '}', '[' and ']', determine if the input string is valid.

An input string is valid if:

Open brackets must be closed by the same type of brackets.

Open brackets must be closed in the correct order.

Note that an empty string is also considered valid.

Example 1:
Input: "()"
Output: true

Example 2:
Input: "()[]{}"
Output: true

Example 3:
Input: "(]"
Output: false

Solution:

```
public boolean isValid(String s) {
    if(s.length() % 2 != 0) return false;

    Stack<Character> stack = new Stack();
    for(char c : s.toCharArray()){
      if(c == '(' || c == '{' || c == '['){
        stack.push(c);
      }else if(c == ')' && !stack.isEmpty() && stack.peek() == '('){
        stack.pop();
      }else if(c == '}' && !stack.isEmpty() && stack.peek() == '{'){
        stack.pop();
      }else if(c == '[' && !stack.isEmpty() && stack.peek() == '['){
        stack.pop();
      }
    }
    return stack.isEmpty();
  }
```

Question 4:

Given a non-empty array of integers, every element appears twice except for one. Find that single one.

Note:

Your algorithm should have a linear runtime complexity. Could you implement it without using extra memory?

Example 1:

Input: [2,2,1]

Output: 1

Example 2:

Input: [4,1,2,1,2]

Output: 4

Solution:

```
public int singleNumber(int[] nums) {

    int result = 0;

    for(int i = 0; i<nums.length; i++){

      result ^= nums[i];

    }

    return result;

  }
```