NORTHERN UNIVERSITY BANGLADESH

Assignment: Lab PW2

Course Code: CSE 4385
Course Title: Artificial Intelligence and Expert Systems Lab Work

SUBMITTED TO:

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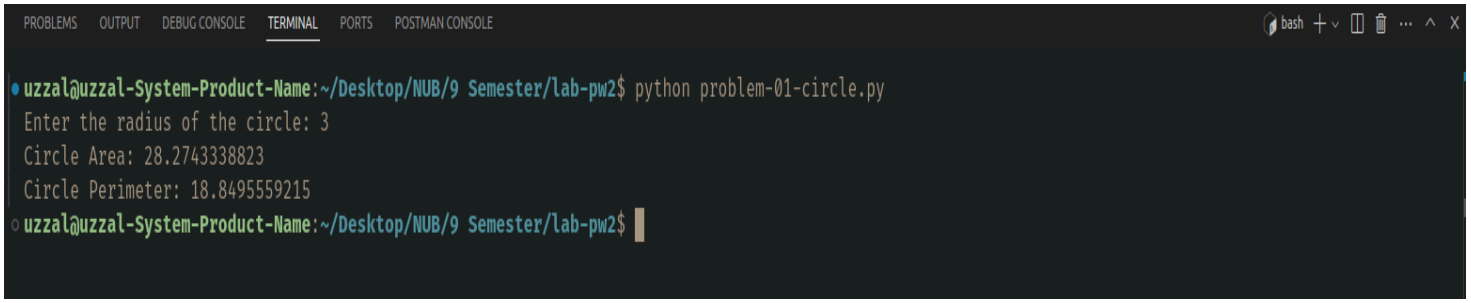
Section: 9(A)

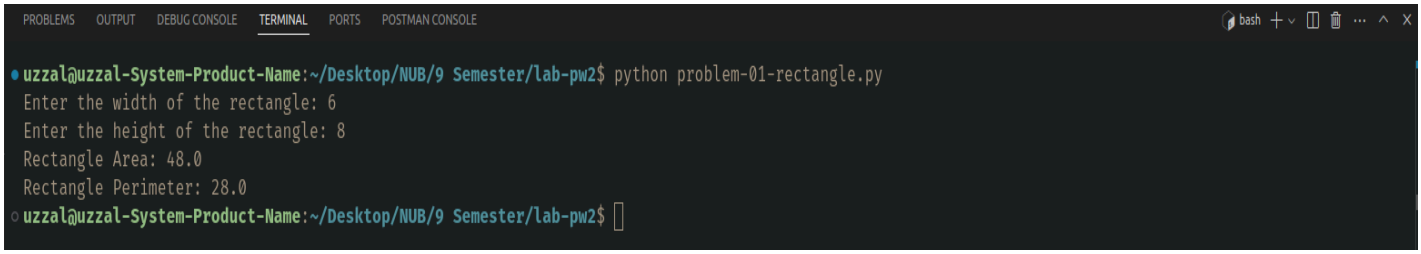
Problem 1.1: Find the area and perimeter of a circle

```python
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))
```



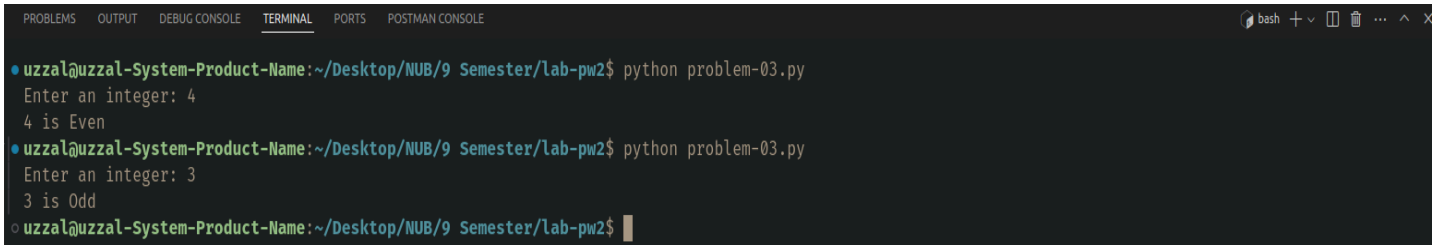
Problem 1.2: Find the area and perimeter of a rectangle

```python
# 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))
```



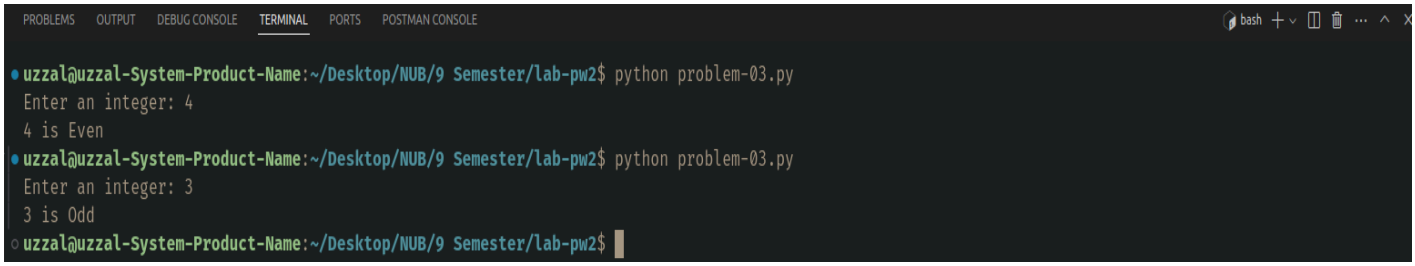
Problem 2: Find the Diagonal of a Square (Given Side Length)

```python
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))
```



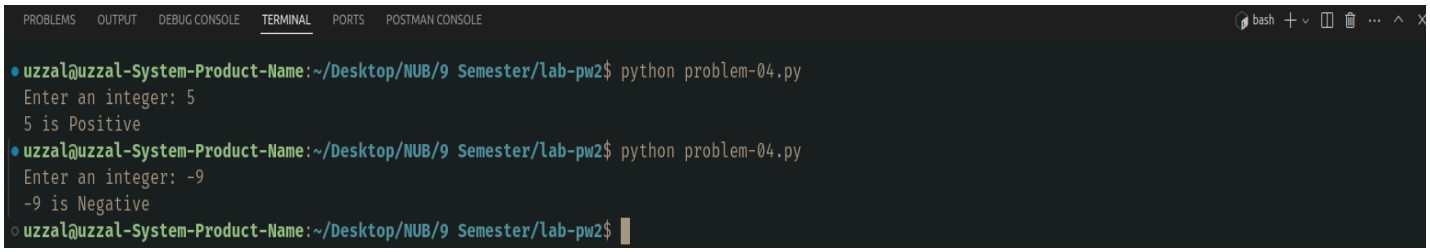
Problem 3: Check if an Integer is Even or Odd

```python
# 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))
```



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")
```

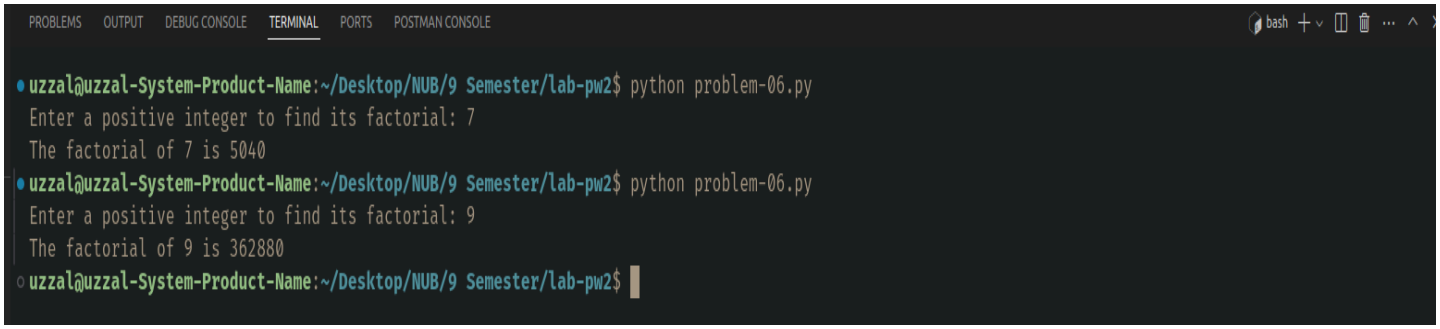


Problem 5: Print a Multiplication Table for an Integer

```
# 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))
```

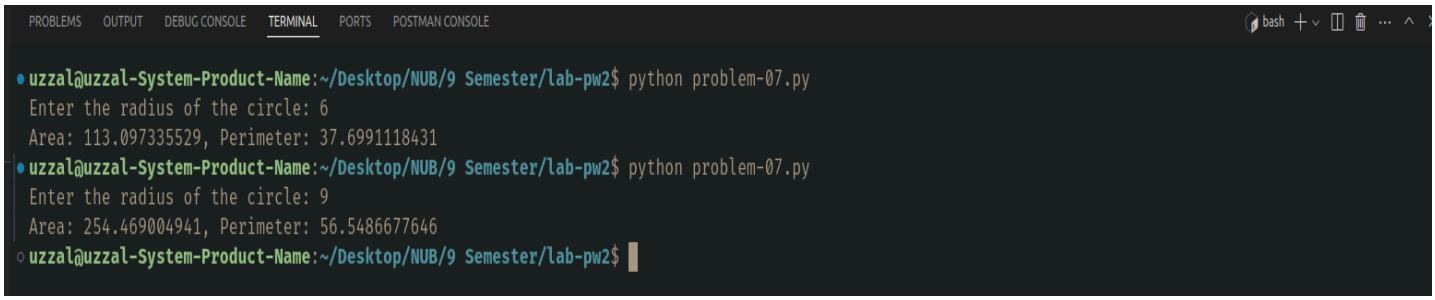
Problem 6: Find the Factorial of a Positive Integer

```python
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)))
```



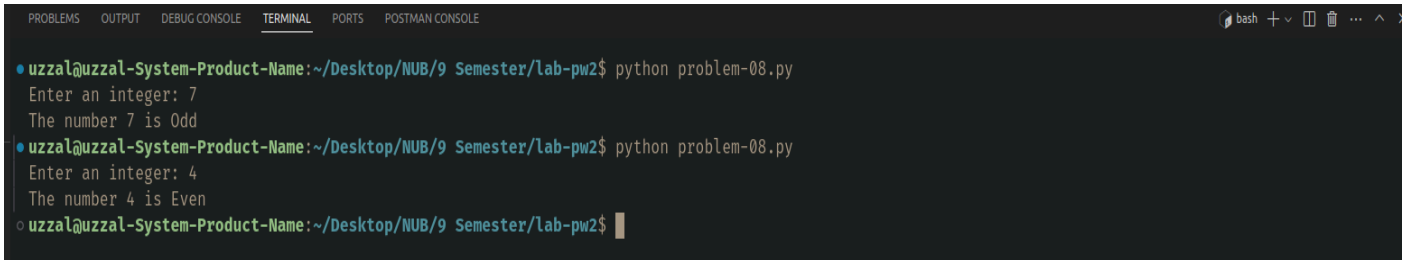
Problem 7: Function for Circle Area and Perimeter:

```python
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))
```



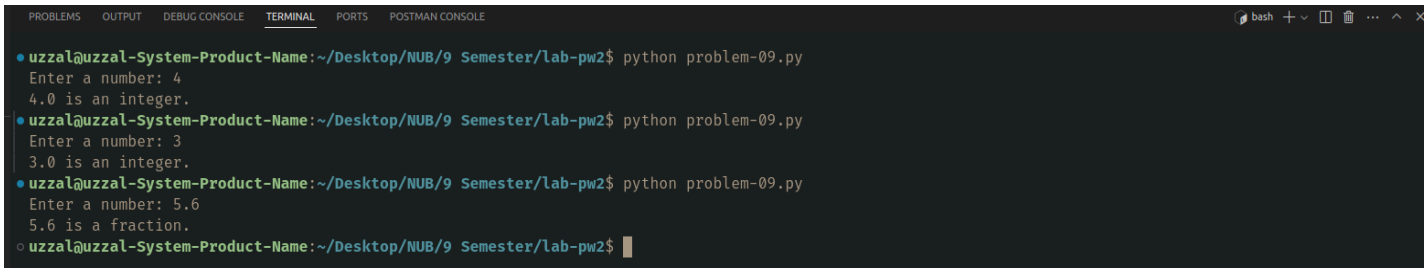
Problem 8: Function for Even/Odd Status:

```python
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))
```



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

```python
# 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))
```



Problem 10. Taking Input from User and Printing Output

```python
# 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))
```