

Algorithm & Knowledge Questions – Answers

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1. Write a function that sorts a bunch of words by the number of character “a”s within the word (decreasing order) if some words contain the same amount of character “a”s then you need to sort those words by their lengths. **(1 point)**

Input Data: ["aaaasd", "a", "aab", "aaabcd", "ef", "csssssd", "fdz", "kf", "zc", "lklklklklklklkl", "l"]

Output --> [aaaasd, aaabcd, aab, a, lklklklklklklkl, csssssd, fdz, ef, kf, zc, l]

Answer is in the **HakanYildiz_TVM_Algorithm_Answers** folder.

2. Write a recursive function which takes one integer parameter. Test your function with "9" integer it should give the following output:**(1 point)**

Output:

2
4
9

Answer is in the **HakanYildiz_TVM_Algorithm_Answers** folder.

3. Please explain differences between two for loops in following example also explain for loop logic step by step.**(1 point)**

```
for (int i = 0; i <= 2; i++) {  
    System.out.println(i);  
}
```

```
for (int i = 0; i <= 2; ++i) {  
    System.out.println(i);  
}
```

Both of them show same results => 0,1,2 .

- a. Initializer
Int i = 0; set the variable i to 0, which is the number of times the loop has executed.
- b. Condition
i <= 2; Execute the next variable if the value of i is less-than or equal to 2.
- c. Step
i++; increments the value of i after the block of code has been executed, in preparation for the next iteration.

There is no difference between “i++” and “++i” when used in for loop.

4. You have two variables `int a = 15, int b = 35` and you will swap their values without using any additional variable or buffer. End of the operation `a` will be 35 and `b` will be 15. **(1 point)**

```
int a = 15, b = 35;
```

```
a = a + b; // temp a = 50, b = 35
```

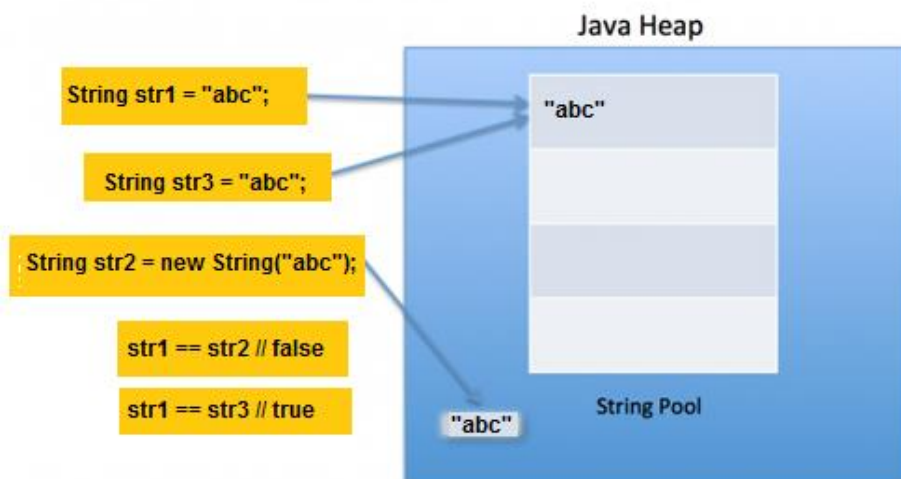
```
b = a - b; // temp a = 50, b = 15
```

```
a = a - b; // result a = 35, b = 15
```

5. In following example how JVM manage memory? **(1 point)**

```
String str1 = "abc";  
String str2 = new String("abc");  
String str3 = "abc";
```

Strings stored in Java Heap Memory.



6. Write a function which takes one parameter as an array/list. Find most repeated data within given array. Test with different datasets. **(1 point)**

Example Input Data: `["apple", "pie", "apple", "red", "red", "red"]`

Answer is in the **HakanYildiz_TVM_Algorithm_Answers** folder.

7. Write a web app with using Spring Boot, there will be User registration with fields "name", "surname" and "address" and you will display these informations in a grid. Also we could do UPDATE, DELETE, CREATE, READ operations in grid. **(3 points)** **NOTE: Please use ReactJs as UI library.**

Answer is in the **tvm-spring-react-assignment** folder.

8. You will now run the following web service. You give two parameters and this web service simply returns these parameters back to you. **(2 point)** <http://soapclient.com/xml/soapresponder.wsdl>

Answer is in the **tvm-spring-react-assignment** folder.

9. You will implement an application with the following explanation ... You are required to use Hibernate during database operations. **(2 point)**

Employee Table -> Fields: Name, Surname and Salary

Department Table -> Fields: Name, Description and Employee

Meetings Table -> Fields: Name, Description and Department

An employee can belong to one department, departments can join any meeting and can also join meeting more than one.

10. Reconfigure Question 9 with using Spring Framework and Hibernate as a JPA Implementation. **(2 point)**

Note: 5 points: using git, code quality, functions names, projects structures, tests cases.