Python Libraries, Modules, and Functions Reference

This document contains a list of Python libraries, modules, and functions with syntax examples for quick reference.

Library: math

Description: Provides mathematical functions

Module: math

Function: sqrt(x)

```
import math

print(math.sqrt(25))  # Output: 5.0
```

Function: ceil(x)

```
import math

print(math.ceil(4.2))  # Output: 5
```

Function: floor(x)

```
import math

print(math.floor(4.9))  # Output: 4
```

Function: factorial(x)

```
import math

print(math.factorial(5))  # Output: 120
```

Library: random

Description: Generates random numbers

Module: random

Function: randint(a, b)

```
import random

print(random.randint(1, 10))
```

Function: choice(seq)

```
import random

print(random.choice(['apple', 'banana', 'cherry']))
```

Function: shuffle(seq)

```
import random

nums = [1, 2, 3, 4]; random.shuffle(nums)

print(nums)
```

Function: random()

```
import random

print(random.random())  # Random float between 0 and 1
```

Library: datetime

Description: Handles date and time operations

Module: datetime

Function: datetime.now()

```
from datetime import datetime

print(datetime.now())
```

Function: date.today()

```
from datetime import date

print(date.today())
```

Function: timedelta(days=5)

```
from datetime import timedelta

print(timedelta(days=5))
```

Library: numpy

Description: Numerical operations on large arrays

Module: numpy

Function: array([list])

```
import numpy as np

arr = np.array([1, 2, 3])

print(arr)
```

Function: linspace(start, stop, num)

```
import numpy as np

print(np.linspace(1, 10, 5))
```

Function: reshape(rows, cols)

```
import numpy as np

arr = np.array([1, 2, 3, 4]).reshape(2, 2)

print(arr)
```

Library: pandas

Description: Data analysis and manipulation

Module: pandas

Function: DataFrame(data)

```
import pandas as pd

df = pd.DataFrame({'A': [1, 2], 'B': [3, 4]})

print(df)
```

Function: read_csv(file)

```
import pandas as pd

df = pd.read_csv('data.csv')

print(df.head())
```

Function: groupby(column)

```
import pandas as pd

df.groupby('A').sum()
```

Library: matplotlib

Description: Data visualization library

Module: matplotlib.pyplot

Function: plot(x, y)

```
import matplotlib.pyplot as plt

plt.plot([1, 2, 3], [4, 5, 6])

plt.show()
```

Function: scatter(x, y)

```
import matplotlib.pyplot as plt

plt.scatter([1, 2, 3], [3, 6, 9])

plt.show()
```

Function: bar(x, height)

```
import matplotlib.pyplot as plt

plt.bar(['A', 'B'], [5, 7])

plt.show()
```