Assignment 3

Name = **Muhammad Abdul Hadi Qamar**

Date = **16/02/2026**

Question 1

Write a lambda expression to get the product of two numbers.

In [1]:
```
Product = lambda x, y: x * y
```

In [2]:
```
print(Product(5,6))
```

```
30
```

Question 2

Write a function to get the area of a circle from the radius.

In [3]:
```
import math
```

In [4]:
```
def circle_area(radius):
    return math.pi * ( radius ** 2 )
```

In [5]:
```
print(circle_area(10))
```

```
314.1592653589793
```

Question 3

Build a simple calculator which can: add, subtract, multiply, divide.

In [6]:
```
def calculator(a, b, op):
    if op == 'a':      # add
        return a + b
    elif op == 's':    # subtract
        return a - b
    elif op == 'm':    # multiply
        return a * b
    elif op == 'd':    # divide
        return a / b
    else:
        raise ValueError("Unknown operation")
```

In [7]:
```
print(calculator(2, 5, 'd'))
```

```
0.4
```

Question 4

Define a class named Rectangle which can be constructed by a length and width. The Rectangle class has a method which can compute the area.

In [8]:
```
class Rectangle:
    def __init__(self, length, width):
        self.length = length
        self.width = width

    def area(self):
        return self.length * self.width
```

In [9]:
```
r = Rectangle(5, 10)
```

In [10]:
```
print(r.area())
```

```
50
```

Question 5

Define a class named Shape and its subclass Square. Shape objects can be consrtucted by name and length has an area function wich return 0 Square subclass has an init function which take a length and name as argument and has an area method and a describe method what prints the name of the Shape.

In [11]:
```
class Shape:
    def __init__(self, name, length):
        self.name = name
        self.length = length
```

In [12]:
```
def area(self):
        return 0
```

In [13]:
```
class Square(Shape):
    def __init__(self, name, length):
        super().__init__(name, length)
```

In [14]:
```
def area(self):
        return self.length ** 2
```

In [25]:
```
def describe(self):
        return f"This is a: {self.name}"
s = Square('square', 5)
print("The area is:")
print(s.area())
print(s.describe())
```

```
The area is:
25
This is a square with side length 5
```