
CS19101 Programming and Data Structures

Nested Loop

General instruction to be followed strictly

1. Do not use any global variable unless you are explicitly instructed so.
2. Use proper indentation in your code and comment.
3. Name your file as `<roll_no>_<assignment_no>`. For example, if your roll number is 14CS10001 and you are submitting assignment 3, then name your file as 14CS10001_3.c or 14CS10001_3.cpp as applicable. Failing to follow this may lead to not evaluating your submission.
4. Write your name, roll number, and assignment number at the beginning of your program. Failing to follow this may lead to not evaluating your submission.
5. Make your program as efficient as possible.

You are not allowed to use any array or user defined function for this exercise.

Part-I

A positive integer is called an IIT number if the number is equal to the sum of factorial of its digits. For example, 1 ($1 = 1!$), 2 ($2 = 2!$), 145 ($145 = 1! + 4! + 5!$) are IIT numbers.

Write a C program to perform the following tasks.

1. To check if a given positive number x is an IIT number.
2. To print all IIT numbers from 1 to a given input number n .

Part-II

A positive integer is called a KGP number if the number is equal to the sum of its divisor except itself. For example, 6 ($6 = 1 + 2 + 3$), 28 ($28 = 1 + 2 + 4 + 7 + 14$) are KGP numbers.

Write a C program to perform the following tasks.

1. To check if a given positive number x is a KGP number.
2. To print all KGP numbers from 1 to a given input number n .

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Table 1: Star K of height 9.

Part-III

Write a C program to perform the following tasks.

1. Take a positive integer n as input and output a K of height $2n - 1$ stars. A star K of height 9 is the following.

Submit one (single) C program.

Sample Output

```

palash@palash-ThinkPad-X1-Yoga-3rd:~$ ./a.out ./a.out
Write number x: 145
145 is an IIT number
Write number n: 1000
The IIT numbers between 1 and 1000: 1, 2, 145,
Write number x: 28
28 is a KGP number
Write number n: 1000
The KGP numbers between 1 and 1000: 6, 28, 496,
Write a positive integer n: 2
Star K of height 3 is
* *
*
* *
palash@palash-ThinkPad-X1-Yoga-3rd:~$

```

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