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Lab 1

In this Lab:

Random variable

- definition
- representation.
  - table
  - pmf
  - CDF
- in Python
  - create as an object
  - use object methods.

Definition

A variable whose value is random.

eg. – tossing a coin

– tossing a die

– the room temperature right now

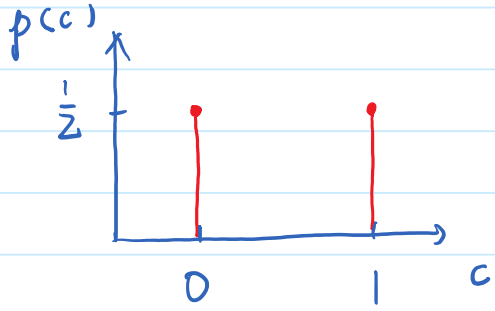
Representation

Toss a fair coin, Head = 1, Tail = 0.

Table

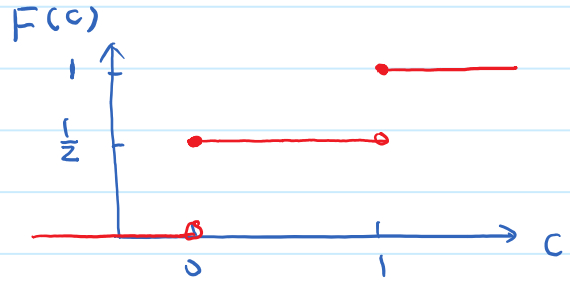
c	1	0
p	$\frac{1}{2}$	$\frac{1}{2}$

pmf



$p(c) \triangleq Pr(X = c)$

CDF



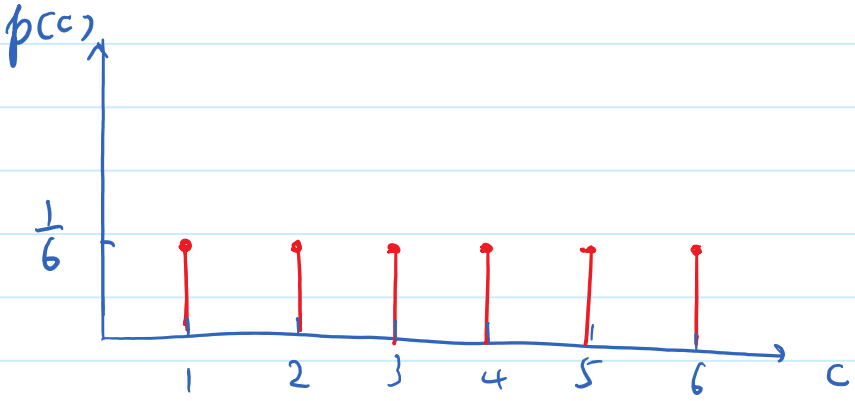
$F(c) \triangleq Pr(X \leq c)$

Toss a fair die

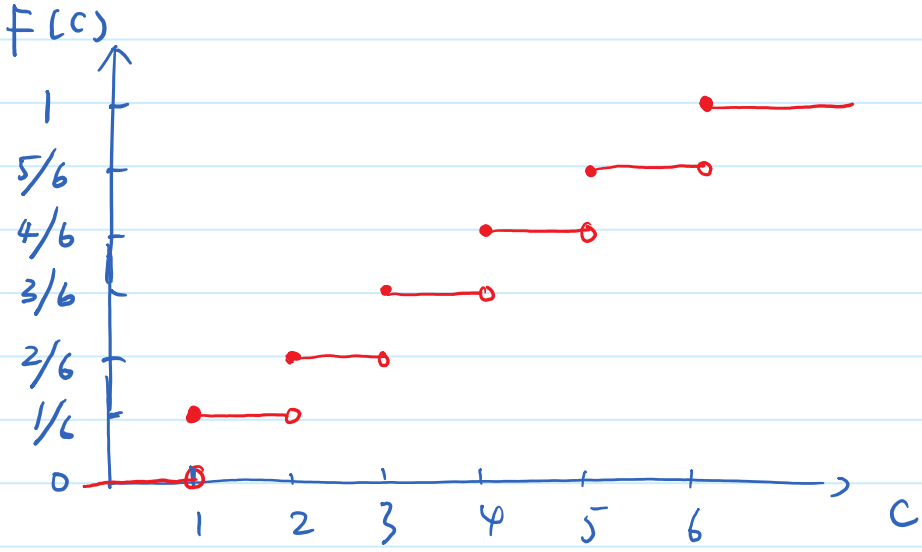
Table

c	1	2	3	4	5	6
p	1/6	1/6	1/6	1/6	1/6	1/6

pmf



COF



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In Python

Create as an object

```
X = scipy.stats.bernoulli(0.5)
```

scipy.stats: module

Think of X as an virtual coin that exists in the computer

Use an object's methods

```
X.mean()
X.var()
X.pmf([0,1])
```