**Chapter 8**

**Recursion Practice**

1. What is the result when printnum(52) is called?

public void printNumber (int n)

{

if (n >= 0)

{

printNumber(n-1);

System.out.print(n);

}

}

1. What value is returned when mysterySum(5) is called?

public int mysterySum (int n)

{

if (n == 0)

return 0;

else

return 3 + mysterySum(n-1);

}

1. What is the output when mysterySum2(5) is called?

public int mysterySum2 (int a)

{

if (a == 1)

return 10;

else

return 10 + mysterySum2(a-1);

}

1. What is the output from mystery(4321)?

//precondition: x >= 0

public void mystery (int x)

{

System.out.print ( x % 10);

if ((x/10) != 0)

{

mystery(x/10);

}

System.out.print (x % 10);

}

1. What is returned as the result of mystery(7)?

public int mystery (int n)

{

if (n == 0)

return 1;

else

return 2 \* mystery(n-1);

}

1. The following method will return true if and only if:
2. s contains two or more of the same characters
3. s contains two or more of the same characters in a row
4. s starts with two or more of the same characters
5. s ends with two or more of the same characters
6. s.charAt(0) == s.charAt(1)

public boolean check (String s)

{

return s.length() >= 2 && (s.charAt(0) == s.charAt(1)

|| check(s.substring(1)));

}

1. What is returned by the call mystery(0, 4, 5) when arr = {1,2,3,5,7}?

private int [] arr;

public int mystery (int low, int high, int num)

{

int mid = (low + high)/2;

if (low > high)

{

return -1;

}

else if (arr[mid] < num)

{

return mystery (mid +1, high, num);

}

else if (arr[mid] > num)

{

return mystery (low, mid -1, num);

}

else

return mid;

}

1. What value is returned by the call something(4,6)?
2. 4
3. 6
4. 24
5. 1296
6. 4096

public int something (int a, int b)

{

if (b <= 1)

return a;

else

return something(a, b-1);

}

1. The procedure call mystery(38) will yield as output which of the following sequences of numbers?
2. 012
3. 120
4. 1102
5. 1111
6. 2011

public void mystery (int n)

{

if (n>2)

mystery(n % 3);

System.out.println( (n/3) + “ “);

}

1. Given the input line ABCD and 0, what does the following method print?
2. ABCDCBA
3. ABBCCCDDDD
4. ABBCCCDDDDDDDDCCCBBA
5. AABABCABCDABCDABCABA
6. ABBCCCDDDDDDDDCCCCBBBBAAAA

public void processLine (String str, int pos)

//precondition: str = “ABCD”, pos = 0

{

if (pos < str.length())

{

int i;

for (i = 0; i <= pos; i++)

System.out.println(str.substring(pos, pos+1));

processLine (str, pos+1);

for (i = 0; i <= pos; i++)

System.out.println(str.substring(pos, pos+1));

}

}