

# Substring Search Example

```
public static int findSubstring(String str, String sub)
```

**Purpose:**

Searches a string for the first occurrence of a substring, and returns the position at which the substring is found.

**Parameters:**

`str` – The string being searched. Must be non-null.

`sub` – The substring being searched for. Must be non-null.

**Returns:**

The zero-based index at which the first occurrence of `sub` was found within `str`, or -1 if `sub` does not appear within `str`

*(See solution on next page)*

## Solution

Test null values for both str and sub

Empty / Empty

“”, “”

Empty / Non-Empty

“”, “a” // “a” is almost empty

“”, “bob”

Non-Empty / Empty

“a”, “” // “a” is almost empty

“bob”, “”

Non-Empty / Non-Empty

Successful Match

No Previous Partial Match

Match at Beginning

“bobby”, “bob”

Match in Middle

“obobo”, “bob”

Match at End

“ooobob”, “bob”

Match at Beginning and End

“bob”, “bob”

“a”, “a”

Multiple Matches

“bob and bob”, “bob”

Previous Partial Match

All combinations of the following 3 dimensions (some are impossible):

1. Partial match position (beginning, middle, end)
2. Match position (beginning, middle, end)
3. Relationship between partial match and match (overlapping, adjacent, neither overlapping nor adjacent)

Unsuccessful Match

No Partial Match

“abcdefg”, “xyz”

Partial Match

Partial Match at Beginning

“box”, “bob”

Partial Match in Middle

“aboxz”, “bob”

Partial Match at End

“hobo”, “bob”

Partial Match at Beginning and End

“bo”, “bob”