

Randomization

What is Randomization used for?

- Shuffling a deck of cards
- Slot Machines
- Lotteries
- Almost every game uses randomization
- And more

Importing

When we need to use certain functions that aren't built into python, we import them. The “random” library is imported in order to allow randomization.

```
1 import random
```

Using the random library

- Once imported, we can use the functions in random.
- Only functions used today are the “randint” and “random” functions
- A full list of random library functions can be found at :
<https://docs.python.org/3/library/random.html>

Let's Try randint

- Takes in two numbers as range
- Prints random number from this range

```
1 import random
2 random_int = random.randint(1,10)
3 print(str(random_int))
4 #prints random number between 1 and 10
```

8

Can this print 1 or 10? Try it yourself!

Now for random.random()

- Takes in no input
- Generates random float(decimal) between 0 and 1
- Includes 0, but not 1

```
1 import random
2 random_float = random.random()
3 print(str(random_float))
4 #prints a random float between 0 and 1
```

```
0.6788217833962542
>
```

How can we generate random decimals between 0 and any number?

2 ways!

Random decimals : Method 1 - Addition

- Simpler method - easy to understand
- Uses randint and random

```
1 import random
2 random_float = random.random()
3 random_int = random.randint(1,10)
4 total = random_int + random_float
5 print(str(total))
6 #prints random decimal between 1 and 11
```

5.7286047167969105



Try using this method to print a random number between 50 and 100.

Random decimals : Method 2-Multiplication

- More complex method
- Requires conceptual understanding of `random.random()` and multiplying

```
1 import random
2 random_float = random.random()
3 print(str(random_float*10))
4 #prints random decimal between 0 and 10
```

2.319935831742852

Because `random.random()` generates between $[0,1)$, when we multiply this decimal by an integer, we end up with any number below the integer entered. Ask your group leader if this still doesn't make sense.

Lab 004 : Rock, Paper, Scissors

For this lab, we will be making a rock paper scissors game using randomization, conditionals, and input. Good luck, and remember to break the problem apart into smaller pieces

```
What do you choose? Type 0 for Rock, 1 for Paper, or 2 for Scissors:  
1
```

```
-----  
---'  )  
      )  
      )  
      )  
---.  )
```

```
Computer choice:
```

```
-----  
---'  )  
      )  
      )  
      )  
---.  )
```

```
You win
```

