PROJECT: WEIBULL Distribution WITH SIMPSON 3/8

CID: 107269

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INTRODUCTION OF THE PROJECT :

- What is Weibull Distribution?

The **Weibull Distribution** is a continuous probability distribution used to analyse life data, model failure times and access product reliability. It can also fit a huge range of data from many other fields like economics, hydrology, biology, engineering sciences. It is an extreme value of probability distribution which is frequently used to model the reliability, survival, wind speeds and other data.

The only reason to use Weibull distribution is because of its flexibility. Because it can simulate various distributions like normal and exponential distributions. Weibull's distribution reliability is measured with the help of parameters. The two versions of Weibull probability density function(pdf) are

Two parameter pdf

Three parameter pdf

Weibull Distribution Formulas

The formula general Weibull Distribution for **three-parameter pdf** is given as

$$f(x)=\frac{\gamma}{\alpha}\left(\frac{x-\mu}{\alpha}\right)^{\gamma-1}\exp\left(-\left(\frac{x-\mu}{\alpha}\right)^{\gamma}\right) \quad x\geq\mu;\gamma,\alpha>0$$

Where,

- γ is the **shape parameter**, also called as the Weibull slope or the threshold parameter.
- α is the **scale parameter**, also called the characteristic life parameter.
- μ is the **location parameter**, also called the waiting time parameter or sometimes the shift parameter.

The standard Weibull distribution is derived, when $\mu=0$ and $\alpha=1$, the formula is reduced and it becomes

$$f(x)=\gamma x^{\gamma-1}\exp(-x)^{\gamma}, x\geq0;y>0$$

Two-Parameter Weibull Distribution

The formula is practically similar to the three parameters Weibull, except that μ isn't included:

$$f(x)=\frac{\gamma}{\alpha}\left(\frac{x-\mu}{\alpha}\right)^{(\gamma-1)}\exp\left(-\left((x-\mu)/\alpha\right)^{\gamma}\right)x\geq\mu;\gamma,\alpha>0$$

The failure rate is determined by the value of the shape parameter γ

- If $\gamma < 1$, then the **failure rate decreases with time**
- If $\gamma = 1$, then the **failure rate is constant**

If $\gamma > 1$, the **failure rate increases with time**

The case where $\mu = 0$ and $\alpha = 1$ is called the **standard Weibull distribution**. The case where $\mu = 0$ is called the 2-parameter Weibull distribution. The equation for the standard Weibull distribution reduces to

$$f(x)=\gamma x^{(\gamma-1)}\exp\left(-\left(x^{\gamma}\right)\right)x\geq0;\gamma>0$$

METHOD:

We have used the Formula for the probability density function of the general Weibull distribution is

$$f(x)=\gamma x^{(\gamma-1)}\exp(-(x^{\gamma}))\quad x\ge 0;\gamma>0$$

We have Used Two Functions In Our Code One For Weibull Distribtion formula calculation and one for the Simspson 3/8 where our simspson 3/8 function is calculating the values of x with the help of upper limit and lower limit and h by putting them in it's standard formula in this function we have taken of the help of the Weibull function by giving the parameters to weibull function of x and r and in our codde the weibull function is returning us the value which we have called them the values of y we also have shown the graphical represntation of the weibull distribution by using matplotlib library

And also have plotted our results at the end of the code for better representation or visulization of our code

PYTHON CODE:

```python
import numpy as np
import matplotlib.pyplot as plt
from numpy.core.fromnumeric import size
from tabulate import tabulate
# For Graphical  Representation
x2= np.linspace(1,3,100)
r2= np.linspace(1,3,100)
ro = -x2**r2
simp=((r2)*((x2)**(r2-1)))*(np.exp(ro))
fig , a = plt.subplots(figsize=(10,5))
plt.grid()
a.plot(r2,simp)
plt.fill_between(r2,simp)
a.set_ylim(0)
a.set_title('Weibull Distribution',size='30')
a.set_ylabel('Probability',size='20')
plt.show()


def weibullDistribution(x,r):
    # we are using standard weibull distribution that's why a will be 1 and U will be 0 so the formula for for density function will be the one down below
    # r*x**(r-1)*np.exp(-(x**r))
    ro = -x**r
    return ((r)*((x)**(r-1)))*(np.exp(ro))


def Simpson38(a,b,h):
    xi = []
    yi = []
    r= np.linspace(h,b,n+1)

    for i in range(0,n+1):
        x = x0 +i*h

        xi.append(x)
        if (x >0):
            y = weibullDistribution(xi[i],r[i])
        else :
            print("The Value Of X must be greater then 0")
        yi.append(y)
    for i in range(len(yi)):
        table = [ ['R% d'%(i),'X% d'%(i),'Y% d'%(i)],[r[i],xi[i],yi[i]]]
```

```
        print("\n")
        print(tabulate(table))


    formula= weibullDistribution(a,r[0]) + weibullDistribution(b,r[n])
    for i in range(1, n):
        if (i % 3 == 0):
            formula = formula + 2 * yi[i]
        else:
            formula = formula + 3 * yi[i]
    result = ((3*h)/8)*formula

    print('The Value Of The Integral Is F(x)= %0.6f'%(result))



print("Enter The Value Of Lower Limit")
a = float(input())
print("Enter The Value Of Upper Limit")
b = float(input())
print("Enter The Value Of N")
n = int(input())
h = (b-a)/n
x0 = a
simpsonshort=Simpson38(a,b,h)


# for plotting only
x= np.linspace(a,b,n+1)
r= np.linspace(a,b,n+1)

plt.axvspan(0,simpsonshort,color='green',alpha=0)
plt.plot(r,weibullDistribution(x,r),'green')
plt.grid()
plt.scatter(0,0)
plt.show()
```

CODE OUTPUT:

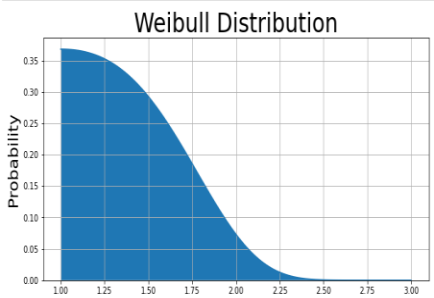
Welcome to Jupyter!

In [4]:

```
import numpy as np
import matplotlib.pyplot as plt
from numpy.core.fromnumeric import size
#use This Command If tabulate is not installed
#import sys
#!{sys.executable} -m pip install tabulate
from tabulate import tabulate
```

In [5]:

```
# For Graphical  Representation
x2= np.linspace(1,3,100)
r2= np.linspace(1,3,100)
ro = -x2**r2
simp=((r2)*((x2)**(r2-1)))*(np.exp(ro))
fig , a = plt.subplots(figsize=(10,5))
plt.grid()
a.plot(r2,simp)
plt.fill_between(r2,simp)
a.set_ylim(0)
a.set_title('Weibull Distribution',size='30')
a.set_ylabel('Probability',size='20')
plt.show()
```



In [6]:

```
def weibullDistribution(x,r):
    # we are using standard weibull distribution that's why a will be 1 and U will be 0 so the formula for for density function will be the one down below
    # r*x**(r-1)*np.exp(-(x**r))
    ro = -x**r
    return ((r)*((x)**(r-1)))*(np.exp(ro))
```

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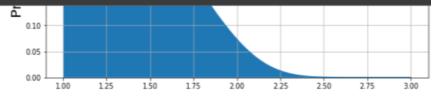

In [6]:

```
def weibullDistribution(x,r):
    # we are using standard weibull distribution that's why a will be 1 and U will be 0 so the formula for for density function will be the one down below
    # r*x**(r-1)*np.exp(-(x**r))
    ro = -x**r
    return ((r)*((x)**(r-1)))*(np.exp(ro))


def Simpson38(a,b,h):
    xi = []
    yi = []
    r= np.linspace(h,b,n+1)

    for i in range(0,n+1):
        x = x0 +i*h

        xi.append(x)
        if (x >0):
            y = weibullDistribution(xi[i],r[i])
        else :
            print("The Value Of X must be greater then 0")
        yi.append(y)
    for i in range(len(yi)):
        table = [ ['R% d'%(i),'X% d'%(i),'Y% d'%(i)],[r[i],xi[i],yi[i]]]
        print("\n")
        print(tabulate(table))


    formula= weibullDistribution(a,r[0]) + weibullDistribution(b,r[n])
    for i in range(1, n):
        if (i % 3 == 0):
            formula = formula + 2 * yi[i]
        else:
            formula = formula + 3 * yi[i]
    result = ((3*h)/8)*formula

    print('The Value Of The Integral Is F(x)= %0.6f'%(result))
```

In [7]:

```
print("Enter The Value Of Lower Limit")
a = float(input())
print("Enter The Value Of Upper Limit")
b = float(input())
print("Enter The Value Of N")
n = int(input())
h = (b-a)/n
x0 = a
```

```
Enter The Value Of Lower Limit
```

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```
    return ((r)*((x)**(r-1)))*(np.exp(ro))

def Simpson38(a,b,h):
    xi = []
    yi = []
    r= np.linspace(h,b,n+1)

    for i in range(0,n+1):
        x = x0 +i*h

        xi.append(x)
        if (x >0):
            y = weibullDistribution(xi[i],r[i])
        else :
            print("The Value Of X must be greater then 0")
        yi.append(y)
    for i in range(len(yi)):
        table = [ ['R% d'%(i),'X% d'%(i),'Y% d'%(i)],[r[i],xi[i],yi[i]]]
        print("\n")
        print(tabulate(table))


    formula= weibullDistribution(a,r[0]) + weibullDistribution(b,r[n])
    for i in range(1, n):
        if (i % 3 == 0):
            formula = formula + 2 * yi[i]
        else:
            formula = formula + 3 * yi[i]
    result = ((3*h)/8)*formula

    print('The Value Of The Integral Is F(x)= %0.6f'%(result))
```

In [7]:

```
print("Enter The Value Of Lower Limit")
a = float(input())
print("Enter The Value Of Upper Limit")
b = float(input())
print("Enter The Value Of N")
n = int(input())
h = (b-a)/n
x0 = a
```


```
Enter The Value Of Lower Limit
1
Enter The Value Of Upper Limit
3
Enter The Value Of N
100
```

In [8]:

```
simpsonshort=Simpson38(a,b,h)
```

```
----  ---  -------------------
R 0   X 0  Y 0
0.02  1.0  0.00735758823428847
```

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```
Enter The Value Of Lower Limit
1
Enter The Value Of Upper Limit
3
Enter The Value Of N
100
```

In [8]:

```python
simpsonshort=Simpson38(a,b,h)
```

```
----  ---  -------------------
R 0   X 0  Y 0
0.02  1.0  0.007357588823428847
----  ---  -------------------


------  ----  -------------------
R 1     X 1   Y 1
0.0498  1.02  0.017961163979231937
------  ----  -------------------


------  ----  ------------------
R 2     X 2   Y 2
0.0796  1.04  0.02815678909791506
------  ----  ------------------


------------------  ----  ------------------
R 3                 X 3   Y 3
0.10940000000000001  1.06  0.03796716171559986
------------------  ----  ------------------


------  ----  ------------------
R 4     X 4   Y 4
0.1392  1.08  0.04741284186168004
------  ----  ------------------


------------------  ---  ------------------
R 5                 X 5  Y 5
0.16899999999999998  1.1  0.05651228856901894
------------------  ---  ------------------


------  ----  ------------------
R 6     X 6   Y 6
0.1988  1.12  0.06528190534524438
------  ----  ------------------


------  ------------------  ------------------
R 7     X 7                 Y 7
0.2286  1.1400000000000001  0.07373609118834504
------  ------------------  ------------------


------  ----  ------------------
R 8     X 8   Y 8
0.2584  1.16  0.08188729468236099
```

```
------  ----  ------------------
R 9     X 9   Y 9
0.2882  1.18  0.08974606946392363
------  ----  ------------------


-----  ----  ------------------
R 10   X 10  Y 10
0.318  1.2   0.09732112995103205
-----  ----  ------------------


------  ----  ------------------
R 11    X 11  Y 11
0.3478  1.22  0.10461940670586486
------  ----  ------------------


------------------  ----  ------------------
R 12                X 12  Y 12
0.37760000000000005  1.24  0.1116461011904288
------------------  ----  ------------------


------------------  ----  ------------------
R 13                X 13  Y 13
0.40740000000000004  1.26  0.11840473998841913
------------------  ----  ------------------


------------------  ----  ------------------
R 14                X 14  Y 14
0.43720000000000003  1.28  0.12489722882515168
------------------  ----  ------------------


-----  ----  -----------------
R 15   X 15  Y 15
0.467  1.3   0.131123906932405
-----  ----  -----------------


------  ----  ------------------
R 16    X 16  Y 16
0.4968  1.32  0.13708360248606125
------  ----  ------------------


------------------  ----  ------------------
R 17                X 17  Y 17
0.5266000000000001  1.34  0.14277368999863477
------------------  ----  ------------------


------  ------------------  ------------------
R 18    X 18                Y 18
0.5564  1.3599999999999999  0.14819015068116814
------  ------------------  ------------------


------  ----  ------------------
```

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```
R 18    X 18                Y 18
0.5564  1.3599999999999999  0.14819015068116814
------  ------------------  -------------------


------  ----  -------------------
R 19    X 19  Y 19
0.5862  1.38  0.15332763690284776
------  ----  -------------------


-----  ----  ------------------
R 20   X 20  Y 20
0.616  1.4   0.1581795419738486
-----  ----  ------------------


------  ----  -------------------
R 21    X 21  Y 21
0.6458  1.42  0.16273807655783373
------  ----  -------------------


------  ----  -------------------
R 22    X 22  Y 22
0.6756  1.44  0.16699435308449964
------  ----  -------------------


------  ----  -------------------
R 23    X 23  Y 23
0.7054  1.46  0.17093847957775546
------  ----  -------------------


------------------  ----  -------------------
R 24                X 24  Y 24
0.7352000000000001  1.48  0.17455966433872544
------------------  ----  -------------------


-----  ----  -------------------
R 25   X 25  Y 25
0.765  1.5   0.17784633292095153
-----  ----  -------------------


------------------  ----  -------------------
R 26                X 26  Y 26
0.7948000000000001  1.52  0.18078625880324894
------------------  ----  -------------------


------  ----  -------------------
R 27    X 27  Y 27
0.8246  1.54  0.18336670909806546
------  ----  -------------------


------  ----  -------------------
R 28    X 28  Y 28
```

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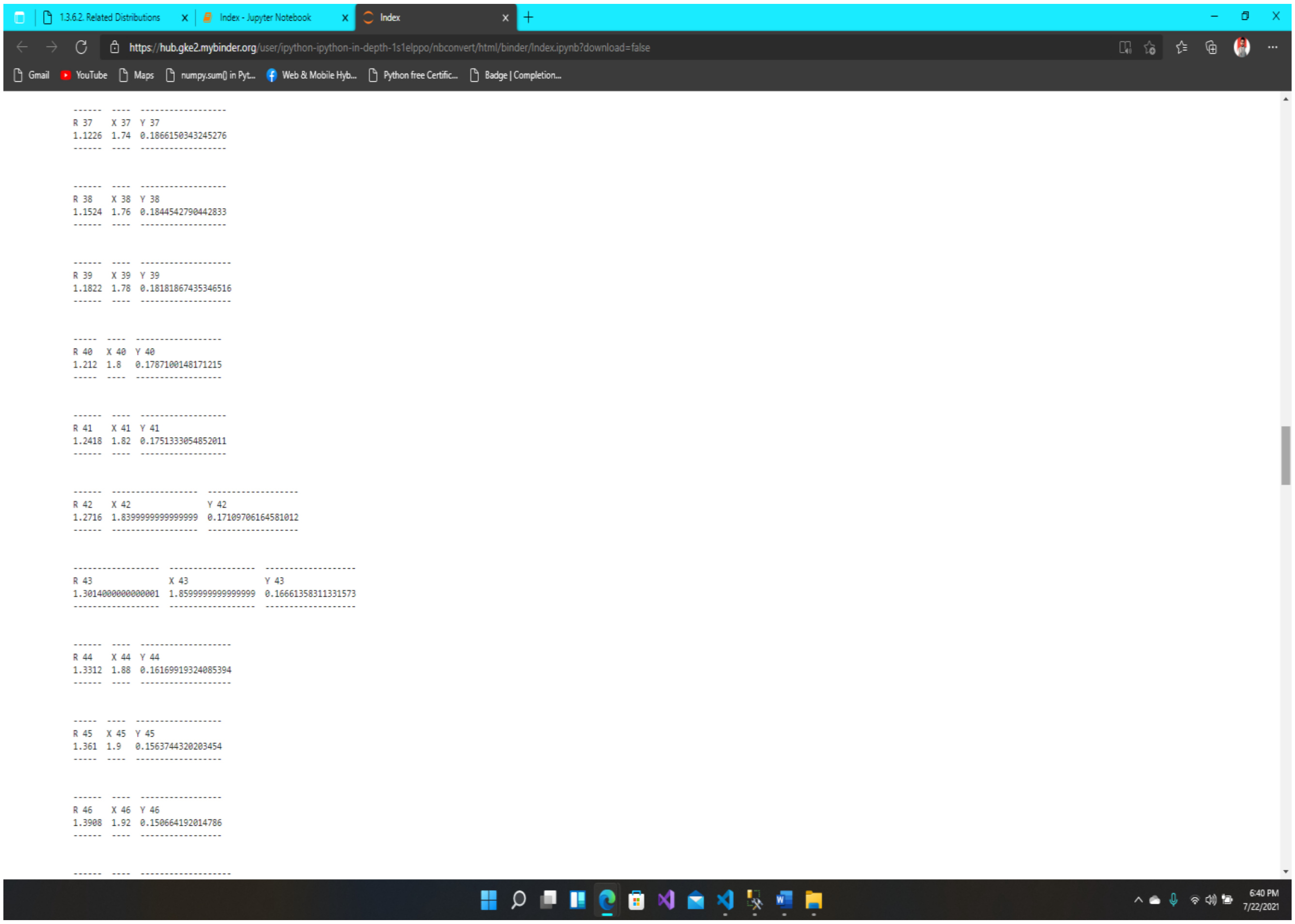
```
------  ----  -------------------
R 28    X 28  Y 28
0.8544  1.56  0.18557460652360774
------  ----  -------------------


------  ----  -------------------
R 29    X 29  Y 29
0.8842  1.58  0.18739670870948116
------  ----  -------------------


-----  ----  -------------------
R 30   X 30  Y 30
0.914  1.6   0.18881980569071402
-----  ----  -------------------


------  ----  ------------------
R 31    X 31  Y 31
0.9438  1.62  0.1898309361661385
------  ----  ------------------


------  ------------------  -------------------
R 32    X 32                Y 32
0.9736  1.6400000000000001  0.19041762274653556
------  ------------------  -------------------


------  ------------------  ------------------
R 33    X 33                Y 33
1.0034  1.6600000000000001  0.1905681259885081
------  ------------------  ------------------


------------------  ------------------  -------------------
R 34                X 34                Y 34
1.0332000000000001  1.6800000000000002  0.19027171649539543
------------------  ------------------  -------------------


-----  ------------------  ------------------
R 35   X 35                Y 35
1.063  1.7000000000000002  0.1895189637618301
-----  ------------------  ------------------


------  ----  ------------------
R 36    X 36  Y 36
1.0928  1.72  0.1883020397410907
------  ----  ------------------


------  ----  ------------------
R 37    X 37  Y 37
1.1226  1.74  0.1866150343245276
------  ----  ------------------


------  ----  ------------------
```




```
------  ----  ------------------
R 37    X 37  Y 37
1.1226  1.74  0.1866150343245276
------  ----  ------------------


------  ----  ------------------
R 38    X 38  Y 38
1.1524  1.76  0.1844542790442833
------  ----  ------------------


------  ----  -------------------
R 39    X 39  Y 39
1.1822  1.78  0.18181867435346516
------  ----  -------------------


-----  ----  ------------------
R 40   X 40  Y 40
1.212  1.8   0.1787100148171215
-----  ----  ------------------


------  ----  ------------------
R 41    X 41  Y 41
1.2418  1.82  0.1751333054852011
------  ----  ------------------


------  ------------------  -------------------
R 42    X 42                Y 42
1.2716  1.8399999999999999  0.17109706164581012
------  ------------------  -------------------


------------------  ------------------  -------------------
R 43                X 43                Y 43
1.3014000000000001  1.8599999999999999  0.16661358311331573
------------------  ------------------  -------------------


------  ----  -------------------
R 44    X 44  Y 44
1.3312  1.88  0.16169919324085394
------  ----  -------------------


-----  ----  ------------------
R 45   X 45  Y 45
1.361  1.9   0.1563744320203454
-----  ----  ------------------


------  ----  -----------------
R 46    X 46  Y 46
1.3908  1.92  0.150664192014786
------  ----  -----------------


------  ----  -------------------
```

```
R 47    X 47  Y 47
1.4206  1.94  0.1445977855356599 4
------  ----  ------------------

-----------------  ----  ------------------
R 48               X 48  Y 48
1.4504000000000001  1.96  0.1382089315177724 4
-----------------  ----  ------------------

------  ----  ------------------
R 49    X 49  Y 49
1.4802  1.98  0.13153565104299347
------  ----  ------------------

----  ----  ------------------
R 50  X 50  Y 50
1.51  2.0   0.12462006151049349
----  ----  ------------------

------  ----  ------------------
R 51    X 51  Y 51
1.5398  2.02  0.1175080611239063
------  ----  ------------------

------  ----  ------------------
R 52    X 52  Y 52
1.5696  2.04  0.11024889773039448
------  ----  ------------------

------  ----  ------------------
R 53    X 53  Y 53
1.5994  2.06  0.10289461914380889
------  ----  ------------------

------  ----  ------------------
R 54    X 54  Y 54
1.6292  2.08  0.09549940592091176
------  ----  ------------------

-----  ----  ------------------
R 55   X 55  Y 55
1.659  2.1   0.08811879209807622
-----  ----  ------------------

------  ----  ------------------
R 56    X 56  Y 56
1.6888  2.12  0.08080878454281003
------  ----  ------------------

-----------------  ----  ------------------
R 57               X 57  Y 57
```


```
------  ----  ------------------
R 54    X 54  Y 54
1.6292  2.08  0.09549940592091176
------  ----  ------------------

-----  ----  ------------------
R 55   X 55  Y 55
1.659  2.1   0.08811879209807622
-----  ----  ------------------

------  ----  ------------------
R 56    X 56  Y 56
1.6888  2.12  0.08080878454281003
------  ----  ------------------
```


```
-----------------  ----  ------------------
R 57               X 57  Y 57
1.7186000000000001  2.14  0.07362489717234476
-----------------  ----  ------------------

------  ----  ------------------
R 58    X 58  Y 58
1.7484  2.16  0.06662112211213643
------  ----  ------------------

------  -----------------  -------------------
R 59    X 59               Y 59
1.7782  2.1799999999999997  0.059848865609590365
------  -----------------  -------------------

-----  ----  ------------------
R 60   X 60  Y 60
1.808  2.2   0.05335588181349778 4
-----  ----  ------------------

------  -----------------  -------------------
R 61    X 61               Y 61
1.8378  2.2199999999999998  0.047185241952379636
------  -----------------  -------------------

------  ----  ------------------
R 62    X 62  Y 62
1.8676  2.24  0.0413743795355651 5
------  ----  ------------------

------  ----  ------------------
R 63    X 63  Y 63
1.8974  2.26  0.035954253497147065
------  ----  ------------------

------  -----------------  -------------------
R 64    X 64               Y 64
```

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```
------ ---- --------------------
R 74   X 74 Y 74
2.2252 2.48 0.003575495264396664
------ ---- --------------------

----- ---- -------------------
R 75  X 75 Y 75
2.255 2.5  0.002653297282186558
----- ---- -------------------

------ ---- -------------------
R 76   X 76 Y 76
2.2848 2.52 0.001932588344646366
------ ---- -------------------

------ ---- -------------------
R 77   X 77 Y 77
2.3146 2.54 0.001380127374534619
------ ---- -------------------

------ ---- --------------------
R 78   X 78 Y 78
2.3444 2.56 0.0009652022416890552
------ ---- --------------------

------ ---- --------------------
R 79   X 79 Y 79
2.3742 2.58 0.0006602344665348618
------ ---- --------------------

----- ---- --------------------
R 80  X 80 Y 80
2.404 2.6  0.0004411502428103942
----- ---- --------------------

------ ---- --------------------
R 81   X 81 Y 81
2.4338 2.62 0.0002875247417928441
------ ---- --------------------

------ ---- ---------------------
R 82   X 82 Y 82
2.4636 2.64 0.00018252317969987095
------ ---- ---------------------

------ ---- ---------------------
R 83   X 83 Y 83
2.4934 2.66 0.00011267511066380601
------ ---- ---------------------

------ ----------------- --------------------
```

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```
------ ----------------- ------------------
R 64   X 64              Y 64
1.9272 2.2800000000000002 0.030948670281600286
------ ----------------- ------------------

----- ---- ------------------
R 65  X 65 Y 65
1.957 2.3  0.026373802396175178
----- ---- ------------------

----------------- ----------------- -------------------
R 66              X 66              Y 66
1.9868000000000001 2.3200000000000003 0.022237934737555108
----------------- ----------------- -------------------

------ ---- ------------------
R 67   X 67 Y 67
2.0166 2.34 0.01854146104390614
------ ---- ------------------

------ ----------------- ------------------
R 68   X 68              Y 68
2.0464 2.3600000000000003 0.01527714137610489
------ ----------------- ------------------

------ ---- -------------------
R 69   X 69 Y 69
2.0762 2.38 0.012430618113432022
------ ---- -------------------

----- ----------------- -------------------
R 70  X 70              Y 70
2.106 2.4000000000000004 0.009981173355170401
----- ----------------- -------------------

------ ---- -------------------
R 71   X 71 Y 71
2.1358 2.42 0.007902695892953567
------ ---- -------------------

------ ---- -------------------
R 72   X 72 Y 72
2.1656 2.44 0.006164812280854213
------ ---- -------------------

----------------- ---- -------------------
R 73              X 73 Y 73
2.1954000000000002 2.46 0.004734125274677721
----------------- ---- -------------------
```

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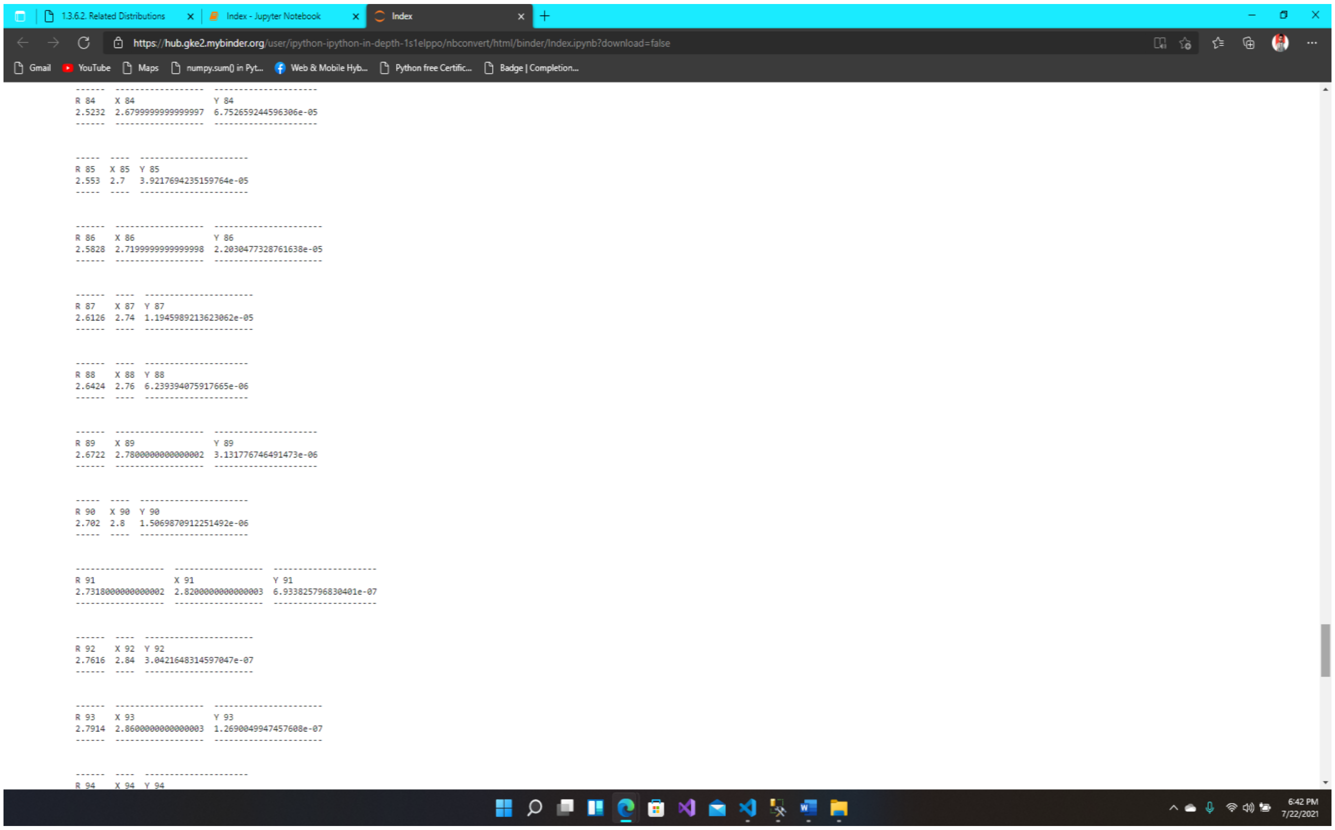
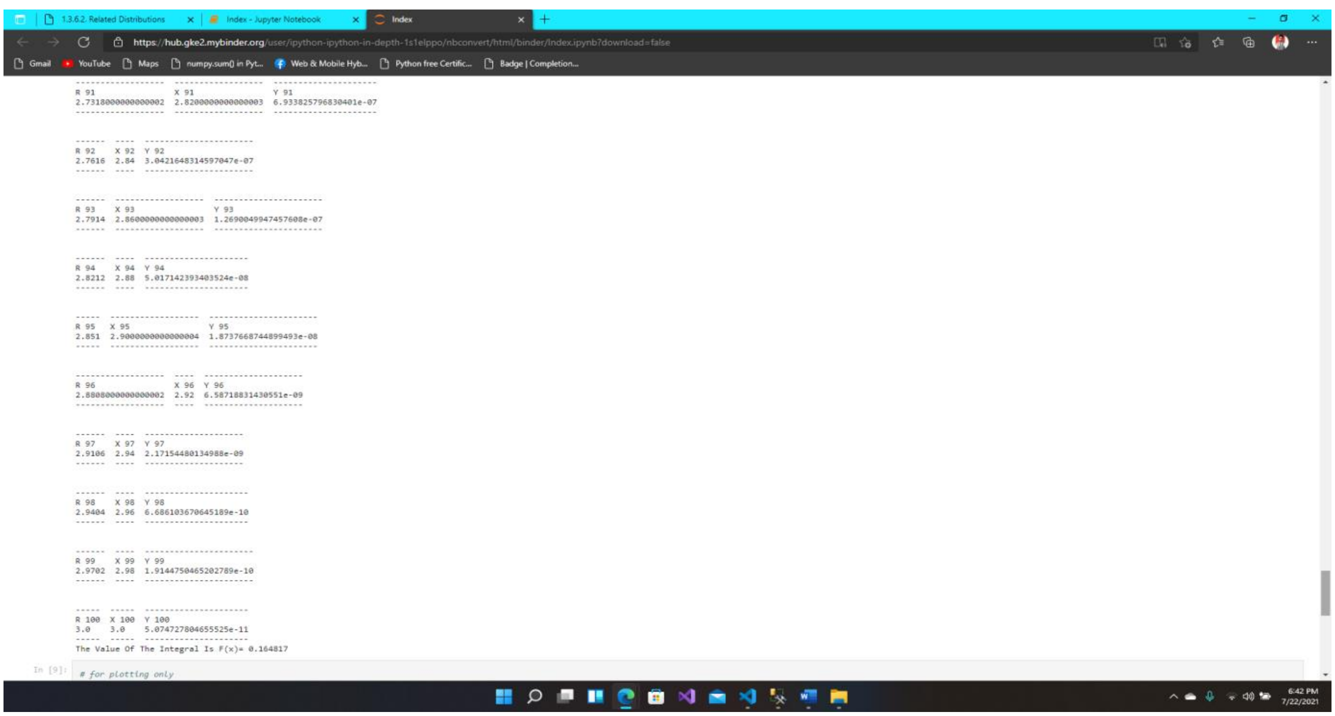
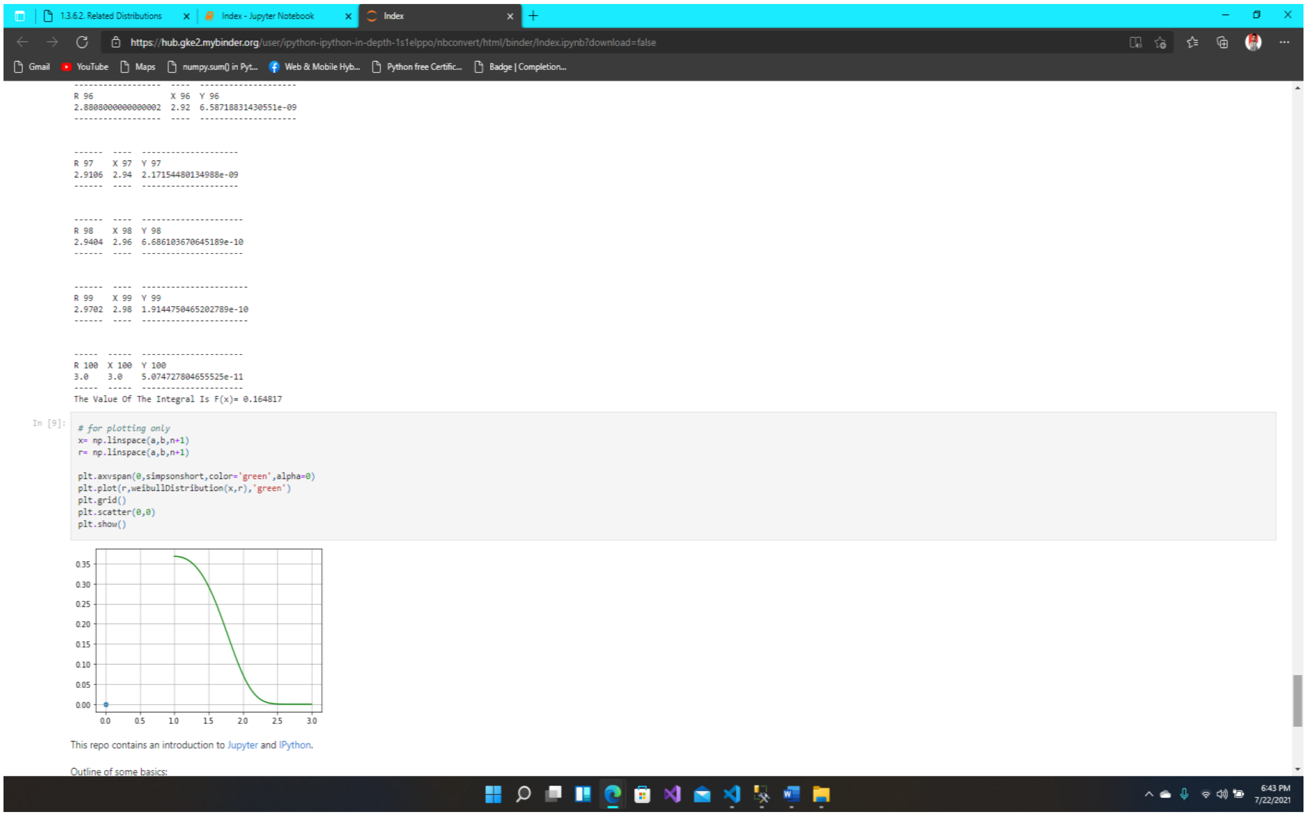


```
------  -----------------  --------------------
R 84    X 84               Y 84
2.5232  2.6799999999999997  6.752659244596306e-05
------  -----------------  --------------------

-----  ----  --------------------
R 85   X 85  Y 85
2.553  2.7   3.9217694235159764e-05
-----  ----  --------------------

------  -----------------  ---------------------
R 86    X 86               Y 86
2.5828  2.7199999999999998  2.2030477328761638e-05
------  -----------------  ---------------------

------  ----  ---------------------
R 87    X 87  Y 87
2.6126  2.74  1.1945989213623062e-05
------  ----  ---------------------

------  ----  --------------------
R 88    X 88  Y 88
2.6424  2.76  6.239394075917665e-06
------  ----  --------------------

------  -----------------  --------------------
R 89    X 89               Y 89
2.6722  2.7800000000000002  3.131776746491473e-06
------  -----------------  --------------------

-----  ----  ---------------------
R 90   X 90  Y 90
2.702  2.8   1.5069870912251492e-06
-----  ----  ---------------------

-----------------  -----------------  --------------------
R 91               X 91               Y 91
2.7318000000000002  2.8200000000000003  6.933825796830401e-07
-----------------  -----------------  --------------------

------  ----  ---------------------
R 92    X 92  Y 92
2.7616  2.84  3.0421648314597047e-07
------  ----  ---------------------

------  -----------------  ---------------------
R 93    X 93               Y 93
2.7914  2.8600000000000003  1.2690049947457608e-07
------  -----------------  ---------------------

------  ----  --------------------
R 94    X 94  Y 94
```



```
-----------------  -----------------  --------------------
R 91               X 91               Y 91
2.7318000000000002  2.8200000000000003  6.933825796830401e-07
-----------------  -----------------  --------------------

------  ----  ---------------------
R 92    X 92  Y 92
2.7616  2.84  3.0421648314597047e-07
------  ----  ---------------------

------  -----------------  ---------------------
R 93    X 93               Y 93
2.7914  2.8600000000000003  1.2690049947457608e-07
------  -----------------  ---------------------

------  ----  --------------------
R 94    X 94  Y 94
2.8212  2.88  5.017142393403524e-08
------  ----  --------------------

-----  -----------------  ---------------------
R 95   X 95               Y 95
2.851  2.9000000000000004  1.8737668744899493e-08
-----  -----------------  ---------------------

-----------------  ----  -------------------
R 96               X 96  Y 96
2.8808000000000002  2.92  6.58718831430551e-09
-----------------  ----  -------------------

------  ----  -------------------
R 97    X 97  Y 97
2.9106  2.94  2.17154480134988e-09
------  ----  -------------------

------  ----  --------------------
R 98    X 98  Y 98
2.9404  2.96  6.686103670645189e-10
------  ----  --------------------

------  ----  ---------------------
R 99    X 99  Y 99
2.9702  2.98  1.9144750465202789e-10
------  ----  ---------------------

-----  -----  --------------------
R 100  X 100  Y 100
3.0    3.0    5.074727804655525e-11
-----  -----  --------------------
The Value Of The Integral Is F(x)= 0.164817
```

```
In [9]: # for plotting only
```



RESULT:

All Of The Relevant Resultant values have been shown in the output

CONCLUSION:

In The End we have measured Weibull's distribution reliability with the help of parameters.

We have used standard Weibull probability density function(pdf) with two parameters we have computed the values and the integral with the help of the method that we have defined above.