0.1
What is recursion?

1. Recursion is a generic class.
2. Recursion is a process of setting a value based on its previous value.
3. Recursion is a process of defining a method that calls itself.
4. Recursion is a process of repeatedly calling other methods.

Recursion is a process of defining a method that calls itself.

0.2
Does the following code compile? If it does not, how can it be fixed? If it does, what is its output? Does it throw an exception? If so, how can it be fixed?

```java
public class Series {
    public static int func(int j) {
        System.out.println(j);
        if (j==1) return 1;
        return 2*func(j-1) + 5*func(j-2); }
    public static void main(String[] args) {
        int N = Integer.parseInt(args[0]);
        if (N<1) {
            System.out.println("invalid argument");
            return;
        }
        System.out.println(func(N)); } }
```

The code compiles, but when it runs it throws a StackOverflowError.

replace the code: if (j==1) return 1;

with the code: if (j<1) return 1;

0.3
Write a recursive program to compute a double factorial, n!! = n*(n-2)!!, 0!! = 1, 1!! = 1.

```java
public class DFac {
    static int dfac(int n) {
        if(n < 2) return 1;
        return n*dfac(n-2);
    }
    public static void main(String[] args) {
        assert dfac(7) == 7*5*3*1; } }
```