**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));

 }

}