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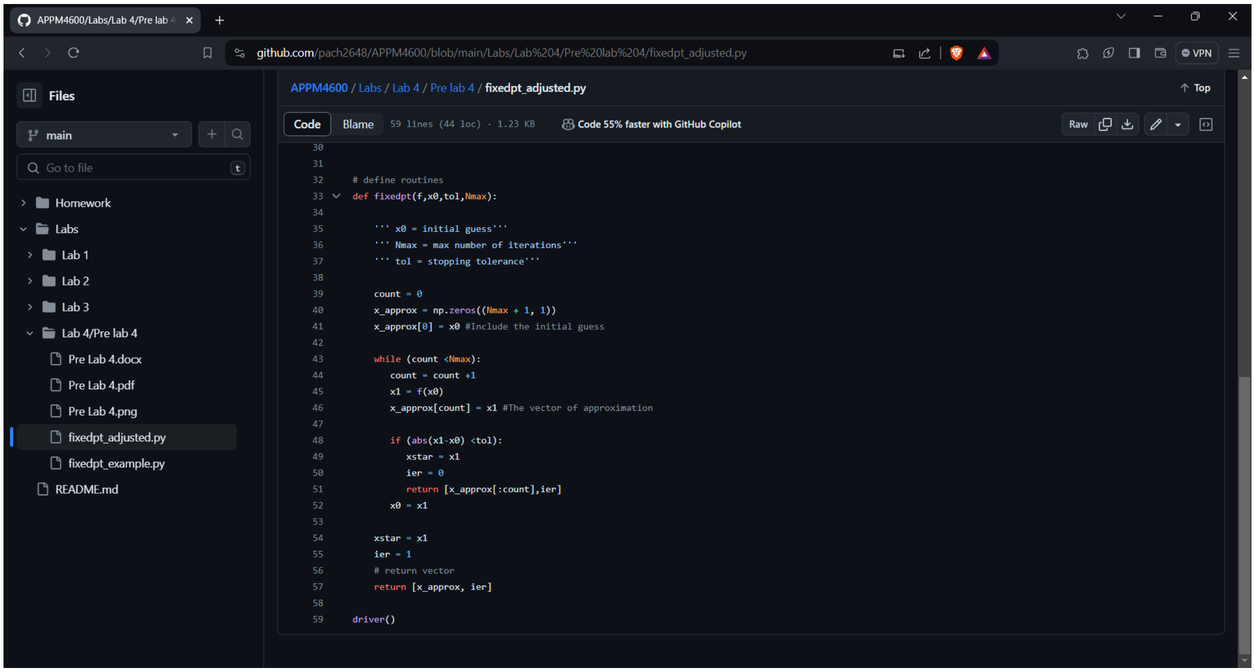
APPM 4600
Pre-lab 4

Pre-lab 4

1. Create a new fixed point iteration subroutine that returns a vector whose entries are the approximations of the fixed point at all the iterations in order.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github.com/pach2648/APPM4600/blob/main/Labs/Lab%204/Pre%20lab%204/fixedpt_adjusted.py
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```python


# define routines
def fixedpt(f,x0,tol,Nmax):

    ''' x0 = initial guess'''
    ''' Nmax = max number of iterations'''
    ''' tol = stopping tolerance'''

    count = 0
    x_approx = np.zeros((Nmax + 1, 1))
    x_approx[0] = x0 #Include the initial guess

    while (count <Nmax):
       count = count +1
       x1 = f(x0)
       x_approx[count] = x1 #The vector of approximation

       if (abs(x1-x0) <tol):
          xstar = x1
          ier = 0
          return [x_approx[:count],ier]
       x0 = x1

    xstar = x1
    ier = 1
    # return vector
    return [x_approx, ier]

driver()
```

Github link:
https://github.com/pach2648/APPM4600/blob/main/Labs/Lab%204/Pre%20lab%204/fixedpt_adjusted.py