Machine learning course
Professor: Dr. Sadeghzadeh
Homework 1
Deadline: 13th Farvardin

1. 10 candidates have applied for a job interview. The perfect age range for the job is between 20 and 40. Write a program to distinguish the adequate applicants from the dictionary bellow.

Here's a dataset of their names and their birth years:

Applicants = {"John": 1983, "Sarah": 1999, "Peter": 1995, "Dane": 2001, "kit": 1979, "Robert": 1980, "Sam": 2010, "Emma": 2000, "Chris": 1899, "Tina": 1991}

2. Write a program to accept a number from a user and calculate the sum of all numbers from 1 to the given number.

Example:
If the user entered 10 the output should be 55
(1+2+3+4+5+6+7+8+9+10)

3. Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included).

The numbers obtained should be printed in a comma-separated sequence on a single line.

Hints: Consider using append and join methods

4. Write a Python function to print the Fibonacci sequence between 0 and n.

N is the second last digit of your student ID number to the power of 2.

Note: The Fibonacci Sequence is the series of numbers like: 0, 1, 1, 2, 3, 5, 8, 13, 21, ...

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

Example:
Given the following student ID number: 9824214**3** -> n = 4^2 = 4*4 = 16
Expected output: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610

5. In a chess game, the rook may move any number of squares horizontally or vertically on the board. Consider the chessboard to be an x-y plane. Starting from the original point (0,0), the rock can move toward UP, DOWN, LEFT and RIGHT with given steps.

The trace of the rook's movement is shown as the following:

UP 5
DOWN 3
LEFT 3
RIGHT 2

The numbers after the direction are steps. Please write a program to compute the distance from the current position (after a sequence of movements) and the original point.

If the distance is a float, then just print the nearest integer.

Example:
Given the following tuples:
UP 5
DOWN 3
LEFT 3
RIGHT 2
Then, the output of the program should be:
2