Instructions:

- ★ All questions carry equal points (2 pts per question)
- ★ Write all your answers on a sheet of paper, which mentions your name, roll number, and the section on each page, scan and upload them in the google form given.
- ★ The TA's for your class will grade every question according to the following scheme:
  0 - solution is incorrect
  1 - solution is partially correct
  2 - solution is completely correct

Duration: 2 days, Submit it before Tuesday(5th January 10:00 pm) in the google form.

Note:

- ★ Please choose the correct section otherwise you will get 0 marks.
- ★ You can submit only **once** so be careful at the time of submission.
- ★ Anyone from non-pec please choose section U

Problems

1. Draw a flowchart that takes a positive integer “n” as input and displays the sum of all the positive integers which are less than or equal to n and divisible by 6 but not by 5.

2. Draw a flowchart that takes a positive integer as input and print “Yes” if the number is prime otherwise print “No”.

3. Draw a flowchart that takes a positive integer as input and displays the number of divisors of the given number.

4. Draw a flowchart that takes as input the following

   - A positive integer “n”, the number of students in the class
   - A positive integer “m”, the number of the subjects taught

   and for **each** student

   - “m” integers, the marks of the student in each subject

   and displays the average marks of **each** student. (Assume that marks are given out of 100).

for example for the input,

3 2
90 100
80 90
70 80

the output of the flowchart should be,

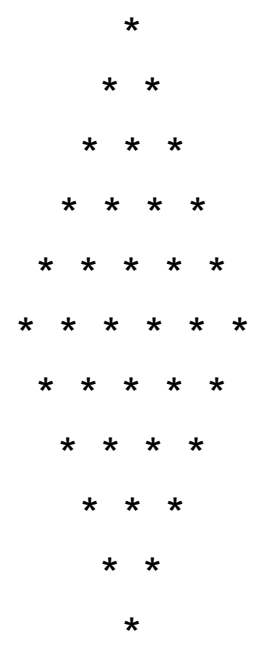
95
85
75

5. Draw a flowchart that takes as input a positive integer "N" and prints all the elements of the sequence 1, 2, 4, 8, … which are **less than or equal to** N.
   How many numbers are printed if N = 1048575?

6. Draw a flowchart that takes a positive integer "n" as input and displays the largest integer x such that n is divisible by 2^x.
   Example:- n = 12 then display 2 since 2^2 = 4 is the power of 2 which is a factor of 12.

7. Draw a flowchart that takes a positive integer "n" as input and displays "n" in binary. Example:- if n = 9 then display "1001".

8. Draw a flowchart that takes a positive odd integer, height of the pattern (height of the given example is 11) as input, and displays the pattern.



9. Draw a flowchart that takes a positive number “n” and n positive numbers as input, and displays the greatest common divisor of all the numbers.
   Example:- let n = 5 and numbers are - 3, 6, 12, 27, 33 so the number that should be displayed is 3.

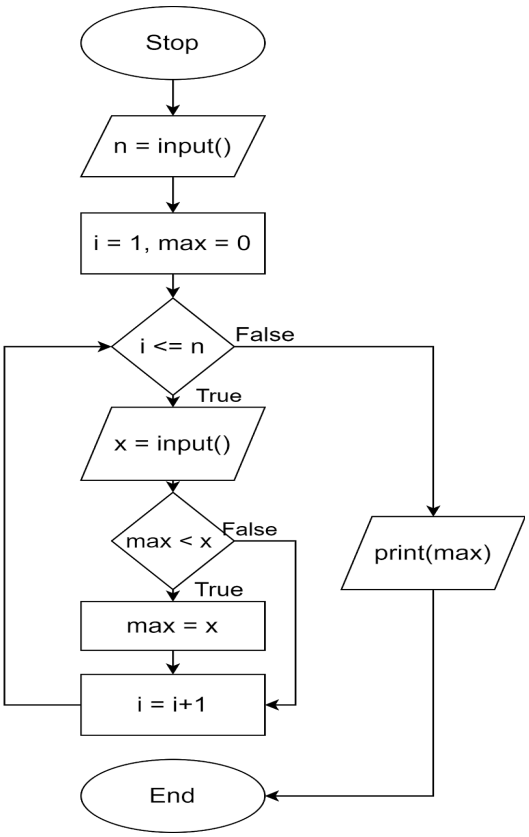
10. Draw a flowchart that takes a positive number h, the height of the pascal triangle (height of the given example is 5 (starting from 0)), as input and displays the pascal triangle up to height h.
    Note: Print two spaces between two consecutive numbers.

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1

Sample Questions:

1. Draw a flowchart that takes a positive number “n”, and then takes n positive numbers and print maximum value.

Solution.


Stop
n = input()
i = 1, max = 0
i <= n
False
True
x = input()
max < x
False
True
max = x
i = i+1
print(max)
End