

NORTHERN UNIVERSITY BANGLADESH

Assignment: Lab PW2

Course Code: CSE 4385

Course Title: Artificial Intelligence and Expert Systems Lab Work

SUBMITTED TO:

A. S. M. Sabiqul Hassan (SQH)
Lecturer, Dept. of CSE, NUB

SUBMITTED BY:

Name: UZZAL KUMAR ROY
ID: 42170300649
Program: ECSE
Semester: Summer 2024
Section: 9(A)

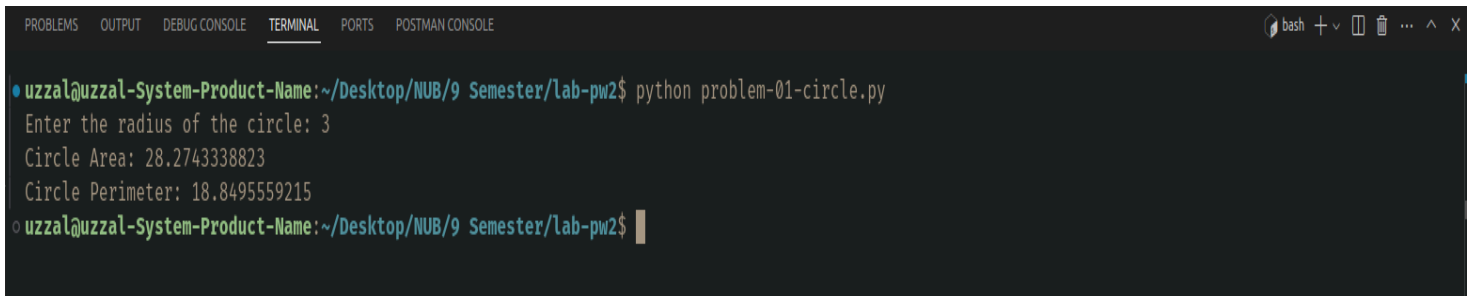
Problem 1.1: Find the area and perimeter of a circle

```
import math

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

# Calculate area and perimeter
circle_area = math.pi * radius ** 2
circle_perimeter = 2 * math.pi * radius

print("Circle Area: {}".format(circle_area))
print("Circle Perimeter: {}".format(circle_perimeter))
```

A screenshot of a terminal window with a dark background. The terminal shows the execution of a Python script. The prompt is 'uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2\$'. The command entered is 'python problem-01-circle.py'. The output shows 'Enter the radius of the circle: 3', followed by 'Circle Area: 28.2743338823' and 'Circle Perimeter: 18.8495559215'. The prompt returns to 'uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2\$'. The terminal window has tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL', 'PORTS', and 'POSTMAN CONSOLE'. The 'TERMINAL' tab is active. The window title bar shows 'bash' and standard window controls.

Problem 1.2: Find the area and perimeter of a rectangle

```
# Rectangle - input width and height
width = float(input("Enter the width of the rectangle: "))
height = float(input("Enter the height of the rectangle: "))

# Calculate the area and perimeter
rectangle_area = width * height
rectangle_perimeter = 2 * (width + height)

print("Rectangle Area: {}".format(rectangle_area))
print("Rectangle Perimeter: {}".format(rectangle_perimeter))
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-01-rectangle.py
Enter the width of the rectangle: 6
Enter the height of the rectangle: 8
Rectangle Area: 48.0
Rectangle Perimeter: 28.0
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```

Problem 2: Find the Diagonal of a Square (Given Side Length)

```
import math

# Input side length of square
side = float(input("Enter the side length of the square: "))

# Calculate the diagonal using the Pythagorean theorem
diagonal = math.sqrt(2) * side

print("The diagonal of the square is: {}".format(diagonal))
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-03.py
Enter an integer: 4
4 is Even
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-03.py
Enter an integer: 3
3 is Odd
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```

Problem 3: Check if an Integer is Even or Odd

```
# Input integer
num = int(input("Enter an integer: "))

# Check if even or odd
if num % 2 == 0:
    print("{} is Even".format(num))
else:
    print("{} is Odd".format(num))
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-03.py
Enter an integer: 4
4 is Even
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-03.py
Enter an integer: 3
3 is Odd
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```

Problem 4: Check if an Integer is Zero, Positive, or Negative

```
# Input integer
num = int(input("Enter an integer: "))

# Check the status of the integer
if num > 0:
    print("{} is Positive".format(num))
elif num < 0:
    print("{} is Negative".format(num))
else:
    print("The number is Zero")
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-04.py
Enter an integer: 5
5 is Positive
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-04.py
Enter an integer: -9
-9 is Negative
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```

Problem 5: Print a Multiplication Table for an Integer

```
# Input integer
num = int(input("Enter an integer to print its multiplication table: "))

# Print multiplication table
for i in range(1, 11):
    print("{} x {} = {}".format(num, i, num * i))
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-05.py
Enter an integer to print its multiplication table: 10
10 x 1 = 10
10 x 2 = 20
10 x 3 = 30
10 x 4 = 40
10 x 5 = 50
10 x 6 = 60
10 x 7 = 70
10 x 8 = 80
10 x 9 = 90
10 x 10 = 100
○ uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```

Problem 6: Find the Factorial of a Positive Integer

```
def factorial(n):
    if n == 0 or n == 1:
        return 1
    else:
        return n * factorial(n - 1)

# Input a positive integer
num = int(input("Enter a positive integer to find its factorial: "))

# Output factorial
if num < 0:
    print("Factorial is not defined for negative numbers.")
else:
    print("The factorial of {} is {}".format(num, factorial(num)))
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-06.py
Enter a positive integer to find its factorial: 7
The factorial of 7 is 5040
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-06.py
Enter a positive integer to find its factorial: 9
The factorial of 9 is 362880
○ uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```

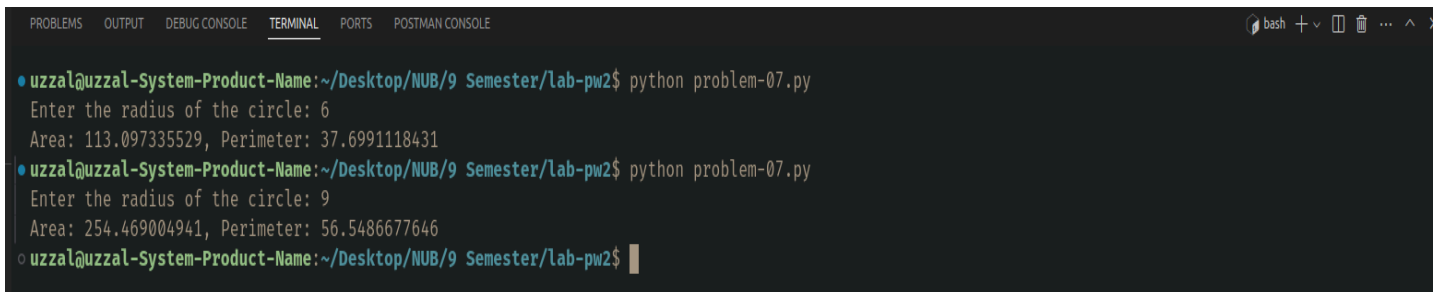
Problem 7: Function for Circle Area and Perimeter:

```
import math

def circle_properties(radius):
    area = math.pi * radius ** 2
    perimeter = 2 * math.pi * radius
    return area, perimeter

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

# Function call
area, perimeter = circle_properties(radius)
print("Area: {}, Perimeter: {}".format(area, perimeter))
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-07.py
Enter the radius of the circle: 6
Area: 113.097335529, Perimeter: 37.6991118431
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-07.py
Enter the radius of the circle: 9
Area: 254.469004941, Perimeter: 56.5486677646
○ uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```

Problem 8: Function for Even/Odd Status:

```
def check_even_odd(num):
    return "Even" if num % 2 == 0 else "Odd"

# Input
num = int(input("Enter an integer: "))

# Function call
status = check_even_odd(num)
print("The number {} is {}".format(num, status))
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-08.py
Enter an integer: 7
The number 7 is Odd
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-08.py
Enter an integer: 4
The number 4 is Even
○ uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```

Problem 9: Check if an Integer is a Fraction or Not (Casting)

```
# Input a number
num = float(input("Enter a number: "))

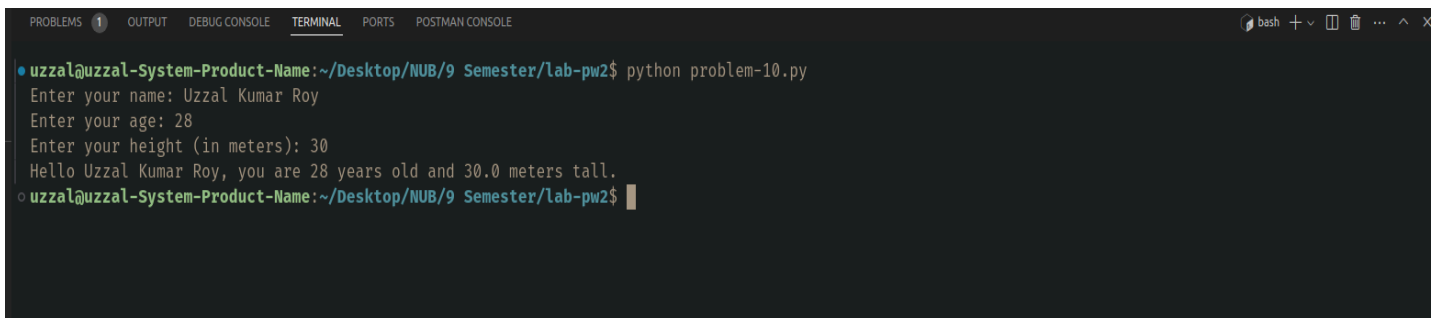
# Check if the number has a fractional part
if num == int(num):
    print("{} is an integer.".format(num))
else:
    print("{} is a fraction.".format(num))
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-09.py
Enter a number: 4
4.0 is an integer.
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-09.py
Enter a number: 3
3.0 is an integer.
● uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-09.py
Enter a number: 5.6
5.6 is a fraction.
○ uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```

Problem 10. Taking Input from User and Printing Output

```
# Taking multiple inputs from the user
name = raw_input("Enter your name: ")
# name = input("Enter your name: ")
age = int(input("Enter your age: "))
height = float(input("Enter your height (in meters): "))

# Printing output
print("Hello {}, you are {} years old and {} meters tall.".format(name,
age, height))
```



The screenshot shows a terminal window with a dark background. At the top, there is a tab bar with 'PROBLEMS' (selected), 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL', 'PORTS', and 'POSTMAN CONSOLE'. The terminal content shows the execution of a Python script named 'problem-10.py'. The user 'uzzal' provides the following inputs: 'Uzzal Kumar Roy' for the name, '28' for the age, and '30' for the height. The script then prints the output: 'Hello Uzzal Kumar Roy, you are 28 years old and 30.0 meters tall.' The prompt 'uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2\$' is visible at the bottom.

```
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS POSTMAN CONSOLE
• uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$ python problem-10.py
Enter your name: Uzzal Kumar Roy
Enter your age: 28
Enter your height (in meters): 30
Hello Uzzal Kumar Roy, you are 28 years old and 30.0 meters tall.
o uzzal@uzzal-System-Product-Name:~/Desktop/NUB/9 Semester/lab-pw2$
```