Aim: Write python programs to implement inheritance and polymorphism in python.

1. Write a class MyMatrix that represents a matrix. Passed the number of rows and columns, a MyMatrix matrix is constructed from a two-dimensional array of floats. These matrices should support the following operations:

    i. Addition and subtraction (element-by-element),
    ii. Multiplication (matrix product), and
    iii. Generalized inverse (returning another matrix object).
    iv. (Feel free to use the numpy package inside your methods for these operations.)

2. Write a specialized subclass SqMatrix that represents a square matrix.

    i. Implement SqMatrix by inheriting from the MyMatrix class.
    ii. SqMatrix should verify that it is constructed from a square array.
    iii. If it is not square, it should display an informative error message.
    iv. In addition to the inherited matrix operations, the class should provide:

        a) Inversion (returning another matrix object) and
        b) Eigenvalues (returning an array).
        c) (Feel free to use the numpy package inside your methods for these operations.)

Objective of the Experiment:

1. Understanding inheritance and polymorphism in python.

Source code for the implementation:

(Write only important functions)

Post Labs:

1. Write a function that has a class Animal with a method ‘legs’. Create two subclasses Tiger and Dog. Now, access the method legs explicitly with the class Dog and implicitly with the class Tiger.
2. Differentiate between method overloading and method overriding.
3. What is the use of pass in python?