**Minor in AI**

**Master Session Notes**

Batch 4

4 Feb 2025

**Title: Mastering Python Functions: From Built-ins to Lambdas with Real-World Applications**

**Concepts Covered:**

Built-in functions in Python - math & string functions

Defining user-defined functions: def keyword

Arguments and return values

Default parameters

Lambda functions and their applications

**Math Functions**

Below are some sample Math Functions. Can you explore more?

# Math functions

import math

num = -10

print("Absolute value:", abs(num))

base, exp = 2, 3

print("Power:", pow(base, exp))

value = 4.56

print("Rounded value:", round(value, 1))

numbers = [5, 2, 8, 1, 9]

print("Minimum value:", min(numbers))

print("Maximum value:", max(numbers))

print("Sum of list:", sum(numbers))

print("Divmod (10/3):", divmod(10, 3))

r, q = divmod(10, 3)

print("Remainder:", r)

print("Quotient:", q)

print("Factorial of 5:", math.factorial(4))

print("Square root of 16:", math.sqrt(25))

**String Functions**

Explore and list at least 5 more.

text = "  Hello, Tuesday  "

print("Length:", len(text))

print("Uppercase:", text.upper())

print("Lowercase:", text.lower())

print("Replaced:", text.replace("Tuesday", "Holiday"))

words = text.strip().split(", ")

print("Split:", words)

print("Find 'Hello':", text.find("Tuesday"))

print("Starts with Hello?:", text.strip().startswith("Hello"))

**Functions**

Functions come with “def”, take input and return result.

# Function definition

def string\_length(ttext):

    count = 0

    for t in ttext:

        count += 1

    return count

# Calling the function

text = "Hello"

print("Length of the string:", string\_length(text))

Using Default Parameters in Python

def greet(name):

    print("Hello", name)

# Call the greet function

greet("Akhil")

def greet(name="Guest"):

    print("Hello", name)

# Calling the function with and without an argument

greet("Aryan")

greet()

**Lambda Functions**

# Lambda function to find the next number

next = lambda x: x + 1

# Calling the lambda function

print("Next of 5:", next(5))

print("Next of 10:", next(10))

# Lambda function to find the cube of the given number

cube = lambda x: x \* x \* x

# Calling the lambda function

print("Cube of 5:", cube(5))

print("Cube of 1:", cube(1))

* Lambda functions are useful for short, one-time operations.
* They work well with higher-order functions like map(), filter(), and reduce().
* The name comes from Lambda Calculus