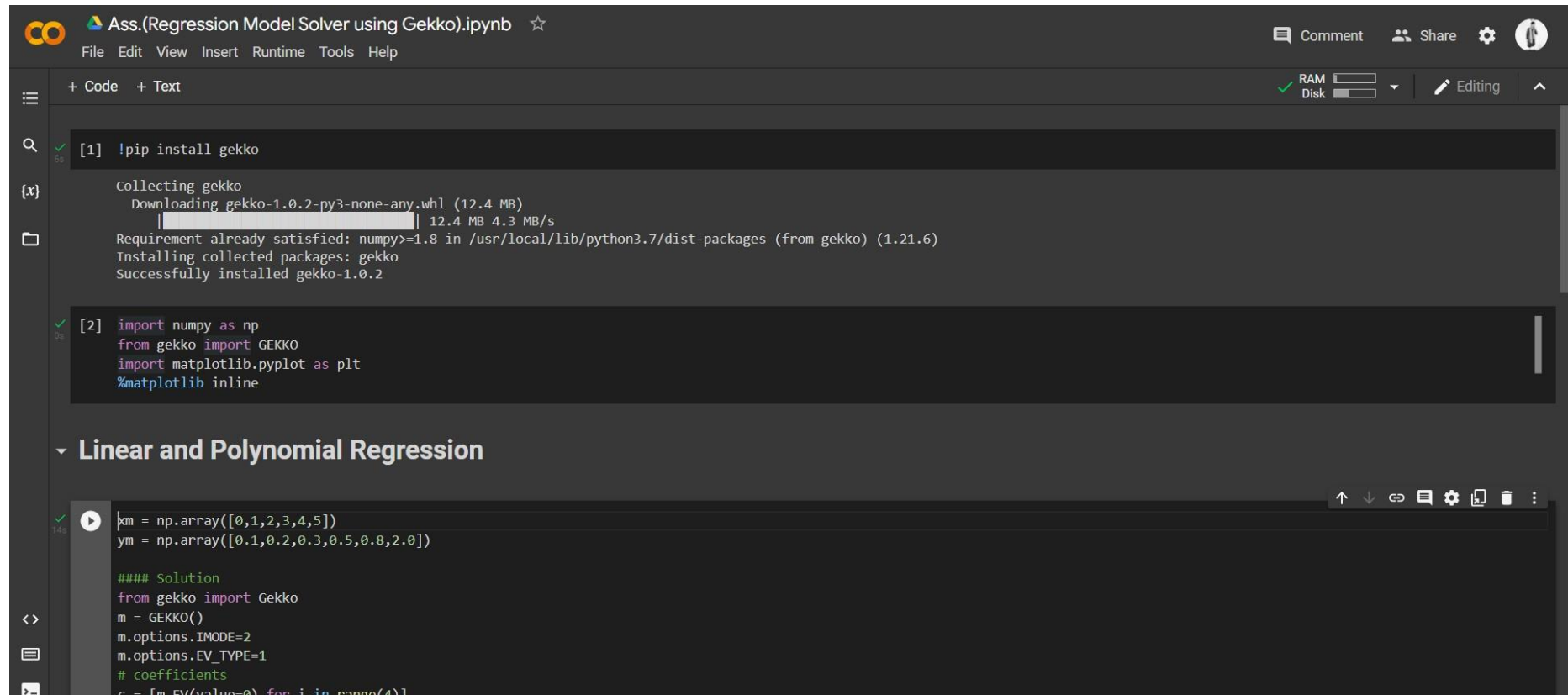


Regression Model Solver Using Gekko



The screenshot displays a Jupyter Notebook titled "Ass.(Regression Model Solver using Gekko).ipynb". The interface includes a top menu bar with options like File, Edit, View, Insert, Runtime, Tools, and Help. On the right, there are icons for Comment, Share, and a user profile, along with RAM and Disk usage indicators. The left sidebar shows a file explorer with a folder icon and a search icon.

The notebook contains three code cells:

```
[1] !pip install gekko
```

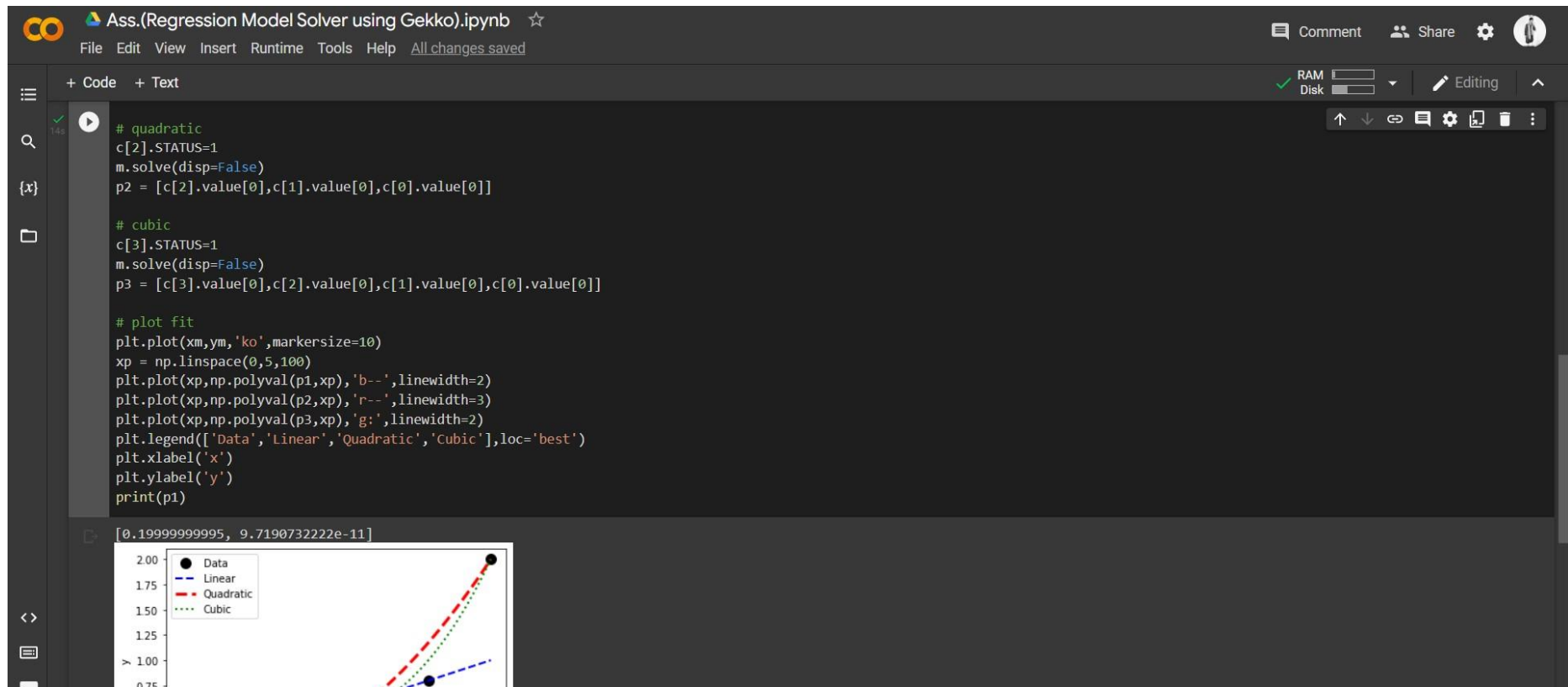
Collecting gekko
Downloading gekko-1.0.2-py3-none-any.whl (12.4 MB)
Requirement already satisfied: numpy>=1.8 in /usr/local/lib/python3.7/dist-packages (from gekko) (1.21.6)
Installing collected packages: gekko
Successfully installed gekko-1.0.2

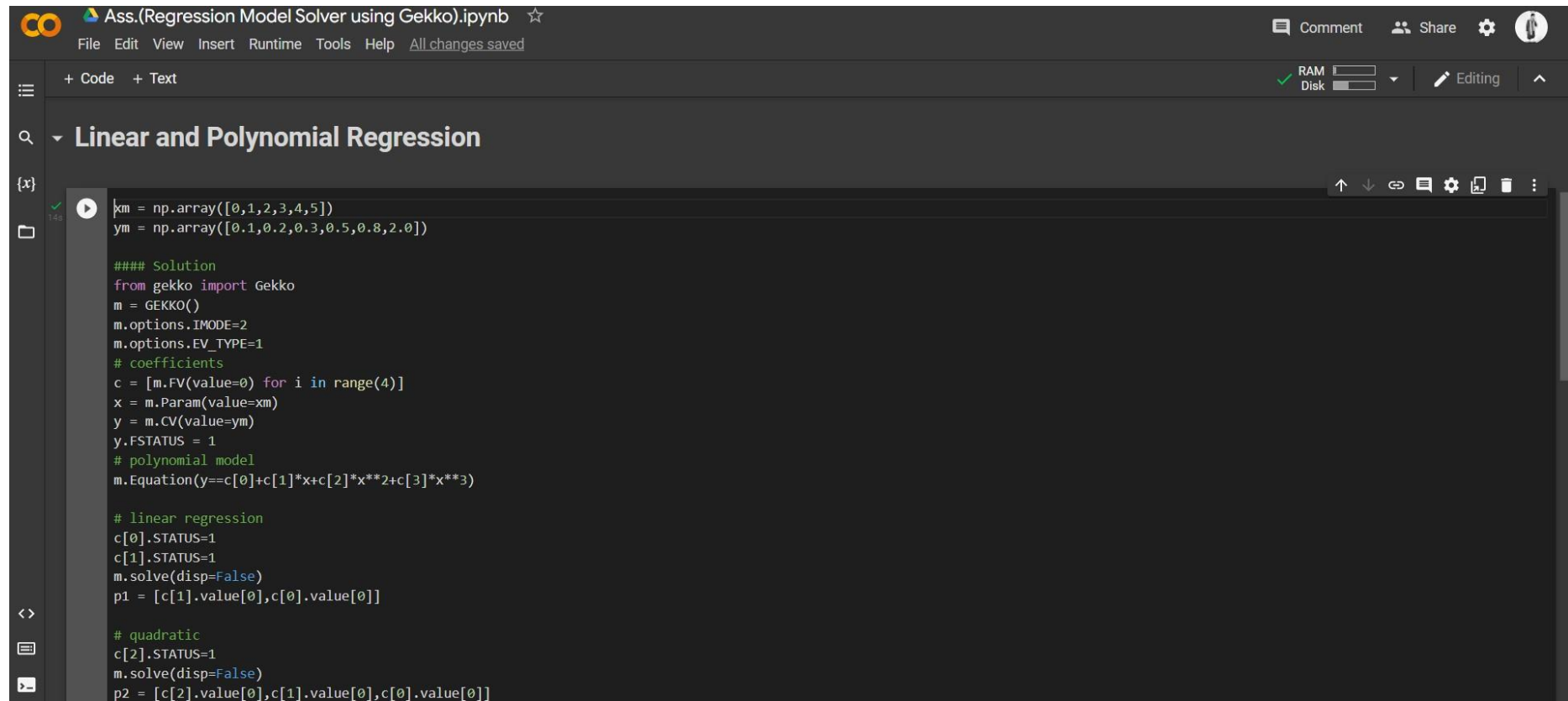
```
[2] import numpy as np
from gekko import GEKKO
import matplotlib.pyplot as plt
%matplotlib inline
```

Below the code cells, a section titled "Linear and Polynomial Regression" is visible. The first code cell in this section contains the following code:

```
km = np.array([0,1,2,3,4,5])
ym = np.array([0.1,0.2,0.3,0.5,0.8,2.0])

#### Solution
from gekko import GEKKO
m = GEKKO()
m.options.IMODE=2
m.options.EV_TYPE=1
# coefficients
c = [m.EV(value=0) for i in range(4)]
```





The screenshot shows a Jupyter Notebook titled "Ass.(Regression Model Solver using Gekko).ipynb". The notebook contains a code cell with the following Python code:

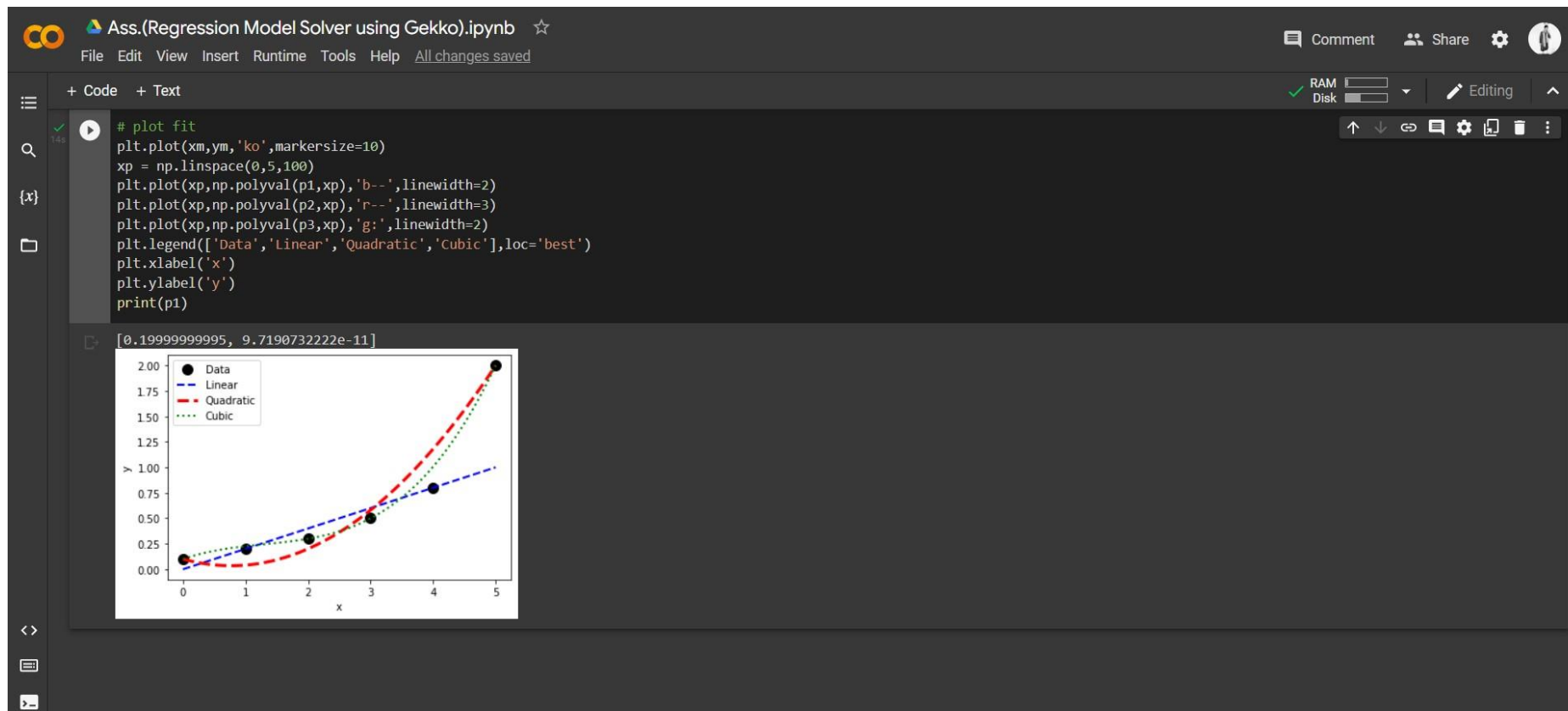
```
km = np.array([0,1,2,3,4,5])
ym = np.array([0.1,0.2,0.3,0.5,0.8,2.0])

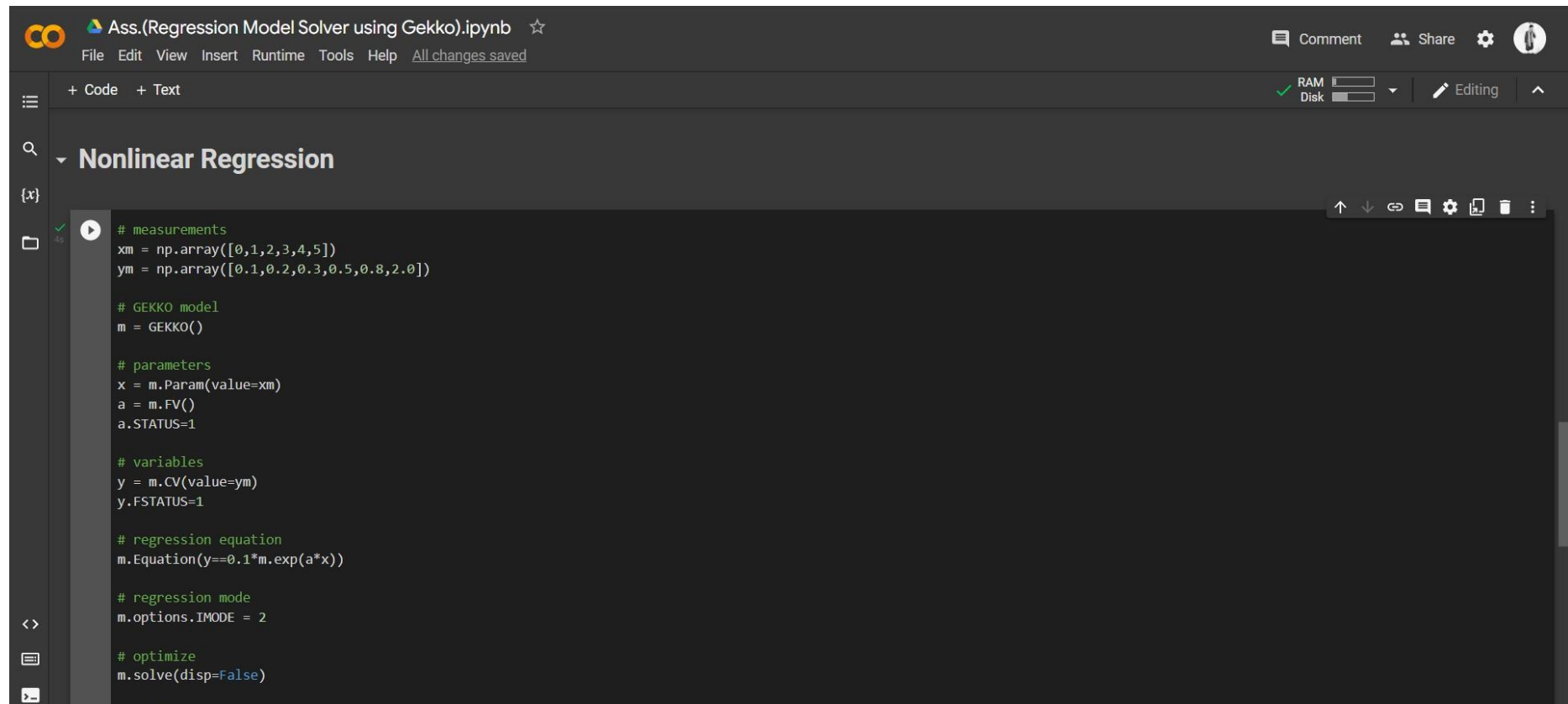
#### Solution
from gekko import Gekko
m = GEKKO()
m.options.IMODE=2
m.options.EV_TYPE=1
# coefficients
c = [m.FV(value=0) for i in range(4)]
x = m.Param(value=km)
y = m.CV(value=ym)
y.FSTATUS = 1
# polynomial model
m.Equation(y==c[0]+c[1]*x+c[2]*x**2+c[3]*x**3)

# linear regression
c[0].STATUS=1
c[1].STATUS=1
m.solve(dis=False)
p1 = [c[1].value[0],c[0].value[0]]

# quadratic
c[2].STATUS=1
m.solve(dis=False)
p2 = [c[2].value[0],c[1].value[0],c[0].value[0]]
```

The interface includes a top bar with the notebook title, a menu (File, Edit, View, Insert, Runtime, Tools, Help), and a status bar showing RAM and Disk usage. The left sidebar shows the notebook's file structure, and the right sidebar shows the current cell's status and a toolbar.





The screenshot displays a Jupyter Notebook titled "Ass.(Regression Model Solver using Gekko).ipynb". The interface includes a top menu bar with options like File, Edit, View, Insert, Runtime, Tools, and Help. Below the menu, there's a toolbar with icons for RAM and Disk usage, and a status bar indicating "Editing". The notebook content is organized into a sidebar with a search icon and a file explorer. The main code area shows a Python script for nonlinear regression using the Gekko library. The code defines measurements (xm, ym), initializes the Gekko model, sets parameters (x, a), defines variables (y), and solves the regression equation. The equation is $y = 0.1 * \exp(a * x)$. The model is solved in IMODE 2, and the results are displayed without a plot.

```
# measurements
xm = np.array([0,1,2,3,4,5])
ym = np.array([0.1,0.2,0.3,0.5,0.8,2.0])

# GEKKO model
m = GEKKO()

# parameters
x = m.Param(value=xm)
a = m.FV()
a.STATUS=1

# variables
y = m.CV(value=ym)
y.FSTATUS=1

# regression equation
m.Equation(y==0.1*m.exp(a*x))

# regression mode
m.options.IMODE = 2

# optimize
m.solve(dispen=False)
```

