Python Cheatsheet

Basics

Control Flow

```
if 1 == 1:
    print("1 is equal to 1")
elif 1 == 2:
    print("1 is equal to 2")
else:
    print("1 is not equal to 1 or 2")
```

Loops

```
for i in range(0, 10):
    print(i)
```

```
i = 0
while i < 10:
    print(i)
    i += 1
```

Functions

```
def add(a, b):
    return a + b
```

List Comprehension

```
# [0, 1, 4, 9, 16]
squares = [x**2 for x in range(5)]
```

Lambda Function

```
square = lambda x: x**2
print(square(5))   # 25
```

Map and Filter

```
nums = [1, 2, 3]
squared = list(map(lambda x: x**2, nums))
# [1, 4, 9]
```

```
evens = list(filter(lambda x: x % 2 == 0, nums))
# [2]
```

Data Structures

List

```
list = [1, 2, 3, 4, 5]
list.append(6)
list.pop()
list[0]
```

Bit Strings

```
bit_str = "1011"
hex_val = hex(int(bit_str, 2))[2:]
```

Tuple

```
tuple = (1, 2)
x, y = tuple
```

Dictionary

```
dictionary = {"key": "value"}
dictionary["new_key"] = "new_value"
dictionary.pop("key")
dictionary["key"]
```

Set (Unique Elements)

```
set = {1, 2, 3, 4, 5}
set.add(6)
set.remove(1)
```

Algorithms

Efficient Sort

```
list = [1, 2, 3, 4, 5]
sorted_list = sorted(list)
list.sorted()
```

Classes

```
class Car:
    def __init__(self, brand, model):
        self.brand = brand
        self.model = model

    def drive(self):
        return f"{self.brand} {self.model} is driving."

# Create object
my_car = Car("Tesla", "Model S")
print(my_car.drive())   # Tesla Model S is driving.
```

Files

Read File

```
with open("file.txt", "r") as file:
    content = file.read()
```

Write File

```
with open("file.txt", "w") as file:
    file.write("Hello, File!")
```

Exceptions

```
try:
    result = 10 / 0
except ZeroDivisionError as e:
    print("Cannot divide by zero:", e)
finally:
    print("Cleanup")
```

Input and Output

Standard Input

```
# Single-line input
name = input("Enter your name: ")
print(f"Hello, {name}!")

# Multiple inputs in one line
x, y = map(int, input("Enter two numbers: ").split())
print(f"x: {x}, y: {y}")

# Multiple lines of input
lines = []
while True:
    line = input("Enter a line (or 'exit' to stop): ")
    if line == "exit":
        break
    lines.append(line)
print(lines)
```

Standard Output

```
# Print with formatting
name, age = "Alice", 30
print(f"{name} is {age} years old.")  # Using f-strings

# Print without newline
print("Hello", end=" ")
print("World")  # Output: Hello World

# Print to file
with open("output.txt", "w") as file:
    print("Writing to file!", file=file)
```