Practice Problems on Loops

Level 1

Execute the following programs using for loop/while loop/dowhile loop:

1. Given an integer N, print all the numbers from 1 to N.
2. Given two integers A and B (A ≤ B). Print all numbers from A to B inclusively.
3. Given an integer N, print all the odd numbers from 1 to N in ascending order.
4. Given two integers A and B. Print all numbers from A to B inclusively, in ascending order, if A < B, or in descending order, if A ≥ B.
5. Given an integer N, print all the even numbers from 0 to N in descending order.
6. 10 numbers are given in the input. Read them and print their sum. Use as few variables as you can.
7. N numbers are given in the input. Read them and print their sum.
8. N numbers are given in the input. Read them and print their product.
9. For a given integer N, print all the squares of integer numbers where the square is less than or equal to N, in ascending order.

Level 2

1. Find factorial of a given number.
2. Check whether a number is palindrome or not
3. Write a C program to find whether a given number is perfect number or not.
4. Print following patterns

```
*
*
* *
* * *
* * * *
```

```
A
BB
CCC
DDDD
EEEEE
```

```
1
2 3
4 5 6
7 8 9 10
```

5. Calculate GCD of two numbers
6. Generate first n numbers in the Fibonacci series
7. Generate n prime numbers
8. Convert a decimal number to binary number

Level 3

1. Given an integer n, print the sum 1!+2!+3!+...+n!1!+2!+3!+...+n!. (This problem has a solution with only one loop, so try to discover it.)
2. There was a set of cards with numbers from 1 to N. One of the cards is now lost. Determine the number on that lost card, given the numbers for the remaining cards.
   Example:
   Input:
   5
   1
   2
   3
   4
   Output:
   5

   Input:
   4
   3
   2
   4
   Output:
   1
3. As a competitive coder you just started your practice for an upcoming Hackathon. Given that on the first day you executed x programs, and by the event you must be able to execute y programs. Calculate the number of days required for you to finally execute the required programs for the event, if you increase your programs each day by 10% from the previous day. Print one integer representing the number of days to execute the required programs.
   Example:
   Input:
   10
   20
   Output:
   9
4. The sequence of marks obtained by students consists of distinct positive integer numbers and ends with the number 0. Determine the value of the second largest mark in this sequence. It is guaranteed that the sequence has at least two elements.
   Example:
   Input:
   56
   65
   34
   43
   21
   22
   12
   0
   Output:
   56

5. A sequence of marks of students consists of integer numbers and ends with the number 0. Determine how many students receive highest marks.
   Example:
   34
   56
   78
   89
   89
   23
   12
   34
   56
   89
   Output:
   3
6.