Group Number: 4

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Assignment 2

Q. In 2004, Google ran a recruitment campaign where they posted the following billboard along the main freeway (101) running through Silicon Valley, and later at other locations in the country. Would you be able to apply for this position? You can test yourself by doing this assignment. Please submit the correct URL, as well as a description of how you achieved it. In particular, your algorithm has to be from *scratch* meaning that you should find a way to generate the digits of *e* and do a search through them for the appropriate prime. Please do not look up the solution online.

A. We followed the steps mentioned below to find the first 10-digit consecutive prime in value of 'e'. By running the python code, we submitted we found the first 10-digit consecutive prime number is **7427466391**. Hence, the url is '**7427466391.com'**

Steps:

1) **Generating value of 'e':**
   We generated value of e by following the Taylor expansion formula

$$e^x = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots, \qquad -\infty < x < \infty$$

   a. x = 1 in our case
   b. with python math factorial function, calculated factorials.
   c. We limited out Taylor expansion to 1000 terms.
   d. Finally, we achieved value of e.
2) **Slicing e value to 10 digits:**
   a. Converted e value to string.
   b. Slicer of length 10 on string e, shifting to one digit right each time.
   c. call the prime number function**.**
   d. Print the number if it is a prime number.
3) **Prime number Function:**
   a. We wrote a function to check prime number with a for-else loop
   b. This function checks if the given number is divisible by any number ranging (2, number).
      i. Breaks out of for loop if it is divisible.
      ii. Otherwise it is a prime number.