

DATA SCIENCE IN PRACTICE ASSESSMENT**Deadline – June 10, 2020.****PROBLEM 1:**

Given the list of numbers 1 through 10

Sum_of_Squares is 385

Square_of_Sum is 3025

(Square_of_Sum - Sum_of_Squares) is 2640

Carry out this same exercise for the list of numbers 1 through 500

PROBLEM 2:

What is the 10001st prime number?

PROBLEM 3:

You're given a number $n=10$

There are four prime numbers less than n (2, 3, 5 and 7)

The sum of these prime numbers is $s=17$

If $n=2,000,000$ then find s

PROBLEM 4:

Given:

1. A list of "user identities" containing the ID number and name of 9 users
2. A list of "connection pairs" containing all unique connections between users

Find:

The number and identities of each user's connections

```
users = [{ 'id': 0, 'name': 'Hero'}, { 'id': 1, 'name': 'Dunn'}, { 'id': 2, 'name': 'Sue'}, { 'id': 3, 'name':  
'Chi'}, { 'id': 4, 'name': 'Thor'}, { 'id': 5, 'name': 'Clive'}, { 'id': 6, 'name': 'Hicks'}, { 'id': 7, 'name':  
'Devin'}, { 'id': 8, 'name': 'Kate'}, { 'id': 9, 'name': 'Klein'}]
```

```
friendships = [(0, 1), (0, 2), (1, 2), (1, 3), (2, 3), (3, 4), (4, 5), (5, 6), (5, 7), (6, 8), (7, 8), (8, 9)]
```

PROBLEM 5:

Given:

A list of "employee-manager-pairs" where the first element of each pair is an employee and the second element of the pair is that employee's direct manager, come up with a function that can take as input two employees, say emp1 and emp2, and returns "True" if emp2 is in emp1's chain of command and returns "False" otherwise

```
tuplesList = [('Worker_1','Boss_1'), ('Worker_2','Boss_2'), ('Boss_1','Exec_1'),  
              ('Boss_2','Exec_2'), ('Exec_1','Director_1'), ('Exec_2','Director_2'),  
              ('Director_1', 'CEO'), ('Director_2', 'CEO'), ('CEO', None)]
```