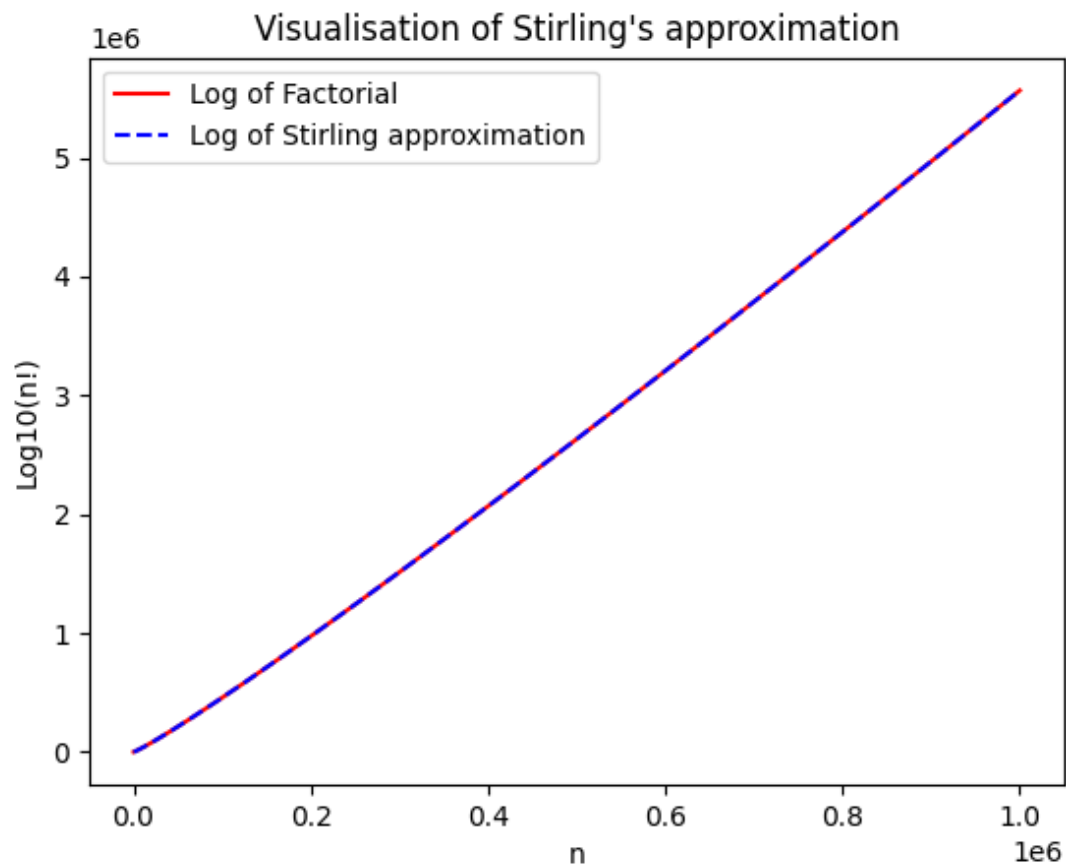Q1

```
def LogOfFactorial(n):
    list1 = [0]
    for i in range (2 , n):
        list1.append(list1[-1] + math.log10(i))
    return list1
```

Output

Visualisation of Stirling's approximation

Q2

```
#MAIN CODE


d = Dice(4)
d.setProb((0.1, 0.2, 0.3, 0.4))
d.roll(10000)
print(d)
```

Output
```
Dice with 4 faces and probability distribution {1.0, 2.0, 3.0, 4.0}
```


Outcome of 10000 throws of a 4-faced dice

If some one try to make dice of sides less than 4

```
#MAIN CODE


d = Dice(3)
d.setProb((0.1, 0.2, 0.3, 0.4))
d.roll(10000)
print(d)
```

Output :-

```
kaustubh@kaustubh:~/CMA/week1$ /bin/python3 /home/kaustubh/CMA/week1/q2.py
<class 'Exception'>
Cannot construct the dice
kaustubh@kaustubh:~/CMA/week1$
```

If sum of probability distribution is not 1

```
#MAIN CODE


d = Dice(4)
d.setProb((0.1, 0.2, 0.3, 0.5))
d.roll(10000)
print(d)
```

If num of elements in probability distribution is not equal to number of sides of dice

```
#MAIN CODE


d = Dice("4")
d.setProb((0.1, 0.2, 0.3, 0.3, 0.1 ))
d.roll(10000)
print(d)
```

Output :-

```
kaustubh@kaustubh:~/CMA/week1$ /bin/python3 /home/kaustubh/CMA/week1/q2.py
<class 'Exception'>
Invalid probability distribution
```

If the dice argument is not Int

```
#MAIN CODE


d = Dice("4")
d.setProb((0.1, 0.2, 0.3, 0.5))
d.roll(10000)
print(d)
```
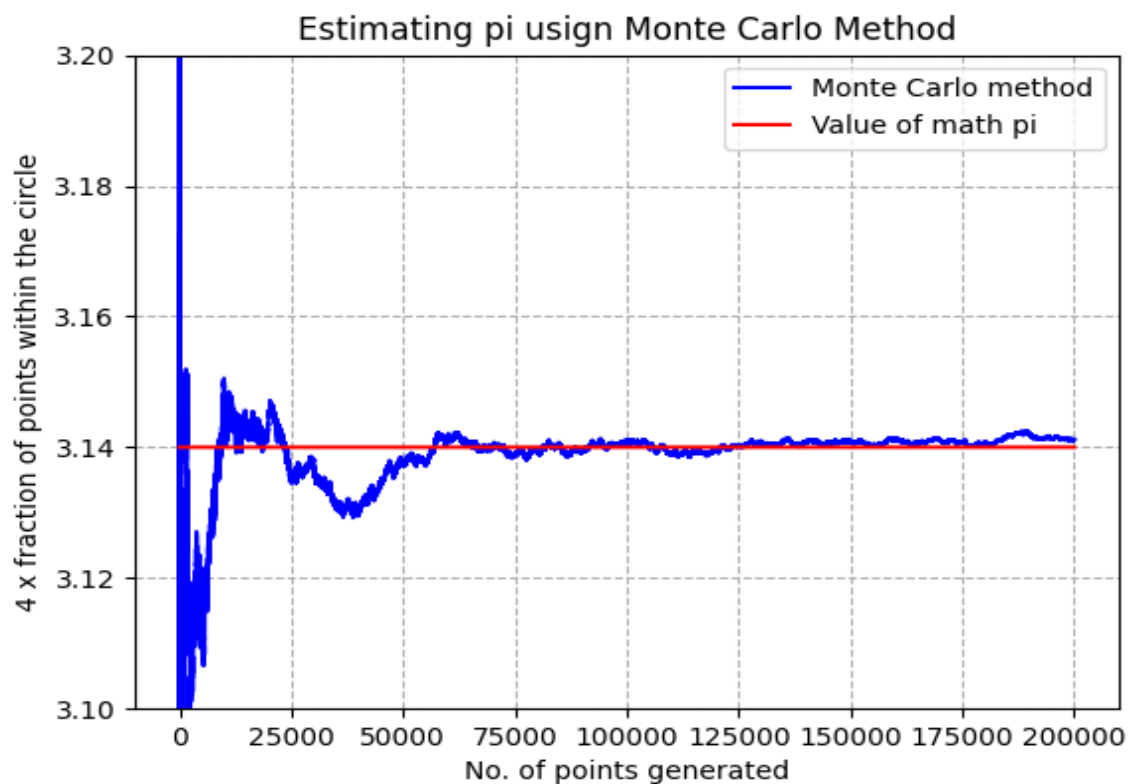
Output :-

```
kaustubh@kaustubh:~/CMA/week1$ /bin/python3 /home/kaustubh/CMA/week1/q2.py
<class 'Exception'>
Cannot construct the dice
```

Q3

```python
def estimatePi(n):
    PointsInCircle = 0
    PointsInSquare = 0
    fraction = []
    x = []
    valueOfPi = []
    for i in range(n):
        x.append(i)
        valueOfPi.append(3.14)
        x_point = random.uniform(-1 , 1 )
        y_point = random.uniform(-1 , 1)
        PointsInSquare = PointsInSquare + 1
        if x_point * x_point + y_point * y_point <= 1 :
            PointsInCircle = PointsInCircle + 1
        fraction.append(4 * float(PointsInCircle)/float(PointsInSquare))
```

Output

Q4
```python
t = TextGenerator()
t.assimilateText('sherlock.txt')
t.generateText(100  , "bright")
```

Output:-
```
bright then remove Miss Stoner has been an axiom of mine apply for." "What is the vilest antecedents, but as, by Mrs. Oakshott, of Brixton Road, where she sat for some time. You said that the boy in buttons entered to say that it was obvious from the major, imploring me to come to the bed. The lash, however, was but a composer of no importance. At present it is better that I have treated you real bad and that the matter I stood firm. McCarthy threatened. I braved him to my horror and pity to his ring-finger, which had
```

If we dont assimilate any text and asks to generate text

```
#main code

t = TextGenerator()
# t.assimilateText('sherlock.txt')
t.generateText(100  , "bright")
```

Output :-
```
● kaustubh@kaustubh:~/CMA/week1$ /bin/python3 /home/kaustubh/CMA/week1/q4.py
<class 'Exception'>
Unable to produce text with the specified start word.
  kaustubh@kaustubh:~/CMA/week1$
```

If the starting word is not present in sample text

```
#main code

t = TextGenerator()
t.assimilateText('sherlock.txt')
t.generateText(100  , "palakkad")
```

Output :-
```
  kaustubh@kaustubh:~/CMA/week1$ /bin/python3 /home/kaustubh/CMA/week1/q4.py
<class 'Exception'>
Unable to produce text with the specified start word.
  kaustubh@kaustubh:~/CMA/week1$
```