**Week 10 – Tutorial Assignment**

**SIMPLE PYTHON PROGRAM TO IMPLEMENT FUNCTIONS**

**1. Write a python program to calculate the sum of Two numbers and Three numbers. However, if the sum is between 120 to 320 it will return 200.**

def calculate\_sum(numbers):

total = sum(numbers)

if 120 <= total <= 320:

return 200

else:

return total

def main():

num\_count = int(input("Enter the number of values (2 or 3):"))

if num\_count == 2:

num1 = float(input("Enter the first number:"))

num2 = float(input("Enter the second number:"))

result = calculate\_sum([num1, num2])

elif num\_count == 3:

num1 = float(input("Enter the first number:"))

num2 = float(input("Enter the second number:"))

num3 = float(input("Enter the third number:"))

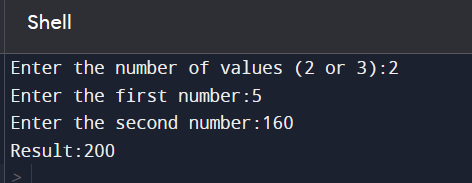
result = calculate\_sum([num1, num2, num3])

else:

print("Invalid number count")

print(f"Result:{result}")

main()



**2. Implement a python function to find the Maximum of Three numbers.**

def find\_maximum\_of\_three\_numbers(num1, num2, num3):

return max(num1, num2, num3)

def main():

print("Trishita Yadav\nRA2211003011325")

try:

num1 = float(input("Enter the first number:"))

num2 = float(input("Enter the second number:"))

num3 = float(input("Enter the third number:"))

except ValueError:

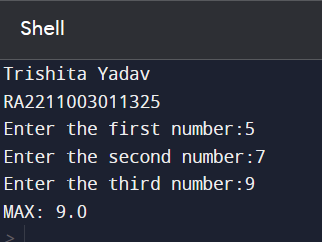
print("Invalid input")

return

maximum = find\_maximum\_of\_three\_numbers(num1, num2, num3)

print(f"MAX: {maximum}")

main()



**3. Write a python program to calculate the Factorial of a given number.**

def factorial(n):

if n == 0:

return 1

else:

return n \* factorial(n - 1)

def main():

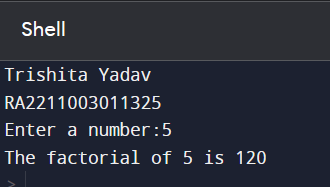
print("Trishita Yadav\nRA2211003011325")

num = int(input("Enter a number:"))

result = factorial(num)

print(f"The factorial of {num} is {result}")

main()



**4. Write a python program to Check if a Number is Even or Odd and also check whether it is Prime or not.**

def is\_even(num):

return num % 2 == 0

def is\_prime(num):

if num <= 1:

return False

elif num <= 3:

return True

elif num % 2 == 0 or num % 3 == 0:

return False

i = 5

while i \* i <= num:

if num % i == 0 or num % (i + 2) == 0:

return False

i += 6

return True

def main():

print("Trishita Yadav\nRA2211003011325")

try:

num = int(input("Enter a number:"))

if is\_even(num):

print(f"{num} is even.")

else:

print(f"{num} is odd.")

if is\_prime(num):

print(f"{num} is prime.")

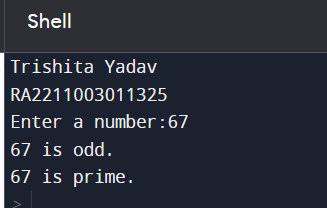
else:

print(f"{num} is not prime.")

except ValueError:

print("Invalid input")

main()



**5. Implement a python function to Reverse a given String and also check for palindrome or not.**

def is\_palindrome(s):

s = s.replace(" ", "").lower()

# Check if the string is equal to its reverse

return s == s[::-1]

def reverse\_string\_and\_check\_palindrome():

# Input from the user

input\_string = input("Enter a string:")

# Reverse the string

reversed\_string = input\_string[::-1]

# Check if it's a palindrome

if is\_palindrome(input\_string):

print(f"'{input\_string}' is a palindrome.")

else:

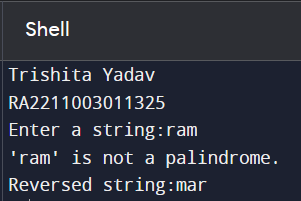
print(f"'{input\_string}' is not a palindrome.")

# Print the reversed string

print(f"Reversed string:{reversed\_string}")

# Call the function

reverse\_string\_and\_check\_palindrome()



**6. Write a python program to Generate Fibonacci Sequence.**

print("Trishita Yadav\nRA2211003011325")

nterms = int(input("How many terms? "))

# first two terms

n1, n2 = 0, 1

count = 0

# check if the number of terms is valid

if nterms <= 0:

print("Please enter a positive integer")

# if there is only one term, return n1

elif nterms == 1:

print("Fibonacci sequence upto",nterms,":")

print(n1)

# generate fibonacci sequence

else:

print("Fibonacci sequence:")

while count < nterms:

print(n1)

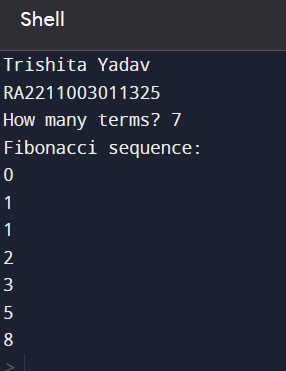
nth = n1 + n2

# update values

n1 = n2

n2 = nth

count += 1



**7. Write a python program to calculate the area and perimeter of different geometric shapes (circle, rectangle, triangle, etc.).**

import math

def calculate\_circle\_area(radius):

return math.pi \* radius\*radius

def calculate\_circle\_perimeter(radius):

return 2 \* math.pi \* radius

def calculate\_rectangle\_area(length, width):

return length \* width

def calculate\_rectangle\_perimeter(length, width):

return 2 \* (length + width)

def calculate\_triangle\_area(base, height):

return 0.5 \* base \* height

def calculate\_triangle\_perimeter(side1, side2, side3):

return side1 + side2 + side3

def main():

print("Trishita Yadav\nRA2211003011325")

print("Choose a shape to calculate its area and perimeter:")

print("1. Circle")

print("2. Rectangle")

print("3. Triangle")

choice = int(input("Enter your choice (1/2/3):"))

if choice == 1:

radius = float(input("Enter the radius of the circle:"))

area = calculate\_circle\_area(radius)

perimeter = calculate\_circle\_perimeter(radius)

elif choice == 2:

length = float(input("Enter the length of the rectangle:"))

width = float(input("Enter the width of the rectangle:"))

area = calculate\_rectangle\_area(length, width)

perimeter = calculate\_rectangle\_perimeter(length, width)

elif choice == 3:

base = float(input("Enter the base of the triangle:"))

height = float(input("Enter the height of the triangle:"))

area = calculate\_triangle\_area(base, height)

side1 = float(input("Enter the length of side 1:"))

side2 = float(input("Enter the length of side 2:"))

side3 = float(input("Enter the length of side 3:"))

perimeter = calculate\_triangle\_perimeter(side1, side2, side3)

else:

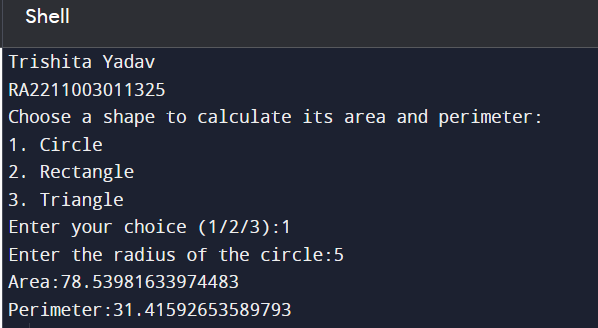
print("Invalid choice")

return

print(f"Area:{area}")

print(f"Perimeter:{perimeter}")

main()



**8. Implement a python function to Convert Celsius to Fahrenheit and Fahrenheit to Celsius.**

def celsius\_to\_fahrenheit(celsius):

fahrenheit = (celsius \* 9/5) + 32

return fahrenheit

def fahrenheit\_to\_celsius(fahrenheit):

celsius = (fahrenheit - 32) \* 5/9

return celsius

def main():

print("Trishita Yadav\nRA2211003011325\n")

while True:

print("Choose an option:")

print("1. Convert Celsius to Fahrenheit")

print("2. Convert Fahrenheit to Celsius")

print("3. Quit")

choice = input("Enter your choice (1/2/3):")

if choice == '1':

celsius = float(input("Enter temperature in Celsius:"))

fahrenheit = celsius\_to\_fahrenheit(celsius)

print(f"{celsius}°C is equal to {fahrenheit}°F\n")

elif choice == '2':

fahrenheit = float(input("Enter temperature in Fahrenheit:"))

celsius = fahrenheit\_to\_celsius(fahrenheit)

print(f"{fahrenheit}°F is equal to {celsius}°C\n")

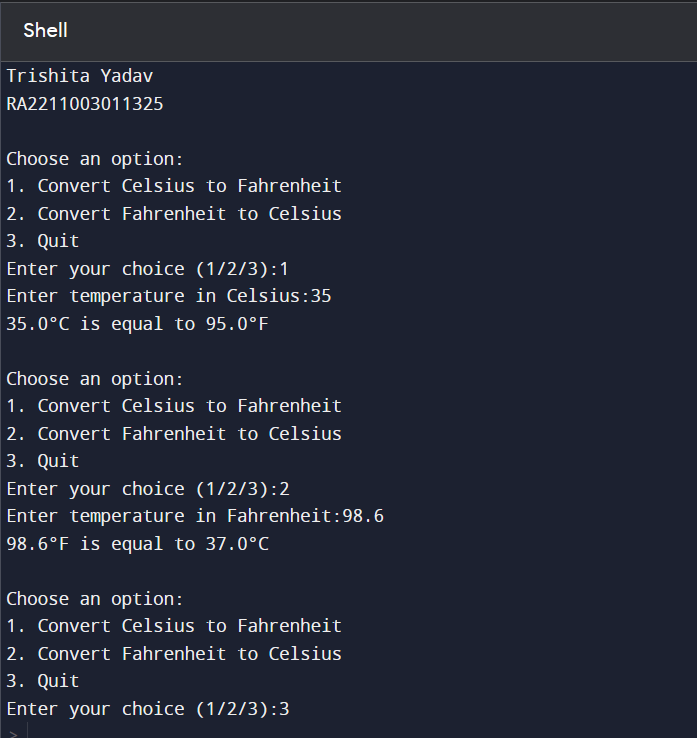
elif choice == '3':

break

else:

print("Invalid choice. Please select a valid option.")

main()



**9. Write a Python program that accepts a string and counts the number of upper and lower case letters.**

def count\_upper\_lower\_case\_letters(input\_string):

upper\_count = 0

lower\_count = 0

for char in input\_string:

if char.isupper():

upper\_count += 1

elif char.islower():

lower\_count += 1

return upper\_count, lower\_count

def main():

print("Trishita Yadav\nRA2211003011325")

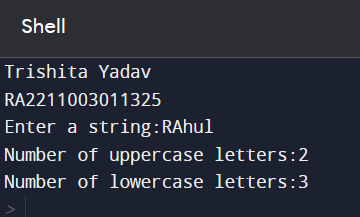
input\_string = input("Enter a string:")

upper\_count, lower\_count = count\_upper\_lower\_case\_letters(input\_string)

print(f"Number of uppercase letters:{upper\_count}")

print(f"Number of lowercase letters:{lower\_count}")

main()



**10. Write a python program to perform Arithmetic operations on Complex Numbers.**

def main():

print("Trishita Yadav\nRA2211003011325")

# Get the first complex number from the user

real1 = float(input("Enter the real part of the first complex number: "))

imag1 = float(input("Enter the imaginary part of the first complex number: "))

complex1 = complex(real1, imag1)

# Get the second complex number from the user

real2 = float(input("Enter the real part of the second complex number: "))

imag2 = float(input("Enter the imaginary part of the second complex number: "))

complex2 = complex(real2, imag2)

# Perform arithmetic operations

addition\_result = complex1 + complex2

subtraction\_result = complex1 - complex2

multiplication\_result = complex1 \* complex2

# Division is a bit more involved

try:

division\_result = complex1 / complex2

except ZeroDivisionError:

division\_result = "Division by zero is not allowed."

# Display the results

print(f"Complex Number 1: {complex1}")

print(f"Complex Number 2: {complex2}")

print(f"Addition Result: {addition\_result}")

print(f"Subtraction Result: {subtraction\_result}")

print(f"Multiplication Result: {multiplication\_result}")

print(f"Division Result: {division\_result}")

main()

