

WORKING WITH SOME SYSTEM CALLS

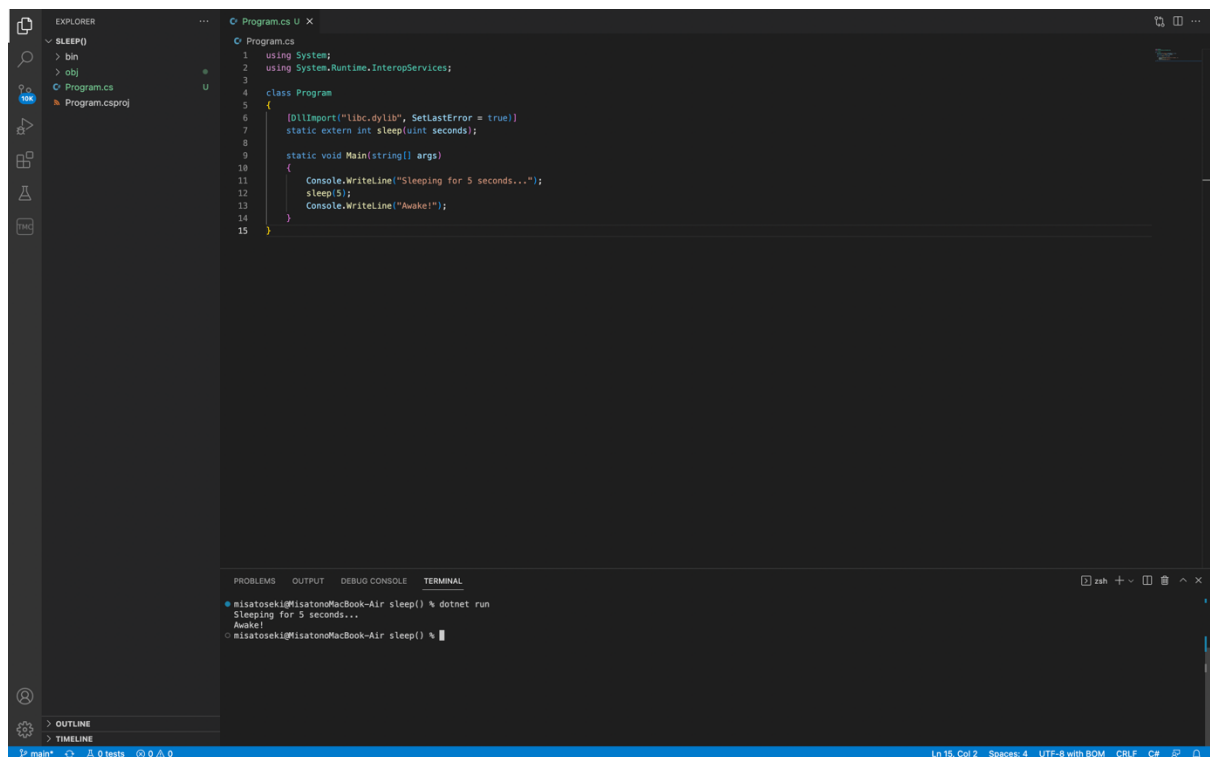
1. WHAT IS THE SYSTEM CALL

System call is the system to access to the functions inside of the operating system. Applications can demand operation towards operating system by using system calls. Generally, programming languages cannot call system call directly. Therefore, we need special API or library to call system call.

2. PROGRAM USING SYSTEM CALL "SLEEP()"

This program uses the DllImport attribute to call the sleep function to utilize system calls on MacOS. The sleep function is located in the shared object file "libc.dylib".

When executing this program, the sleep function is invoked, and the program will sleep for 5 seconds. After that, it shows the message "Awake!".



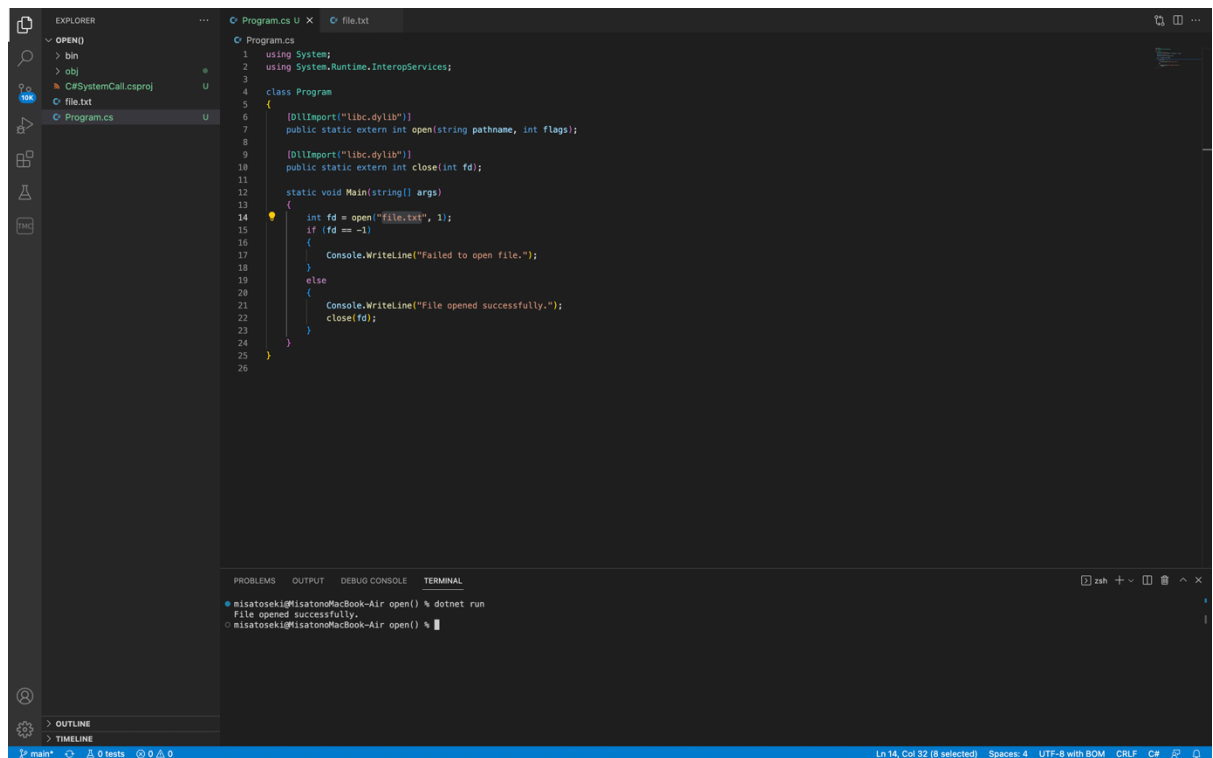
```
Program.cs
1 using System;
2 using System.Runtime.InteropServices;
3
4 class Program
5 {
6     [DllImport("libc.dylib", SetLastError = true)]
7     static extern int sleep(uint seconds);
8
9     static void Main(string[] args)
10     {
11         Console.WriteLine("Sleeping for 5 seconds...");
12         sleep(5);
13         Console.WriteLine("Awake!");
14     }
15 }
```

```
misatosaki@MisatoMacBook-Air sleep() % dotnet run
Sleeping for 5 seconds...
Awake!
misatosaki@MisatoMacBook-Air sleep() %
```

3. PROGRAM USING SYSTEM CALL “OPEN()”

This program uses the DllImport attribute to call the open function to utilize system calls on MacOS. The open function is located in the shared object file “libc.dylib”.

This program opens the file named “file.txt”. “int fd” store a file descriptor for the file. If the value is -1, it means that the program could not open the file and show the error message. Otherwise, the program displays the success message and close the file using close function.



```
1 using System;
2 using System.Runtime.InteropServices;
3
4 class Program
5 {
6     [DllImport("libc.dylib")]
7     public static extern int open(string pathname, int flags);
8
9     [DllImport("libc.dylib")]
10    public static extern int close(int fd);
11
12    static void Main(string[] args)
13    {
14        int fd = open("file.txt", 1);
15        if (fd == -1)
16        {
17            Console.WriteLine("Failed to open file.");
18        }
19        else
20        {
21            Console.WriteLine("File opened successfully.");
22            close(fd);
23        }
24    }
25 }
26
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

misatosseki@MisatonoMacBook-Air open() % dotnet run
File opened successfully.
misatosseki@MisatonoMacBook-Air open() %

4. REFERENCES

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