Level III

1. Write a program that will print all the prime numbers between two integers entered by the user.
2. If the user enters two numbers, print all the palindrome numbers between those two numbers.
3. If the user enters two numbers, print all the perfect numbers between those two numbers.
4. Find the sum of the squares of the first 100 odd numbers.
5. Compute the sum, $S = 1^1 + 2^2 + 3^3 + \cdots + 10^{10}$
6. Compute the sum, $S = 1^0 + 2^{-1} + 3^{-2} + \cdots + 10^{-9}$
7. Compute the sum, $S = 1! + 2! + 3! + \cdots + 10!$
8. Compute the value of e^x. The user will enter the value of *x* and *n*. The value of *n* cannot be greater than 10. *x*can be a fraction.Use the following formula.

$$e^x = \frac{x^0}{0!} + \frac{x^1}{1!} + \frac{x^2}{2!} + \cdots + \frac{x^n}{n!}$$

9. Find all the numbers between 10 and 1000 where each number's summation of their digits is a prime number. For example 344 should be printed because 3+4+4=11 which is a prime number.
10. Take 25 integers from the user and count the number of odd, even, positive and negative numbers the user enters. Print the results. Remember 0 is neither positive nor negative but it's an even number.
11. Print the following shapes given the size. If the user enters 5 the shapes should look like the following.

a)
```
1
12
123
1234
12345
```

b)
```
5 4 3 2 1
 1 2 3 4
  3 2 1
   1 2
    1
```

c)
```
1
10 Five  Four Three Two
101Five Four Three
1010      Five Four
10101Five
```

d)
```
FiveFour Three Two One
```