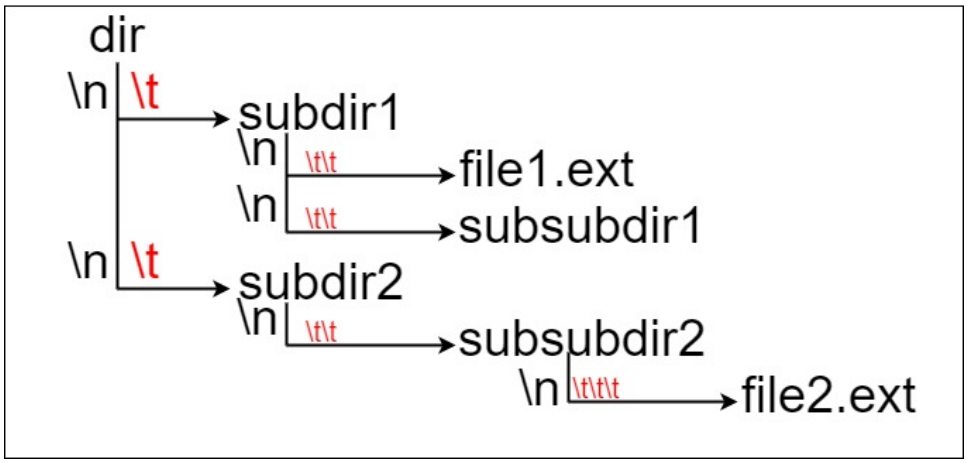
Problem 388: Longest Absolute File Path

Problem Information

Difficulty: Medium
Acceptance Rate: 0.00%
Paid Only: No

Problem Description

Suppose we have a file system that stores both files and directories. An example of one system is represented in the following picture:



Here, we have

dir

as the only directory in the root.

dir

contains two subdirectories,

subdir1

and

subdir2

.

subdir1

contains a file

file1.ext

and subdirectory

subsubdir1

.

subdir2

contains a subdirectory

subsubdir2

, which contains a file

file2.ext

.

In text form, it looks like this (with ■ representing the tab character):

dir ■ subdir1 ■ ■ file1.ext ■ ■ subsubdir1 ■ subdir2 ■ ■ subsubdir2 ■ ■ ■ file2.ext

If we were to write this representation in code, it will look like this:

"dir\n\tsubdir1\n\t\tfile1.ext\n\t\tsubsubdir1\n\tsubdir2\n\t\tsubsubdir2\n\t\t\tfile2.ext"

. Note that the

'\n'

and

'\t'

are the new-line and tab characters.

Every file and directory has a unique

absolute path

in the file system, which is the order of directories that must be opened to reach the file/directory itself, all concatenated by

'/'s

. Using the above example, the

absolute path

to

file2.ext

is

"dir/subdir2/subsubdir2/file2.ext"

. Each directory name consists of letters, digits, and/or spaces. Each file name is of the form

name.extension

, where

name

and

extension

consist of letters, digits, and/or spaces.

Given a string

input

representing the file system in the explained format, return

the length of the

longest absolute path

to a

file

in the abstracted file system

. If there is no file in the system, return

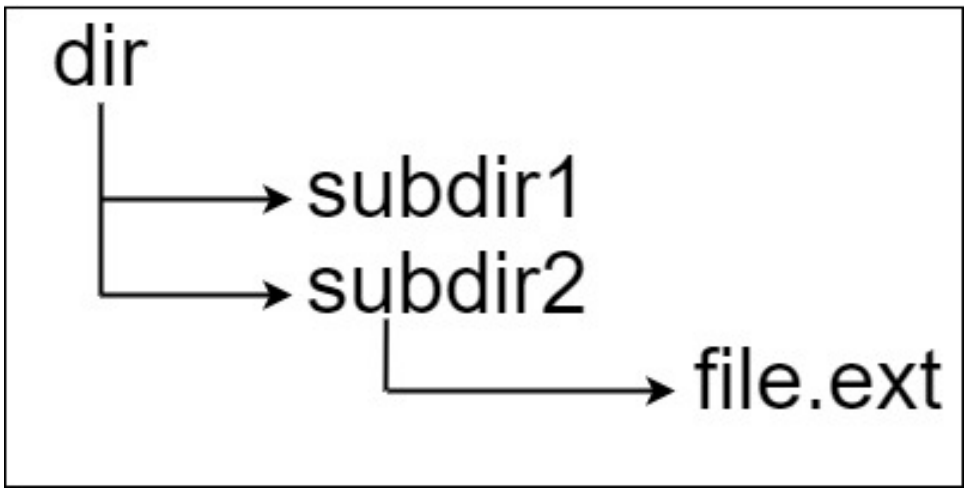
0

.

Note

that the testcases are generated such that the file system is valid and no file or directory name has length 0.

Example 1:



Input:

input = "dir\n\tsubdir1\n\tsubdir2\n\t\tfile.ext"

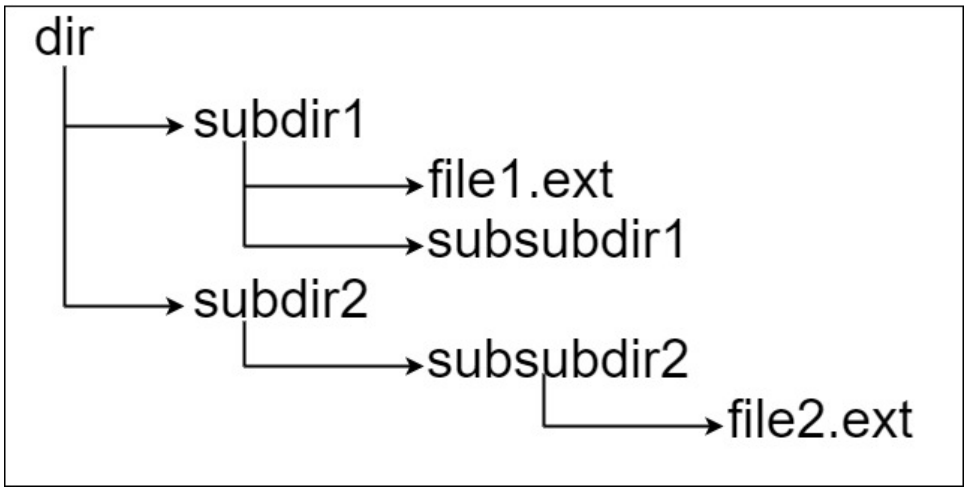
Output:

20

Explanation:

We have only one file, and the absolute path is "dir/subdir2/file.ext" of length 20.

Example 2:



Input:

input = "dir\n\tsubdir1\n\t\tfile1.ext\n\t\tsubsubdir1\n\tsubdir2\n\t\tsubsubdir2\n\t\t\tfile2.ext"

Output:

32

Explanation:

We have two files: "dir/subdir1/file1.ext" of length 21 "dir/subdir2/subsubdir2/file2.ext" of length 32. We return 32 since it is the longest absolute path to a file.

Example 3:

Input:

input = "a"

Output:

0

Explanation:

We do not have any files, just a single directory named "a".

Constraints:

1 <= input.length <= 10

4

input

may contain lowercase or uppercase English letters, a new line character

'\n'

, a tab character

'\t'

, a dot

'.'

, a space

' '

, and digits.

All file and directory names have

positive

length.

Code Snippets

C++:

```
class Solution {
public:
int lengthLongestPath(string input) {

}
};
```

Java:

```
class Solution {
public int lengthLongestPath(String input) {

}
}
```

Python3:

```
class Solution:
def lengthLongestPath(self, input: str) -> int:
```

Python:

```
class Solution(object):
def lengthLongestPath(self, input):
"""
:type input: str
:rtype: int
"""
```

JavaScript:

```
/**
* @param {string} input
* @return {number}
*/
var lengthLongestPath = function(input) {

};
```

TypeScript:

```
function lengthLongestPath(input: string): number {

};
```

C#:

```
public class Solution {
public int LengthLongestPath(string input) {

}
}
```

C:

```
int lengthLongestPath(char* input) {

}
```

Go:

```
func lengthLongestPath(input string) int {
```

```
}
```

Kotlin:

```
class Solution {
fun lengthLongestPath(input: String): Int {

}
}
```

Swift:

```
class Solution {
func lengthLongestPath(_ input: String) -> Int {

}
}
```

Rust:

```
impl Solution {
pub fn length_longest_path(input: String) -> i32 {

}
}
```

Ruby:

```
# @param {String} input
# @return {Integer}
def length_longest_path(input)

end
```

PHP:

```
class Solution {

/**
* @param String $input
* @return Integer
*/
```

```
function lengthLongestPath($input) {

}
}
```

Dart:

```
class Solution {
int lengthLongestPath(String input) {

}
}
```

Scala:

```
object Solution {
def lengthLongestPath(input: String): Int = {

}
}
```

Elixir:

```
defmodule Solution do
@spec length_longest_path(input :: String.t) :: integer
def length_longest_path(input) do

end
end
```

Erlang:

```
-spec length_longest_path(Input :: unicode:unicode_binary()) -> integer().
length_longest_path(Input) ->
.
```

Racket:

```
(define/contract (length-longest-path input)
(-> string? exact-integer?)
)
```

Solutions

C++ Solution:

```
/*
* Problem: Longest Absolute File Path
* Difficulty: Medium
* Tags: string, tree, search, stack
*
* Approach: String manipulation with hash map or two pointers
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(h) for recursion stack where h is height
*/

class Solution {
public:
int lengthLongestPath(string input) {

}
};
```

Java Solution:

```
/**
* Problem: Longest Absolute File Path
* Difficulty: Medium
* Tags: string, tree, search, stack
*
* Approach: String manipulation with hash map or two pointers
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(h) for recursion stack where h is height
*/

class Solution {
public int lengthLongestPath(String input) {

}
}
```

Python3 Solution:

```
"""
Problem: Longest Absolute File Path
Difficulty: Medium
Tags: string, tree, search, stack

Approach: String manipulation with hash map or two pointers
Time Complexity: O(n) or O(n log n)
Space Complexity: O(h) for recursion stack where h is height
"""

class Solution:
def lengthLongestPath(self, input: str) -> int:
# TODO: Implement optimized solution
pass
```

Python Solution:

```
class Solution(object):
def lengthLongestPath(self, input):
"""
:type input: str
:rtype: int
"""
```

JavaScript Solution:

```
/**
* Problem: Longest Absolute File Path
* Difficulty: Medium
* Tags: string, tree, search, stack
*
* Approach: String manipulation with hash map or two pointers
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(h) for recursion stack where h is height
*/

/**
* @param {string} input
* @return {number}
*/
var lengthLongestPath = function(input) {
```

```
};
```

TypeScript Solution:

```
/**
* Problem: Longest Absolute File Path
* Difficulty: Medium
* Tags: string, tree, search, stack
*
* Approach: String manipulation with hash map or two pointers
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(h) for recursion stack where h is height
*/

function lengthLongestPath(input: string): number {

};
```

C# Solution:

```
/*
* Problem: Longest Absolute File Path
* Difficulty: Medium
* Tags: string, tree, search, stack
*
* Approach: String manipulation with hash map or two pointers
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(h) for recursion stack where h is height
*/

public class Solution {
public int LengthLongestPath(string input) {

}
}
```

C Solution:

```
/*
* Problem: Longest Absolute File Path
* Difficulty: Medium
```

```
* Tags: string, tree, search, stack
*
* Approach: String manipulation with hash map or two pointers
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(h) for recursion stack where h is height
*/

int lengthLongestPath(char* input) {

}
```

Go Solution:

```
// Problem: Longest Absolute File Path
// Difficulty: Medium
// Tags: string, tree, search, stack
//
// Approach: String manipulation with hash map or two pointers
// Time Complexity: O(n) or O(n log n)
// Space Complexity: O(h) for recursion stack where h is height

func lengthLongestPath(input string) int {

}
```

Kotlin Solution:

```
class Solution {
fun lengthLongestPath(input: String): Int {

}
}
```

Swift Solution:

```
class Solution {
func lengthLongestPath(_ input: String) -> Int {

}
}
```

Rust Solution:

```
// Problem: Longest Absolute File Path
// Difficulty: Medium
// Tags: string, tree, search, stack
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// Approach: String manipulation with hash map or two pointers
// Time Complexity: O(n) or O(n log n)
// Space Complexity: O(h) for recursion stack where h is height

impl Solution {
pub fn length_longest_path(input: String) -> i32 {

}
}
```

Ruby Solution:

```
# @param {String} input
# @return {Integer}
def length_longest_path(input)

end
```

PHP Solution:

```
class Solution {

/**
* @param String $input
* @return Integer
*/
function lengthLongestPath($input) {

}
}
```

Dart Solution:

```
class Solution {
int lengthLongestPath(String input) {
```

```
}
}
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Scala Solution:

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object Solution {
def lengthLongestPath(input: String): Int = {

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defmodule Solution do
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