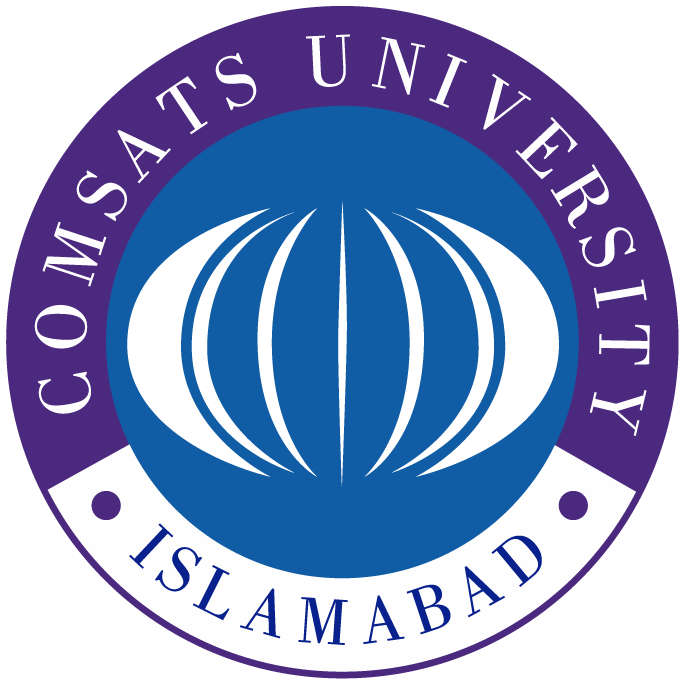
***COMSATS University Islamabad***

***Lahore Campus***



**Submitted to:**

Ma’am Mufeeza Manzoor

**Submitted by:**

Muhammad Awais

(FA24-BBA-132)

Section “**B**”

**Course:**

Programming Languages for Business Analytics

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**Exercise # 01**

**Input:**

# store a variable name and print it

a = "Awais"

print(a)

# store two numbers in variables a and b then print their sum

a = 6

b = 10

print(a + b)

# create one integer and one float variable and display their types

c = 11

d = 2.75

print(type(c), type(d))

# store the string "Hello, Python" and print its length

e = "Hello, Python"

print(len(e))

# assign a number to x and print its square

x = 8

print(x \*\* 2)

# take an input from the user and display its data type

y = input("Enter something: ")

print(type(y))

# store a boolean value and check whether it is True or not

z = True

print(z is True)

# use f-string to print your name and age in one line

a = "Bilal"

b = 20

print(f"My name is {a} and I am {b} years old.")

# convert integer x = 10 to float and print the result

x = 10

x = float(x)

print(x)

# create a complex number and print real and imaginary parts

c = 2 + 3j

print(c.real, c.imag)

# perform addition, subtraction, multiplication, and division on two numbers

d = 18

e = 5

print(d + e, d - e, d \* e, d / e)

# use floor division to get integer result of division

print(d // e)

# use modulus operator to find remainder

print(d % e)

# use exponentiation operator to calculate power

print(e \*\* 3)

# use comparison operators to compare two variables

f = 14

g = 21

print(f > g, f < g, f == g, f != g)

# use logical operators (and, or, not) to test a condition

h = (f < g) and (d > e)

print(h)

print(not (f == g))

# expression that demonstrates operator precedence in Python

i = 2 + 3 \* 5    # multiplication before addition

j = (2 + 3) \* 5  # parentheses change order

print(i, j)

# use compound assignment operators (+=, -=)

k = 20

k += 5

k -= 3

print(k)

# take two numbers from the user and calculate their average

m = float(input("Enter first number for average: "))

n = float(input("Enter second number for average: "))

print((m + n) / 2)

# use a conditional expression (ternary) to check if a number is even or odd

p = 27

print("Even" if p % 2 == 0 else "Odd")

# check whether a number is positive, negative, or zero

q = float(input("Enter a number to check sign: "))

if q > 0:

    print("Positive")

elif q < 0:

    print("Negative")

else:

    print("Zero")

# check if a user-entered number is even or odd

r = int(input("Enter an integer to check even/odd: "))

if r % 2 == 0:

    print("Even")

else:

    print("Odd")

# take the user's age and print whether adult or minor

s = int(input("Enter your age: "))

print("Adult" if s >= 18 else "Minor")

# find and print the largest of three given numbers

t = int(input("Enter first number: "))

u = int(input("Enter second number: "))

v = int(input("Enter third number: "))

print(max(t, u, v))

# assign a grade based on marks

w = int(input("Enter marks (0-100): "))

if w >= 90:

    print("A")

elif w >= 80:

    print("B")

elif w >= 70:

    print("C")

elif w >= 60:

    print("D")

else:

    print("F")

# check whether a given year is a leap year

y = int(input("Enter a year: "))

if (y % 4 == 0 and (y % 100 != 0 or y % 400 == 0)):

    print("Leap Year")

else:

    print("Not a Leap Year")

# take the temperature and print Hot, Warm, or Cold

z = float(input("Enter temperature in °C: "))

if z >= 30:

    print("Hot")

elif z >= 15:

    print("Warm")

else:

    print("Cold")

# password-checking program that prints Access Granted if matches

a = "bilal@2025"   # preset password (example)

b = input("Enter password: ")

print("Access Granted" if b == a else "Access Denied")

# input a single character and check vowel or consonant

c = input("Enter a single character: ").lower()

if len(c) == 1 and c.isalpha():

    print("Vowel" if c in "aeiou" else "Consonant")

else:

    print("Invalid input")

# print the day of the week based on a number (1-7)

d = int(input("Enter a number (1-7) for day: "))

days = {1: "Monday", 2: "Tuesday", 3: "Wednesday", 4: "Thursday",

        5: "Friday", 6: "Saturday", 7: "Sunday"}

print(days.get(d, "Invalid number"))

# create a list of fruits and print it

e = ["apple", "banana", "mango", "orange", "grape"]

print(e)

# add an element using append() and remove one element using remove()

e.append("pineapple")

e.remove("banana")

print(e)

# find and print the sum of all numbers in a list

f = [2, 4, 6, 8, 10]

print(sum(f))

# print the maximum and minimum elements in a list

print(max(f), min(f))

# list slicing: first three and last three elements

print(e[:3], e[-3:])

# replace an element in a list at a specific index

e[2] = "kiwi"

print(e)

# reverse a list using slicing

print(e[::-1])

# count how many times a specific element appears in a list

print(e.count("mango"))

# concatenate two lists and print the new combined list

g = ["strawberry", "blueberry"]

h = e + g

print(h)

# list comprehension to generate squares from 1 to 10

i = [n \* n for n in range(1, 11)]

print(i)

# create a tuple and print all its elements

j = (5, 10, 15, "hello")

print(j)

# tuple unpacking to individual variables

p1, p2, p3, p4 = j

print(p1, p2, p3, p4)

# find index and count of a specific value in a tuple

print(j.index(10), j.count(15))

# convert a tuple to a list, modify an element, and convert back to tuple

k = list(j)

k[3] = "world"

j = tuple(k)

print(j)

# concatenate two tuples and print the resulting tuple

l = (99, 100)

m = j + l

print(m)

# End of exercises

print("All exercises completed.")

**Output:**

Awais

16

<class 'int'> <class 'float'>

13

64

Enter something: bilal

<class 'str'>

True

My name is Bilal and I am 20 years old.

10.0

2.0 3.0

23 13 90 3.6

3

3

125

False True False True

True

True

17 25

22

Enter first number for average: 23

Enter second number for average: 45

34.0

Odd

Enter a number to check sign: 78

Positive

Enter an integer to check even/odd: 34

Even

Enter your age: 45

Adult

Enter first number: 23

Enter second number: 34

Enter third number: 56

56

Enter marks (0-100): 89

B

Enter a year: 2019

Not a Leap Year

Enter temperature in °C: 55

Hot

Enter password: bilal@2025

Access Granted

Enter a single character: u

Vowel

Enter a number (1-7) for day: 5

Friday

['apple', 'banana', 'mango', 'orange', 'grape']

['apple', 'mango', 'orange', 'grape', 'pineapple']

30

10 2

['apple', 'mango', 'orange'] ['orange', 'grape', 'pineapple']

['apple', 'mango', 'kiwi', 'grape', 'pineapple']

['pineapple', 'grape', 'kiwi', 'mango', 'apple']

1

['apple', 'mango', 'kiwi', 'grape', 'pineapple', 'strawberry', 'blueberry']

[1, 4, 9, 16, 25, 36, 49, 64, 81, 100]

(5, 10, 15, 'hello')

5 10 15 hello

1 1

(5, 10, 15, 'world')

(5, 10, 15, 'world', 99, 100)

All exercises completed.