<u>8/1/2024</u>

USN-1BM22CS241 (Sanjeet P. Pandit)

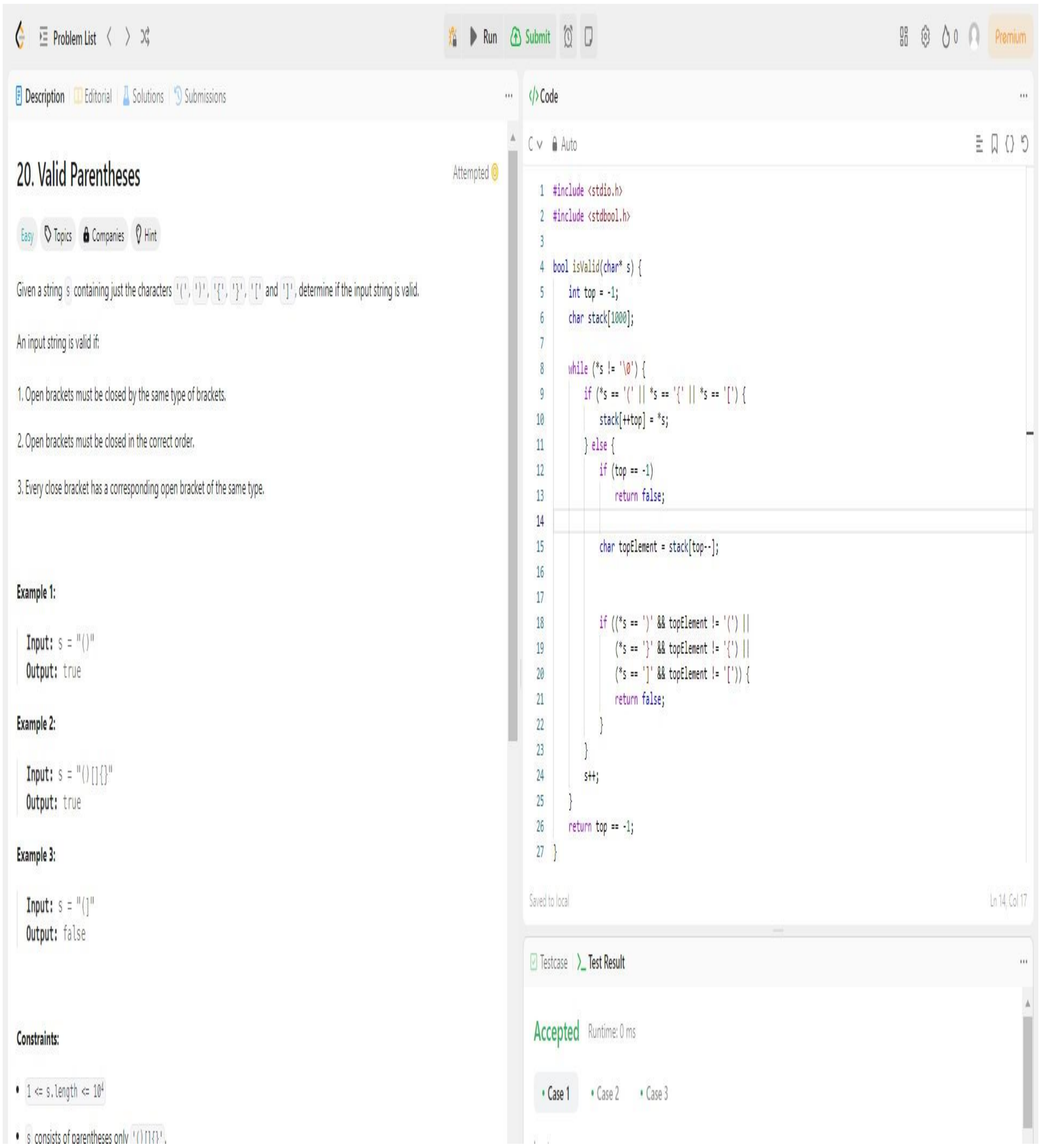
<u>CODE:</u>

```
#include <stdio.h>

#include <stdbool.h>



bool isValid(char* s) {

   int top = -1;

   char stack[1000];


   while (*s != '\0') {

      if (*s == '(' || *s == '{' || *s == '[') {


         stack[++top] = *s;

      } else {

         if (top == -1)

            return false;


         char topElement = stack[top--];



         if ((*s == ')' && topElement != '(') ||

            (*s == '}' && topElement != '{') ||

            (*s == ']' && topElement != '[')) {

            return false;

         }
```

```
        }
        s++;
    }

    return top == -1;
}

int main() {
    char input[1000];
    printf("Enter a string: ");
    scanf("%s", input);

    printf("%s\n", isValid(input) ? "Valid" : "Invalid");

    return 0;
}
```

OUTPUT:

```
Enter a String: { ( [ ] ) }
Valid
Enter a String: ( } ]
Invalid
```



20. Valid Parentheses

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

An input string is valid if:

1. Open brackets must be closed by the same type of brackets.
2. Open brackets must be closed in the correct order.
3. Every close bracket has a corresponding open bracket of the same type.

Example 1:

```
Input: s = "()"
Output: true
```

Example 2:

```
Input: s = "()[]{}"
Output: true
```

Example 3:

```
Input: s = "(]"
Output: false
```

Constraints:

- `1 <= s.length <= 10^4`
- `s` consists of parentheses only `'()[]{}'`.

```c
#include <stdio.h>
#include <stdbool.h>

bool isValid(char* s) {
    int top = -1;
    char stack[1000];

    while (*s != '\0') {
        if (*s == '(' || *s == '{' || *s == '[') {
            stack[++top] = *s;
        } else {
            if (top == -1)
                return false;

            char topElement = stack[top--];


            if ((*s == ')' && topElement != '(') ||
                (*s == '}' && topElement != '{') ||
                (*s == ']' && topElement != '[')) {
                return false;
            }
        }
        s++;
    }
    return top == -1;
}
```

Accepted Runtime: 0 ms

Case 1 Case 2 Case 3