

Concept part

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Section: BBR

Question1. Consider the following recursive method:

```
import java.util.*;

public class code {

    public static int recFunction (int A[])
    {
        if(A.length == 1)
            return A[0];

        int m = A.length %2;
        int val1 = recFunction(Arrays.copyOfRange(A, 0, m + 1));
        int val2= recFunction(Arrays.copyOfRange(A, m+1, A.length));

        if (val1 > val2)
            return val1;
        return val2;

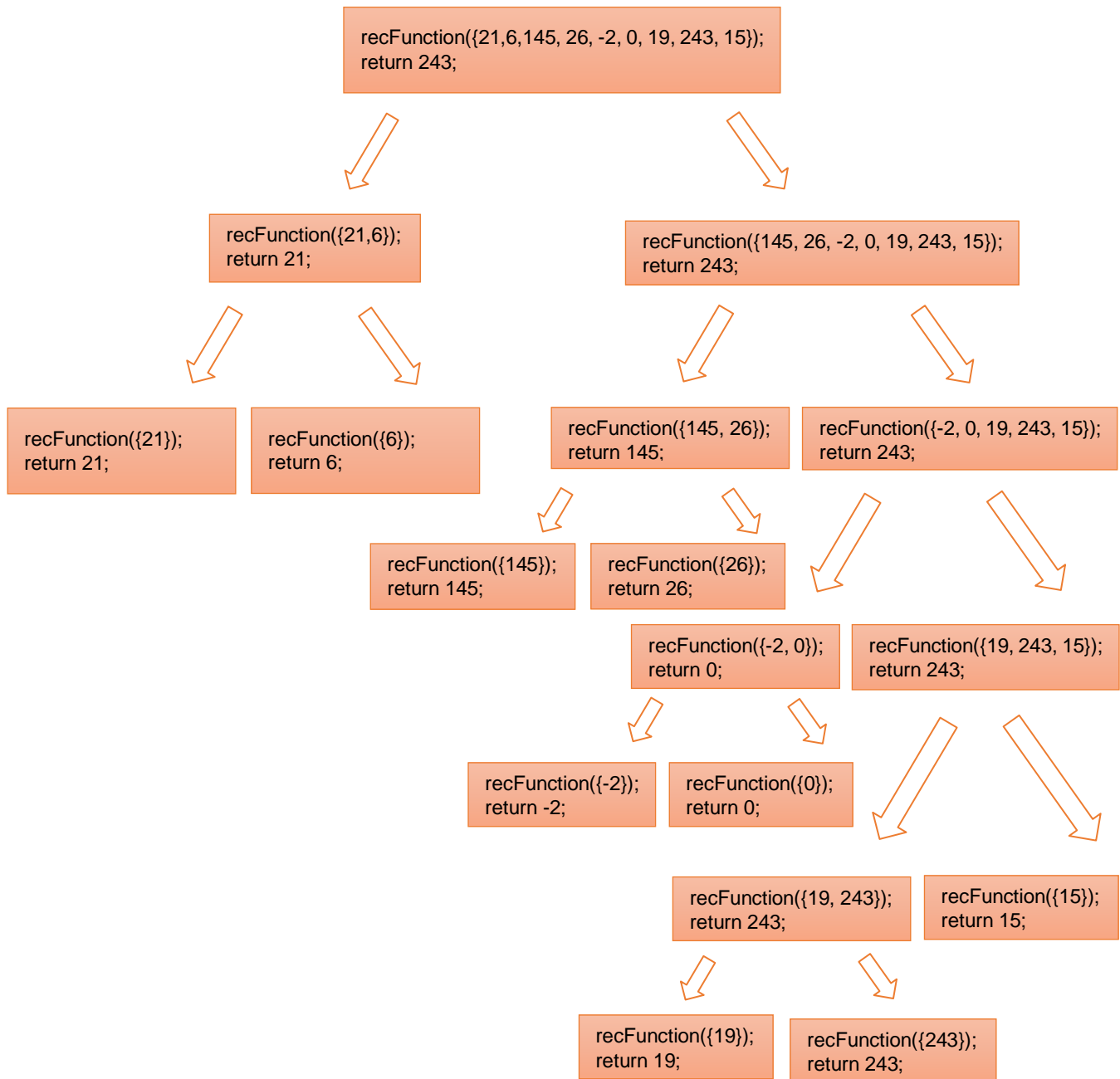
    }

    public static void main(String args[])
    {
        int A[] = {21, 6, 145, 26, -2, 0, 19, 243, 15};

        System.out.println(recFunction(A));

    }
}
```

1- Trace the above code (15 pts)



Result= 243

2- What does the method `recFunction` calculate? (5 pts)

The largest number in the array.

Note: You must write your tracing using recursion trace - its format is described in the course lectures. You must also show the final answer that is returned.

Question 2. Consider a recursive method that removes all occurrences of substring in a given string

Examples:

Input1 : str='abcccabc', substr= 'abc', result1: 'cc'

Input2 : str='aabcbcc', substr= 'abc', result2: 'abcc'

Input3 : str='bacbcbcc', substr= 'ab', result3: 'bacbcbcc'

1- Write a complete pseudo code/algorithm to solve the requirement of the method as explained above. (15 points)

Note: write the information that you need to describe the header of the method

Input:

String str, String substr

Output:

String

Method header:

public static String remove(String str, String substr)

Algorithm:

Step1:

if str.length() >= substr.length()

Step2:

if str.substring(0, substr.length()).equals(substr)
 return remove(str.substring(substr.length()), substr);
END IF

Step3:

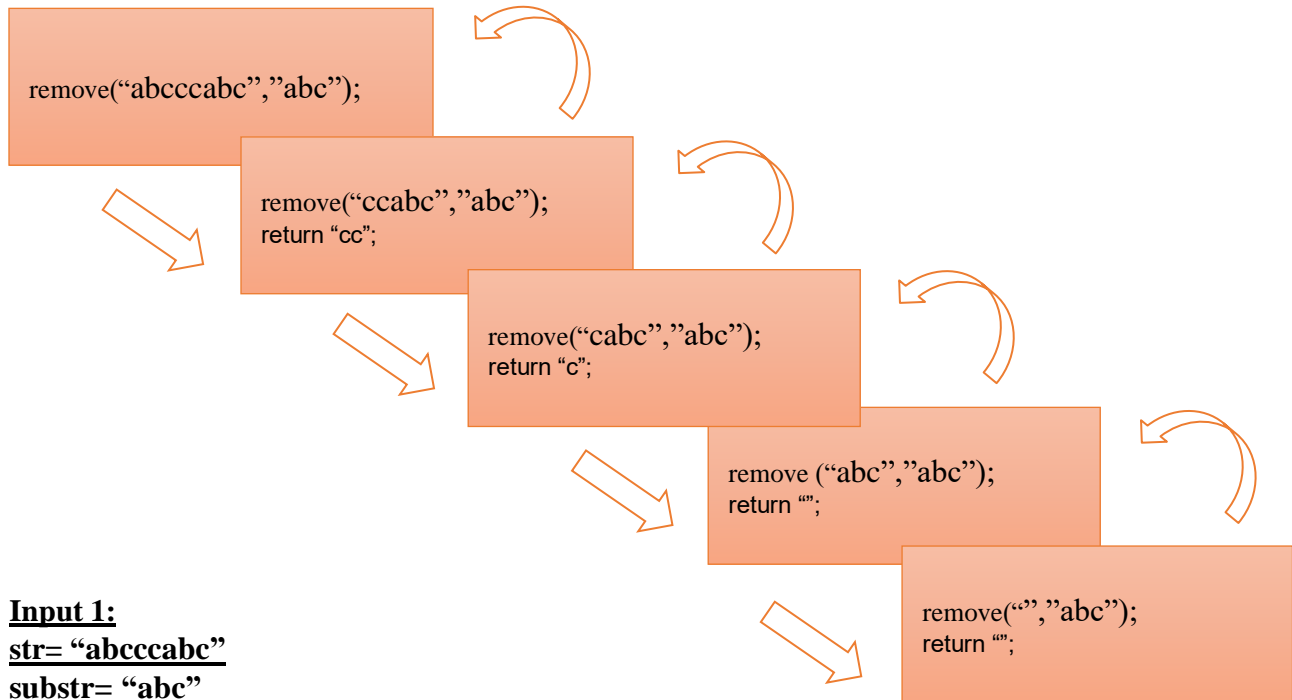
else
 return str.substring(0, 1) + remove(str.substring(1), substr);
END ELSE
END IF

Step4:

return str;

2- Trace your algorithm using input1. (5 points)

Note: You must write your tracing using recursion trace - its format is described in the course lectures. You must also show the final answer.



Result= "cc"