## Homework - 2

#### IC100 Introduction To Programming

### Question 1

Write a C program to find the sum of all numbers divisible by 17 within 100 to 999. It is easy with the modulus(%) operator. Can you do it without using the modulus operator?

# Question 2

Write a C program to find the GCD of two given numbers. Assume both the numbers to be distinct integers and greater than 1.

```
Sample Input 0
81
153
Sample Output 0
9
Sample Input 1
35
21
Sample Output 1
```

# Question 3

Write a C program to take a number as input and check if it is a perfect number or not. A perfect number is equal to the sum of all its factors except itself. For example, 6 is a perfect number as 6 = 1 + 2 + 3.

Assume the input to be a non-zero positive integer. Your program should output "Perfect" if the number is perfect; otherwise, output "Not Perfect".

```
Sample Input 0
28
Sample Output 0
Perfect
as (28 = 1 + 2 + 4 + 7 + 14)
Sample Input 1
```

21

#### Sample Output 1

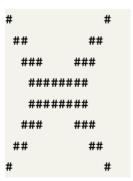
Not Perfect as  $((21 \neq 1 + 3 + 7))$ 

### Question 4

Write a C program that takes a positive integer n and prints a triangle like this: (given example for n = 5)

# Question 5

Write a C program that takes a positive integer n and prints a pattern like this: (given example for n=4)



# Question 6

Write a C program that takes a positive integer n and prints the first  $n^2$  prime numbers in a square. (given example for n=5)

Note that its perfectly fine if the output is not exactly a square. It just needs

```
2 3 5 7 11
13 17 19 23 29
31 37 41 43 47
53 59 61 67 71
73 79 83 89 97
```

to have n primes in each row.

### Question 7

```
Given two positive integers a and b (a \leq b \leq 1000), find the number of pairs (i, j) (a \leq i \leq j \leq b) such that i divides j.
```

```
Sample Input 0
1
10
Sample Output 0
27
Sample Input 1
1
1000
Sample Output 1
7069
```

# Question 8

Given a positive integer  $n (n \le 100)$ , find the number of positive integers less than or equal to n, that are expressible as sum of squares of two (not necessarily distinct) non-negative integers a and b.

```
Sample Input 0 5 Sample Output 0 4 as 1=0^2+1^2, 2=1^2+1^2, 4=0^2+2^2, 5=1^2+2^2 Sample Input 1 50 Sample Output 1 24
```

# Submission

Please submit your homework in piazza under hw2 folder and make it a private submission to the instructors. Zip all the codes and name the zip as yourname\_rollno

Submission deadline is 8:00pm Dec 3.