Task 3: Create test cases with assertEquals, assertTrue, and assertFalse to validate the correctness of a custom String utility class.

```
package test;
public class StringUtil {
public static boolean isEmpty(String str) {
return str == null || str.trim().isEmpty();
}
public static String reverse(String str) {
if (str == null) {
return null;
}
return new StringBuilder(str).reverse().toString();
}
public static boolean containsIgnoreCase(String str, String substr) {
if (str == null || substr == null) {
return false;
}
return str.toLowerCase().contains(substr.toLowerCase());
}
}
import org.junit.Test;
import static org.junit.Assert.*;
public class StringUtilTest {
@Test
public void testIsEmpty() {
assertTrue(StringUtil.isEmpty(null));
assertTrue(StringUtil.isEmpty(""));
assertTrue(StringUtil.isEmpty(" "));
assertFalse(StringUtil.isEmpty("hello"));
}
@Test
```

```
public void testReverse() {
assertNull(StringUtil.reverse(null));
assertEquals("", StringUtil.reverse(""));
assertEquals("olleh", StringUtil.reverse("hello"));
assertEquals("54321", StringUtil.reverse("12345"));
}
@Test
public void testContainsIgnoreCase() {
assertFalse(StringUtil.containsIgnoreCase(null, "abc"));
assertFalse(StringUtil.containsIgnoreCase("def", null));
assertTrue(StringUtil.containsIgnoreCase("abcdef", "abc"));
assertTrue(StringUtil.containsIgnoreCase("abcdef", "DEF"));
assertFalse(StringUtil.containsIgnoreCase("abcdef", "xyz"));
}
}
```