**Recursion Worksheet**

For each of the following use the trace method taught to you in class to help identify what is the end result for each recursive function call:

1. For the following method, what would be displayed by the call *mystery1(5)*?

int mystery1(int nNum)

{

if (nNum <= 0)

{

return 0;

}

else

{

return nNum + mystery1(nNum - 1);

}

}

5 + mystery1(5-1)

4 + mysery1(4-1)

3 + mystery1 ( 3- 1)

2 + Mystery1 (2-1)

1 + Mystery1 (1-1)

0;

2. For the following method, what would be displayed by the call *mystery2(5)*?

String mystery2(int nNum){

if(nNum <= 0)

{

return 0+"";

}

return (nNum) + " " + mystery2(nNum - 1);

}

5 + “” + mystery2(5-1)

4 + “” mysery1(4-1)

3 + “” mystery1 ( 3- 1)

2 + “” Mystery1 (2-1)

1 + “” Mystery1 (1-1)\

0;

3. For the following method, what would be displayed by the call: *mystery3(4)*?

String mystery3(int nNum){

String data="";

if(nNum <= 0)

{

return "";

}

for(int nI = 0; nI < nNum; nI++)

{

data+=("-");

}

for(int nI = 0; nI < nNum; nI++)

{

data+=("+");

}

return data + mystery3(nNum - 1) +"\n";

}

+Mystery3(4-1)

++Mystery3(3-1)

+++Mystery3(2-1)

++++Mystery3(1-1)

“”;

4. For the following method, what value would be returned by the call: *ans =mystery4(4)?*

int mystery4(int nNum)

{

if (nNum > 1)

{

return nNum \* mystery4(nNum - 2);

}

else

{

return 2;

}

}

4 \* Mystery3(4-2)

2 \* Mystery3 (2-2)

2;

5. For the following method, what value would be returned by the call *ans=mystery5(6,8)*?

int mystery5(int k, int n)

{

if (n == k)

{

return k;

}

else

{

if (n > k)

{

return mystery5(k, n - k);

}

else

{

return mystery5(k - n, n);

}

}

}**}**

Mystery5(6,8)

Mystery 5(6, 8 – 6)

Mystery 5(6 - 2, 2)

Mystery 5(4 - 2, 2)

2;

6. For the following method, what would be displayed by the call: *mystery6(“abcdefgh”)*?

String mystery6(String sWord){

int nL = sWord.Length;

if (nL > 1)

{

String sTemp = sWord.Substring((int)Math.Round(nL / 2.0));

return sTemp + mystery6(sTemp);

}

else { return ""; }

}

Mystery6(abcdefgh)

Nl = 8

Efgh + mystery6(*efgh)*

*NI = 4*

*Bcdefgh +mystery6(bcdefgh)*

*NI = 2*

*Abcdefgh + stemp( abcdefgh)*