MA322 : SCIENTIFIC COMPUTING
LAB ASSIGNMENT 3

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L3.2)

The following are the given system of non-linear equations : -

$4x^2 + y^2 - 4 = 0$
$x + y - \sin(x - y) = 0$

Given : - The system has roots near (1.0, 0.0) .

Using **Newton's Method** : -
Let x_0 = (1.0001, 0.0001)
Maximum number of iterations = 100000
ϵ = 0.000001

Result :- (x, y) = (0.998607, -0.10553) is the set of roots of the given system of non-linear equations and they are close to (1.0, 0.0) .

The output is as follows : -

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The initial value for x = 1.0001
The initial value for y = 0.0001
The maximum number of iterations = 100000
The roots are :
x = 0.998607
y = -0.10553
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