CSSE 220 – Object-Oriented Software Development
Rose-Hulman Institute of Technology

Worksheet 12

Name (Print):_____   Section:_____

1. Recursive calls: `mystery(n)`

   Consider the method below. What is the output for `mystery(3)`: _____

```
1 public static int mystery (int n) {
2     if (n == 0) {
3         return 0;
4     }
5     return n + mystery (n - 1);
6 }
```

2. Write the value returned at each line.

   `mystery(3)` $= 3 + $ `mystery(2)`

   `mystery(3)` $= 3+$ [_____]

   `mystery(3)` $=$ [_____]

   `mystery(2)` $= 2 + $ `mystery(1)`

   `mystery(2)` $= 2+$ [_____]

   `mystery(2)` $=$ [_____]

   `mystery(1)` $= 1 + $ `mystery(0)`

   `mystery(1)` $= 1+$ [_____]

   `mystery(1)` $=$ [_____]

   `mystery(0)` $=$ [_____]

3. Draw traces

```java
public int rightTriangleArea(int inputWidth) {
  if (inputWidth < 1)
    return 0;
  return inputWidth + rightTriangleArea(inputWidth - 1);
}
//call from main:
rightTriangleArea(3);
```

4. Draw Traces

```java
public int recursiveFactorial(int curVal) {
  if(curVal == 1)
    return 1;
  return curVal * recursiveFactorial(curVal - 1);
}
//call from main:
recursiveFactorial(4);
```