


✓ Discrete Uniform Distribution


Problem statement

The number of books sold by a bookseller per day is given in 'bookseller.csv'. Let X = Number of books sold by a bookseller per day X is a Discrete Random variable (because it represents the book count). Let's see the distribution of X and answer the below questions.

1. Find the probability that more than (or equal to) 96 books will be sold on a given day
2. Find the probability that less than (or equal to) 92 books will be sold on a given day


```
import pandas as pd
book=pd.read_csv('bookseller.csv')
book.head()
```




	S.No	Date	Number of Books Sold	
0	1	01-01-2020	90	
1	2	02-01-2020	100	
2	3	03-01-2020	100	
3	4	04-01-2020	97	
4	5	05-01-2020	93	


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```
book.shape
```


 (366, 3)

```
book.describe()
```



	S.No	Number of Books Sold	
count	366.000000	366.000000	
mean	183.500000	94.961749	
std	105.799338	3.178465	
min	1.000000	90.000000	
25%	92.250000	92.000000	
50%	183.500000	95.000000	
75%	274.750000	98.000000	
max	366.000000	100.000000	

```
import scipy.stats as stats
import numpy as np
k=np.arange(90,101)
prob=stats.uniform.pdf(k,loc=90,scale=11)
prob
```

 array([0.09090909, 0.09090909, 0.09090909, 0.09090909, 0.09090909,
0.09090909, 0.09090909, 0.09090909, 0.09090909, 0.09090909])

0.09090909]])

```
# 1) Find the probability that more than (or equal to) 96 books will be sold on a given day
1-stats.uniform.cdf(96,90,11)
```

 0.4545454545454546

```
# 2) Find the probability that less than (or equal to) 92 books will be sold on a given day
stats.uniform.cdf(93,90,11)
```

 0.2727272727272727


✓ Continuous Uniform Distribution



Problem statement

IT industry records the amount of time a software engineer needs to fix a bug in the initial phase of software development in 'debugging.csv'. Let X = Time needed to fix bugs X is a continuous random variable. Let's see the distribution of X and answer the below questions.

1. Find the probability that a randomly selected software debugging requires less than three hours
2. Find the probability that a randomly selected software debugging requires more than two hours
3. Find the 50th percentile of the software debugging time


```
bug=pd.read_csv('debugging.csv')
bug.head()
```





	Bug ID	Time Taken to fix the bug	
0	12986	2.42	
1	12987	2.03	
2	12988	2.74	
3	12989	3.21	
4	12990	3.40	

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```
bug.describe()
```



	Bug ID	Time Taken to fix the bug	
count	2098.000000	2098.000000	
mean	14034.500000	3.012531	
std	605.784753	1.147148	
min	12986.000000	1.010000	
25%	13510.250000	2.010000	
50%	14034.500000	3.005000	
75%	14558.750000	4.030000	
max	15083.000000	5.000000	

```
import numpy as np
from scipy.stats import uniform
x=np.linspace(1,5,50)
probs=stats.uniform.pdf(x,1,4)
probs
```

```
array([0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25,
       0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25,
       0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25,
       0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25,
       0.25, 0.25, 0.25, 0.25, 0.25, 0.25])
```

```
# 1)Find the probability that a randomly selected software debugging requires less than three hours
stats.uniform.cdf(3,1,4)
```

```
0.5
```

```
# 2)Find the probability that a randomly selected software debugging requires more than two hours
1- stats.uniform.cdf(2,1,4)
```

```
0.75
```

```
# 3)Find the 50th percentile of the software debugging time
uniform.ppf(q=0.25, loc=1, scale=4)
```

```
2.0
```