Popular Modules

This lesson highlights some of the most commonly used Python modules.

WE'LL COVER THE FOLLOWING

Here are some useful Python modules for beginners. Keep in mind that this is by no means an exhaustive list. For the full Python library module list, check out their official documentation.

`math`

The `math` module offers a wide range of mathematical functions such as factorial, trigonometric operations, etc.

```
import math

fact_of_5 = math.factorial(5)  # The factorial of 5
print(fact_of_5)

gcd = math.gcd(300, 90)  # Greatest common denominator
print(gcd)

log100 = (math.log(10, 100))  # Logarithm of 10 to the base of 100
print(log100)
```

To get all `math` methods for complex numbers, use the `cmath` module instead.

`heapq`

The `heapq` module allows us to create the **heap** data structure. A heap is a

binary tree which always stores a special value at the top (root). A **minheap**

stores the smallest value at the top and a **maxheap** stores the largest value at the top.

The `pop` method returns the value at the top of the heap.

Python's `heapq` creates a minheap by default.

```
import heapq

heap = []  # Empty heap

# Inserting elements in the heap
heapq.heappush(heap, 10)
heapq.heappush(heap, 70)
heapq.heappush(heap, 5)
heapq.heappush(heap, 35)
heapq.heappush(heap, 50)

# Popping the smallest value
minimum = heapq.heappop(heap)
print(minimum)
```

`random`

The `random` module is used for generating random numbers in Python. There are several methods which allow us to generate different types of random numbers.

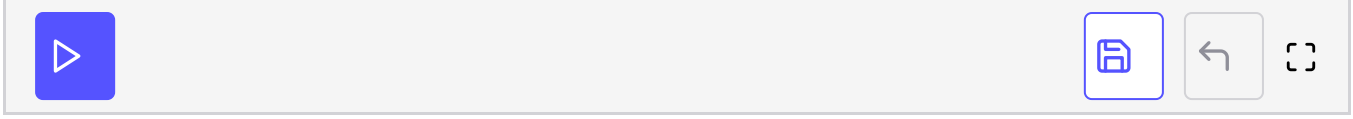
The `random()` method generates a random floating-point number between `0` and `1`, whereas `uniform()` returns a floating-point number within a custom range.

```
import random

rand_num = random.random()
print(rand_num)

rand_num_in_range = random.uniform(30, 50)  # A random number between 30 and 50
print(rand_num_in_range)

str_list = ['a', 'b', 'c', 'd', 'e']
random.shuffle(str_list)  # Randomly shuffle a list
print(str_list)
```



The library is filled with many crafty modules like the ones mentioned above. Be sure to check it out.

Apart from the Standard Library, there are thousands of reliable external packages which can be integrated into Python. We'll talk about them in the next lesson.