

## Problem 1

```
public static StringBuilder mergeSortedString(String str1, String
str2) {
    StringBuilder sb = new StringBuilder();

    char[] str1ASChar = str1.toCharArray();
    char[] str2ASChar = str2.toCharArray();

    Arrays.sort(str1ASChar);
    Arrays.sort(str2ASChar);

    str1 = new String(str1ASChar);
    str2 = new String(str2ASChar);

    if (str1 == null || str1.length() == 0 || str2 == null ||
str2.length() == 0) {
        return null;
    }

    for (int i = 0; i < str1.length(); i++) {
        if (str1.substring(i, i +
1).compareTo(str2.substring(i, i + 1)) < 0) {
            sb.append(str1.substring(i, i + 1));
            sb.append(str2.substring(i, i + 1));
            if (i + 3 <= str1.length()) {
                mergeSortedString(str1.substring(i + 2,
i + 3), str2.substring(i + 2, i + 3));
            }
        }

        if (str1.substring(i, i +
1).compareTo(str2.substring(i, i + 1)) > 0) {
            sb.append(str2.substring(i, i + 1));
            sb.append(str1.substring(i, i + 1));
            if (i + 3 <= str1.length()) {
                mergeSortedString(str1.substring(i + 2,
i + 3), str2.substring(i + 2, i + 3));
            }
        }

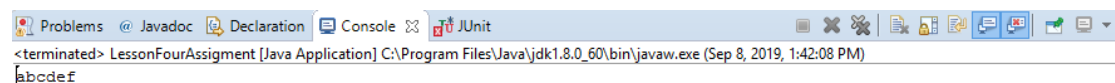
        if (str1.substring(i, i +
1).compareTo(str2.substring(i, i + 1)) == 0) {
            sb.append(str1.substring(i, i + 1));
            sb.append(str2.substring(i, i + 1));
            if (i + 3 <= str1.length()) {
                mergeSortedString(str1.substring(i + 2,
i + 3), str2.substring(i + 2, i + 3));
            }
        }
    }

    return sb;
}
```

## Calling

```
System.out.println(mergeSortedString("ace", "bdf"));
```

## Output



Problems @ Javadoc Declaration Console JUnit  
<terminated> LessonFourAssignment [Java Application] C:\Program Files\Java\jdk1.8.0\_60\bin\javaw.exe (Sep 8, 2019, 1:42:08 PM)  
abcdef

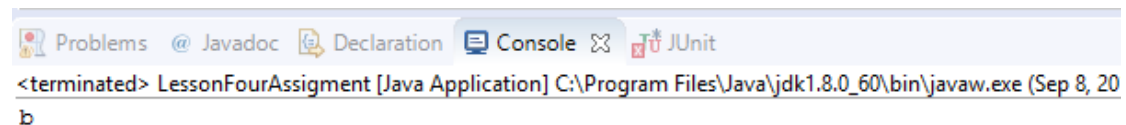
## Problem 2

```
public static char getMinimumChar(String str) {  
    StringBuilder sb = new StringBuilder();  
    if (str == null || str.length() == 0)  
        return ' ';  
    char[] c = str.toCharArray();  
    char temp;  
    for (int i = 1; i < c.length; i++) {  
        if (c[0] > c[i]) {  
            temp = c[0];  
            c[0] = c[i];  
            c[i] = temp;  
        }  
    }  
    sb.append(c[0]);  
    str = new String(c);  
    getMinimumChar(str.substring(1));  
    return sb.charAt(0);  
}
```

## Calling

```
System.out.println(getMinimumChar("bghuytdc"));
```

## Output

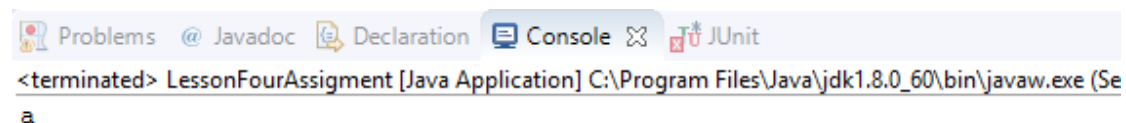


Problems @ Javadoc Declaration Console JUnit  
<terminated> LessonFourAssignment [Java Application] C:\Program Files\Java\jdk1.8.0\_60\bin\javaw.exe (Sep 8, 2019, 1:42:08 PM)  
b

## Calling

```
System.out.println(getMinimumChar("bghuatdc"));
```

## Output



Problems @ Javadoc Declaration Console JUnit  
<terminated> LessonFourAssignment [Java Application] C:\Program Files\Java\jdk1.8.0\_60\bin\javaw.exe (Sep 8, 2019, 1:42:08 PM)  
a

### Problem 3

```
static boolean binarySearch(String str, char c) {
    if (str.length() == 0)
        return false;

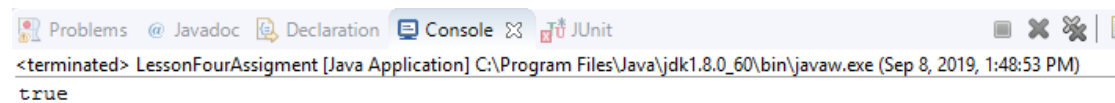
    int mid = str.length() / 2;
    char ch = str.charAt(mid);
    if (c == ch)
        return true;

    if (c > ch)
        return binarySearch(str.substring(mid + 1,
str.length()), c);
    if (c < ch)
        return binarySearch(str.substring(0, mid - 1), c);
    return false;
}
```

### Calling

```
System.out.println(binarySearch("abcdef", 'd'));
```

### Output

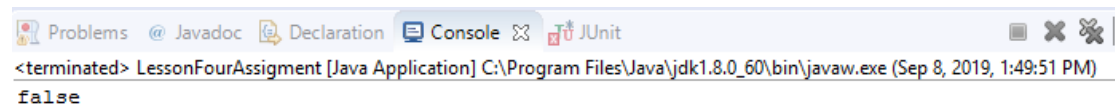


The screenshot shows an IDE window with tabs for Problems, Javadoc, Declaration, Console, and JUnit. The Console tab is active, displaying the output of a Java application. The text in the console is:   
<terminated> LessonFourAssignment [Java Application] C:\Program Files\Java\jdk1.8.0\_60\bin\javaw.exe (Sep 8, 2019, 1:48:53 PM)   
true

### Calling

```
System.out.println(binarySearch("abcdef", 'z'));
```

### Output



The screenshot shows an IDE window with tabs for Problems, Javadoc, Declaration, Console, and JUnit. The Console tab is active, displaying the output of a Java application. The text in the console is:   
<terminated> LessonFourAssignment [Java Application] C:\Program Files\Java\jdk1.8.0\_60\bin\javaw.exe (Sep 8, 2019, 1:49:51 PM)   
false

### Problem 4

```
public static boolean isPalindrome(String input) {
    if (input == null) {
        return false;
    }
    String reversed = reverse(input);
    return input.equals(reversed);
}

public static String reverse(String str) {
    if (str == null) {
        return null;
    }
    if (str.length() <= 1) {
```

```

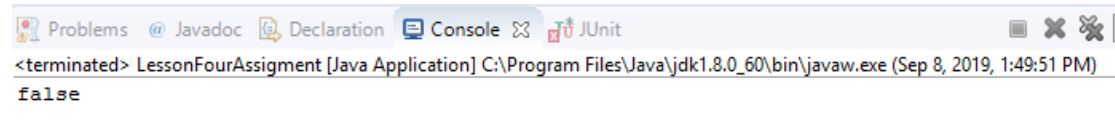
        return str;
    }
    return reverse(str.substring(1)) + str.charAt(0);
}

```

### Calling

```
System.out.println(isPalindrome("ayam"));
```

### Output

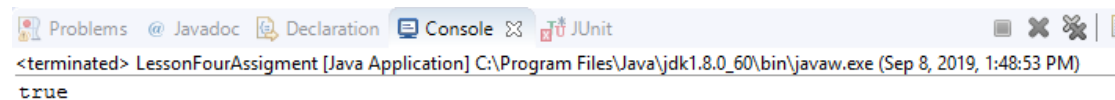


The screenshot shows an IDE console window with the following text:
   
<terminated> LessonFourAssignment [Java Application] C:\Program Files\Java\jdk1.8.0\_60\bin\javaw.exe (Sep 8, 2019, 1:49:51 PM)
   
false

### Calling

```
System.out.println(isPalindrome("aya"));
```

### Output



The screenshot shows an IDE console window with the following text:
   
<terminated> LessonFourAssignment [Java Application] C:\Program Files\Java\jdk1.8.0\_60\bin\javaw.exe (Sep 8, 2019, 1:48:53 PM)
   
true

## Problem 5

```

package lesson4;

import static org.junit.jupiter.api.Assertions.assertEquals;

import org.junit.jupiter.api.Test;

class LessonFourAssignmentUnitTest {

    LessonFourAssignment obj = new LessonFourAssignment();

    @Test
    void testIsPalindrome() {

        obj = new LessonFourAssignment();
        assertEquals(true, obj.isPalindrome("aya"));

    }

    @Test
    void testBinarySearch() {
        assertEquals(true, obj.binarySearch("abgdr", 'g'));
    }

    @Test
    void testMergeSortedString() {
        StringBuilder sb = obj.mergeSortedString("ace", "bdf");
        StringBuilder expected = new StringBuilder("abcdef");
    }
}

```

```
        assertEquals(sb.toString(), expected.toString());
    }

    @Test
    void testGetMinimumChar() {
        assertEquals('a', obj.getMinimumChar("rbgadr"));
    }
}
```

## Output

Runs: 4/4   Errors: 0   Failures: 0

---

LessonFourAssignmentUnitTest [Runner: JUnit 5] (0.059 s)

- testGetMinimumChar() (0.030 s)
- testMergeSortedString() (0.009 s)
- testIsPalindrome() (0.004 s)
- testBinarySearch() (0.015 s)

Failure Trace