Unit 10/Recursion Practice

Name: key 2/23/23

1. What are two features that must be found in every recursive method?

1. base case
2. call to self

2. Write a recursive method **evenFactorial** which returns the even factorial of a number (that is, the product of all positive even integers less than or equal to n). The factorial of 0 is 1.

```
public static int evenFactorial(int n)
{
   if(n==0)return 1;
   if(n%2==0)
      return n * evenFactorial(n-2);
   else
      return evenFactorial(n-1);

}
```

3. Write a recursive method **spaceIt** to print the digits of an integer on a single line with 2 spaces between each digit. So spaceIt(123) prints "1 2 3".

```
public static void spaceIt(int m)
{
      if(m>9)
         spaceIt(m/10);
      System.out.print(m%10 + "  ");

}
```

4. Given the following array how many times would a recursive binary search method be called when searching for the value 21?

```
int[] array = {3, 6, 8, 11, 14, 16, 21, 22};
```

3

5. Given the following array how many times would a recursive binary search method be called when searching for the value 6?

```
int[] array = {0, 1, 2, 3, 4, 5, 7, 8, 9, 9};
```

4

6. What is returned by the call mystery(4)?

```
public static int mystery(int a)
 {
   if(a>11)
     return 5;
   return a + mystery(a+3);
 }
```

4 + 7 + 10 + 5 = 26

7. What is returned by the call mystery(6)?

```
public static int mystery(int a)
 {
   if(a==3)
     return 1;
   return a * mystery(a-1);
 }
```

6 · 5 · 4 · 1 = 120

8. What is printed by the call mystery(4)?

```
public static void mystery(int a)
 {
   System.out.print(a);
   if(a<7)
     mystery(a+2);
 }
```

4 6 8

9. What is returned by the call mystery(4)?

```
public static void mystery(int a)
 {
   if(a<7)
     mystery(a+2);
   System.out.print(a);
 }
```

8 6 4