Review Exam 1

ENGIE 1006: (Fall 2016)

October 17th, 2016

Question 1: What do I accomplish?

```
n=int(input('give a positive integer'))
if (n < 0):
    printf('Incorrect number')
else:
    s = 0
    for i in range(1,n):
      s = s+i
    print('results is ',s)
```

1. What does this program do?

2. What happens if at the loop *for*, n is negative?

3. Write an equivalent program using a while loop.

Question 1: Order

Write a python code that prints three variable in increasing order without changing the value of the variables.

Question 2: Dates

1. Write a python function that tests if a given date (month, day, year) is valid.

2. Write a python function that given a date, writes the month in full letters. For instance, 10/17/2016 will be printed October 17, 2016.

3. A leap year is a year occurring once every four years, that has 366 days including February 29 as an intercalary day. A year is a leap year if it is divisible by 4 and not by 100 or if it is divisible by 400. Write a Python function that tests is a year is a leap year or not.

Question 3: Special numbers

Let's call an integer in $10 \leq n \leq 99$ *special* if it is equal to 3 times the product of its digits.

1. Write a python function that checks if a number n in $10 \leq n \leq 99$ is special. For instance, $24 = 3 \times 2 \times 4$

2. Use this function to output all *special* numbers between 10 and 99.

Question 4: Triangles

Write a python code that asks for the length of a triangle and prints the properties of the triangle as follows:

- It is not a triangle (Triangle inequality theorem: given any triangle, if a, b, and c are the lengths of the sides, the following is always true: $a+b > c$, $a+c > b$, $b+c > a$). For instance, $a = 3$, $b = 6$, $c = 4$ makes a triangle while $a = 7$, $b = 16$, $c = 8$ does not.

- Triangle Isosceles (two sides of equal length).

- Equilateral triangle

- Right triangle

- Random triangle

Question 5: Number properties

Write python functions and code that provides all properties of an integer number.

1. Read an integer number between 0 and 1000. If the value is incorrect, prompt the user and introduce another one.

2. Print all factors of n

3. Print all multiples of n up till 1000.

4. Check if the number is prime or composite.

5. Get all digits of the number.