HW4

Due November 10th

1. Write a Java program that uses an int variable num which starts at 1.

Your program will have a loop that will continue as long as num is less than or equal to 30. The loop will do the following:

1. If num is odd, you should output: *num* is an odd number
2. If num is even, you should output: *num* is an even number
3. If num is divisible by 3, you should output: *num* is divisible by 3
4. If num is divisible by 5, you should output: *num* is divisible by 5
5. If num is divisible by 7, you should output: *num* is divisible by 7
6. If num is divisible by 9, you should output: *num* is divisible by 9
7. Increment num

Please note that your class should be named **Loop**.

1. Write a program to read a list of exam grades given as int's in the range of 0 to 100. Your program will display the total number of grades and the number of grades in each letter-grade category as follows:

**A** 93 <= grade <= 100

**A-** 90 <= grade < 93

**B+** 87 <= grade < 90

**B** 83 <= grade < 87

**B-** 80 <= grade < 83

**C+** 77 <= grade < 80

**C** 73 <= grade < 77

**C-** 70 <= grade < 73

**D** 60 <= grade < 70

**F** 0 <= grade < 60

Use a negative number as a sentinel value to indicate the end of the input. (The negative value is used only to end the loop, do not use it in your calculations.)

Each time you prompt the user to enter a grade you will print:

Enter a grade:

For example, if the input is:

98 95 87 86 83 92 85 78 74 72 81 71 69 63 50 43 -1

The output would be:

Total number of grades = 16

Number of A's = 2  
 Number of A-'s = 1

Number of B+'s = 1  
 Number of B's = 3

Number of B-'s = 1  
Number of C+'s = 1  
Number of C's = 1  
Number of C-'s = 2  
Number of D's = 2  
Number of F's = 2

Please note that your class should be named **Grades**.

1. Write a Java program that prompts the user for an int n. You can assume that 1 ≤ n ≤ 9. You program should use two embedded for loops that produce the following output:

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

.

.

.

1 2 3 4 5 . . . n

Your prompt to the user should be:

Please enter a number 1...9 :

Please note that your class should be named **PatternOne**.

1. Write a Java program that prompts the user for an int n. You can assume that 1 ≤ n ≤ 9. You program should use two embedded for loops that produce the following output:

1

2 1

3 2 1

4 3 2 1

5 4 3 2 1

.

.

.

n . . . 5 4 3 2 1

Your prompt to the user should be:

Please enter a number 1...9 :

Please note that your class should be named **PatternTwo**.

1. To make telephone numbers easier to remember, some companies use letters to show their telephone number. For example, using letters, the telephone number 438-5626 can be shown as GET LOAN.

In some cases, to make a telephone number meaningful, companies might use more than seven letters. For example 225-5466 can be displayed as CALL HOME, which uses eight letters.

Write a Java program that prompts the user to enter a telephone number expressed in letters and outputs the corresponding telephone number in digits. If the user enters more that seven letters (spaces do not count), then process only the first seven letters and ignore the rest. Your program should also output the - (hyphen) after the third digit.

Allow the user to use uppercase and lowercase letters, as well as spaces between the words.

*Hint:* You can read the entered telephone number as a String and then use the charAt method of the class String to extract each character. For example, if str refers to your String, then the expression str.charAt(i) returns the character at the *ith* position. Recall that in a String, the position of the first character is 0.

Your prompt to the user should be:

Please enter a telephone number using letters :

If the user enters:

Get Loan

Your program will output:

438-5626

Or, if the user enters:

cAll HoMe

Your program will output:

225-5466

Please note that your class should be named **TelephoneNumber**.