**Chapter 8**

**Recursion Practice**

**(and then there’s more)**

Question 21-22 refer to the method smile below.

21. What is the output when smile(4) is called?

public static void smile (int n)

{

if(n == 0)

return;

for (int k=1; k<= n; k++)

System.out.print(“smile!”);

smile(n-1);

}

1. smile!
2. smile!smile!
3. smile!smile!smile!
4. smile!smile!smile!smile!
5. smile!smile!smile!smile!smile!smile!smile!smile!smile!smile!

22. When smile(4) is called, how many times will smile be called including the initial call?

1. 2
2. 3
3. 4
4. 5
5. 10

23. What is displayed when the following method is called with splat(\*\*)?

public static void splat(String s)

{

if(s.length() < 8)

splat(s+s);

System.out.println(s);

}

1. \*\*
2. \*\*\*\*
3. \*\*\*\*\*\*\*\*
4. \*\*\*\*\*\*\*\*

\*\*

1. \*\*\*\*\*\*\*\*

\*\*\*\*

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24. Lexi is a cheerleader and a programmer. She has written the following recursive mthod that is supposed to generate the cheer “2 4 6 8 who do we appreciate!”:

public void cheer (int i)

{

if (i != 8) //line 1

{ //line 2

i += 2; //line 3

cheer(i); //line 4

System.out.print(i + “ “); //line 5

} //line 6

else //line 7

{ //line 8

System.out.print(“who do we appreciate!”); //line 9

} //line 10

}

However, Lexi’s method doesn’t work as expected when she calls cheer(0). To get the right cheer, Lexi should

1. replace if (i != 8) with if (i<=8) on line 1
2. replace if (i != 8) with if (i==8) on line 1
3. replace if (i != 8) with while (i!=8) one line 1
4. swap line 4 and line 5
5. move line 3 after line 5

25. Consider the following method:

public String filter (String str, String pattern)

{

int pos = str.indexOf(pattern);

if (pos ==1)

return str;

else

return filter (str.substring(0,pos) + str.substring(pos+pattern.length()), pattern);

}

What is the output of

System.out.print(filter(“papaya”, “pa”));

1. p
2. pa
3. ya
4. aya
5. paya

26. Consider the following method:

public void mystery (int a, int b)

{

System.out.print (a + “ “);

if (a <= b)

mystery(a+5, b-1);

}

What is the output when mystery(0,16) is called?

1. 0
2. 0 5
3. 0 5 10
4. 0 5 10 15
5. 0 5 10 15 20

27. Consider the following method:

public int getSomething (int value)

{

if (value < 2)

return 0;

else

return 1 + getSomething(value -2);

}

Assume val > 0. What is returned by the call getSomething(val)?

1. val – 2
2. val%2
3. (val-1) % 2
4. val /2
5. (val-1) /2

28. Consider the following method:

public int change (int value)

{

if (value < 3)

return value % 3;

else

return value %3 + 10\*change(value/3);

}

What will be returned by the call change(45)?

1. 0
2. 21
3. 150
4. 500
5. 1200

29. Consider the following method:

public void change (int value)

{

if (value < 5)

Sytem.out.print(“” + value%5);

else

{

System.out.print(“” + value%5);

change(value/5);

}

}

What will be printed as a result of the call change(29)?

1. 1
2. 4
3. 14
4. 104
5. 401

30. Consider the following two methods that are declared within the same class:

public int supplement (int value)

{

if(value < 50)

return reduce (value + 10);

else

return value;

}

public int reduce (int value)

{

if (value > 0)

return supplement(value – 5);

else

return supplement(value);

}

What will be returned as a result of the call supplement(40)?

1. 0
2. -5
3. 50
4. 55
5. nothing will be returned due to an infinite recursion