



1 / 1 points

1. Your friend is trying to solve the following problem using Java:

Write a method that finds each occurrence of "abc_" in a String input (where _ is a single character) and prints "bc_" for each such occurrence. For example, **findAbc("abcdefabcghi")** should print:

```
1 bcd
2 bcg
```

You friend has just finished writing a solution and needs help testing it.

Create a new BlueJ project. Create a class and copy and paste the two methods (below) into it.

```
1 public void findAbc(String input) {
2     int index = input.indexOf("abc");
3     while (true) {
4         if (index == -1) {
5             break;
6         }
7         String found = input.substring(index+1, index+4);
8         System.out.println(found);
9         index = input.indexOf("abc", index+4);
10    }
11 }
12 public void test() {
13     //no code yet
14 }
```

Test method **findAbc()** by adding a line in the **test()** method:

```
1 findAbc("abcd");
```

Do this example by hand. What should the output be if the method is working correctly?

bcd

Correct Response



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2. Compile your class and run the **test()** method. What is the output?

bcd

Correct Response



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3. So far so good! Comment out the line **findAbc("abcd")** and add a new line in the **test()** method:

```
1 findAbc("abcdabc");
```

What should the output be if the method is working correctly?

bcd

Correct Response



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4. Compile and run your code. Which *two* of the following are results?

- ☐ "Error" is printed.
- Un-selected is correct
- ☒ A StringIndexOutOfBoundsException is thrown.
- Correct
- ☒ "bcd" is printed.
- Correct
- ☐ A blank line is printed.
- Un-selected is correct



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5. Which line of the program is causing the error?

- ☐ 1 int index = input.indexOf("abc");
- ☐ 1 if (index == -1) {
- ☒ 1 String found = input.substring(index+1, index+4);
- Correct
- ☐ 1 index = input.indexOf("abc", index+4);



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6. What is the index that is out of range?

8

Correct Response



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7. What is the length of input for this method call?

7

Correct Response



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8. At the time this error is produced, what are the values of index+1 and index+4? You may want to add print statements to your code and run it again to see what these values are.

Enter your answer as numbers separated by a comma: int1, int2. For example if index+1 were 1 and index+4 were 5, you would enter:

```
1 1,5
```

5,8

Correct Response



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9. Why does the program throw an index out of bounds exception for this input?

- ☒ The method **substring()** is trying to access index 8 but the String **input** is only 7 characters long.
- Correct
- For the substring() method to access indices between 5 inclusive and 8 exclusive, there must be a character at index 7. Since here the input is 7 characters long, the last character is at index 6.
- ☐ The method **findAbc()** never works when the String **input** is longer than 6 characters.
- ☐ The method **substring()** is trying to access index 5, but the value of the int **index** is 4.
- ☐ The program finds the wrong index for the second occurrence of "abc".



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10. Imagine your friend wants to get help from Coursera classmates on the discussion forums.

Which one of the following would be the most helpful way to describe the problem so that others can easily help?

- ☐ My method **findAbc()** has an index out of bounds exception.
- ☐ My method **findAbc()** has an index out of bounds exception when I call it with input "abcdabc".
- ☐ My method **findAbc()** has an index out of bounds exception when I call it with input "abcdabc". The exception is at the line

```
1 String found = input.substring(index+1, index+4);
```

- ☒ My method **findAbc()** has an index out of bounds exception at the line

```
1 String found = input.substring(index+1, index+4);
```

when I call it with input "abcdabc". It prints "bcd" and then throws the exception. The index out of range is 8.

Correct

Always give your peers as much information about your problem as possible. However, posting your entire code is rarely useful.



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11. Which of the following are examples of input that would also throw this exception? Check all that are correct.

- ☒ "abcbbbabcdaddabc"
- Correct
- This option ends with "abc", causing the same index out of bounds exception when the substring() method looks for the next character.
- ☒ "yabcyabc"
- Correct
- This option ends with "abc", causing the same index out of bounds exception when the substring() method looks for the next character.
- ☐ "eusabce"
- Un-selected is correct
- ☐ "woiehabchi"
- Un-selected is correct
- ☒ "aaaaabc"
- Correct
- This option ends with "abc", causing the same index out of bounds exception when the substring() method looks for the next character.



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12. Add an if statement, such that the while loop breaks if the index is out of bounds. Compile the code and run it again. It should now print "bcd" without throwing an exception. Try it on the examples you selected the previous question to make sure it works.

What are possible conditions for this if statement? (Choose all that are correct.)

- ☐ 1 index >= input.length() - 3
- This should be selected
- ☒ 1 index >= input.length() - 4
- This should not be selected
- The case when index = input.length() - 4 would not cause this error. Try this by constructing a test String where the final value of **index** is input.length() - 4.
- ☒ 1 index > input.length() - 3
- This should not be selected
- index = input.length() - 3 would also cause an error. See this by printing the index for this test case, where index 4 = length 7 - 3.
- ☐ 1 index > input.length() - 4
- This should be selected