

**Instructions:**

1. Each response should be in a .py file. Submit all your code to <https://submittv.cs.rpi.edu>
2. For every question it is specified when the user input must be taken.
3. For all output: Print using a print() statement

**Answer the following questions:**

1. **Fibonacci series:** Write a Python program using 'While Loop' to get the Fibonacci series between 0 to a user provided value. User input is the maximum value up to which the series must be printed.

Note : The Fibonacci Sequence is the series of numbers :

0, 1, 1, 2, 3, 5, 8, 13, 21, ....

Every next number is found by adding up the two numbers before it.

For example, if user provided value=50 then:

Expected Output : 1 1 2 3 5 8 13 21 34. **(20 points)**

2. **Data computation:** Write a program that takes a user input 'n' and prints all numbers that are multiples of 5 up to n. **(20 points)**

3. **Print Data:** Write a function that takes two user inputs: an integer N, a Boolean. If Boolean is True, then return all even integers up to N (less than or equal to) else return all odd integers up to N (less than or equal to). **(20 points)**

**Test Cases:**

odd\_even\_print(10,False): 1,3,5,7,9

odd\_even\_print(10,True): 2,4,6,8,10

odd\_even\_print(13,False): 1,3,5,7,9,11,13

4. **Test Numbers:** Write python program that prints all odd numbers in a given range (both inclusive). For the range, read user provided input for the minimum value and the maximum value. **(20 points)**

**Test cases:**

Range is 11-25; Output: 11,13,15,17,19,21,23

Range is 2-13; Output: 3,5,7,9,11,13

5. **Armstrong Number:** A positive integer is called an Armstrong number of order  $n$  if

$$abcd... = a^n + b^n + c^n + d^n + \dots$$

We are interested in Armstrong numbers of order 3 only. To write this program we can use the following property: In case of an Armstrong number of 3 digits, the sum of cubes of each digits is equal to the number itself. For example:

$$153 = 1^3 + 5^3 + 3^3 \quad // \quad 153 \text{ is an Armstrong number.}$$

Write a Python program to check if a user provided three-digit number is an Armstrong number or not. **(20 points)**

Hint: Separate each digit by dividing the number with 10 to get the remainder.