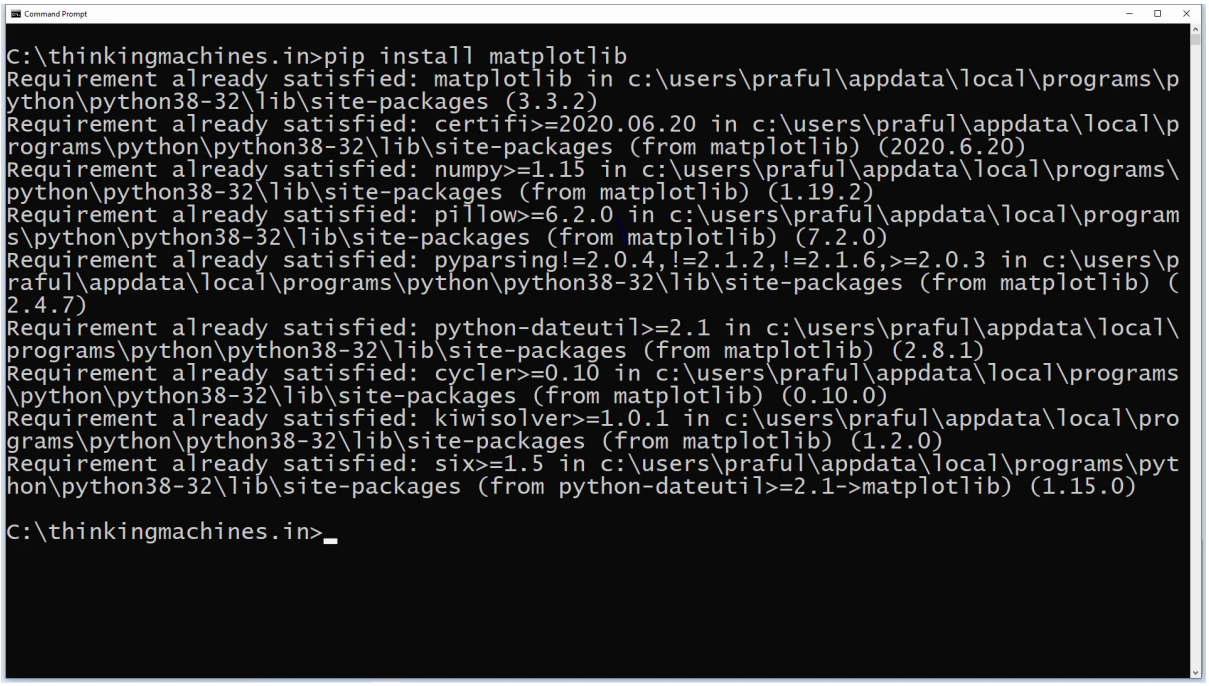
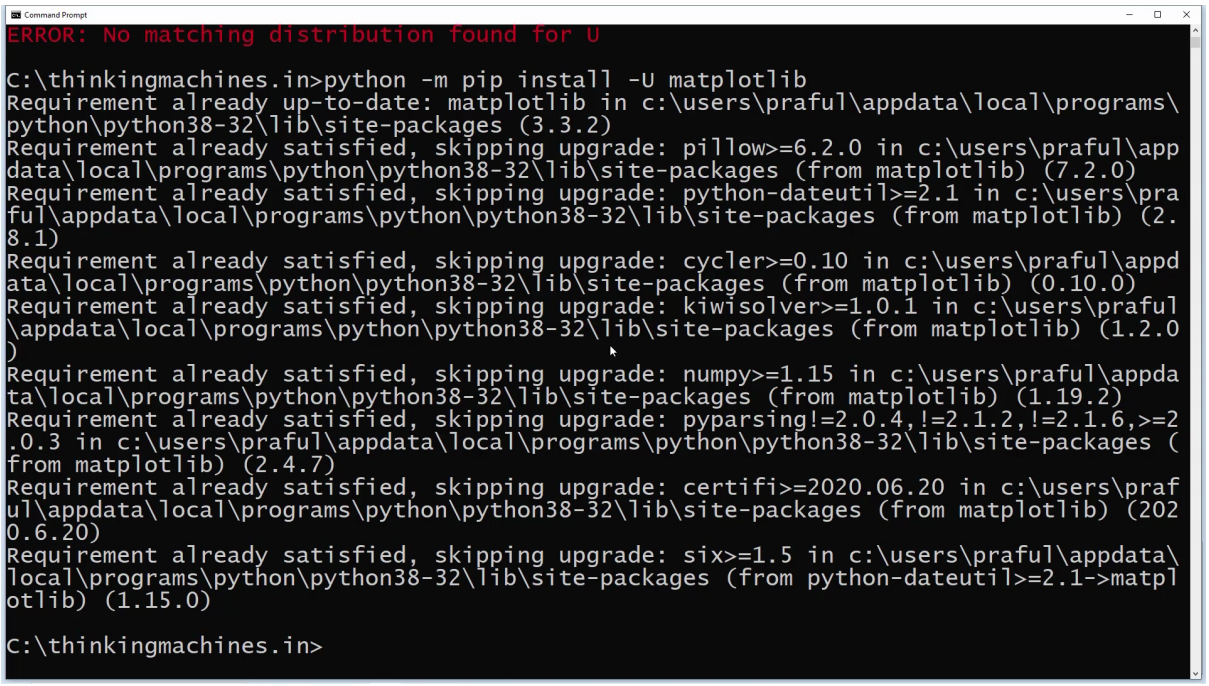

Command Prompt
C:\thinkingmachines.in>pip install matplotlib
Requirement already satisfied: matplotlib in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (3.3.2)
Requirement already satisfied: certifi>=2020.06.20 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (2020.6.20)
Requirement already satisfied: numpy>=1.15 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (1.19.2)
Requirement already satisfied: pillow>=6.2.0 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (7.2.0)
Requirement already satisfied: pyparsing!=2.0.4,!=2.1.2,!=2.1.6,>=2.0.3 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (2.4.7)
Requirement already satisfied: python-dateutil>=2.1 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (2.8.1)
Requirement already satisfied: cycler>=0.10 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (0.10.0)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (1.2.0)
Requirement already satisfied: six>=1.5 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from python-dateutil>=2.1->matplotlib) (1.15.0)
C:\thinkingmachines.in>


Command Prompt
ERROR: No matching distribution found for U
C:\thinkingmachines.in>python -m pip install -U matplotlib
Requirement already up-to-date: matplotlib in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (3.3.2)
Requirement already satisfied, skipping upgrade: pillow>=6.2.0 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (7.2.0)
Requirement already satisfied, skipping upgrade: python-dateutil>=2.1 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (2.8.1)
Requirement already satisfied, skipping upgrade: cycler>=0.10 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (0.10.0)
Requirement already satisfied, skipping upgrade: kiwisolver>=1.0.1 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (1.2.0)
Requirement already satisfied, skipping upgrade: numpy>=1.15 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (1.19.2)
Requirement already satisfied, skipping upgrade: pyparsing!=2.0.4,!=2.1.2,!=2.1.6,>=2.0.3 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (2.4.7)
Requirement already satisfied, skipping upgrade: certifi>=2020.06.20 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from matplotlib) (2020.6.20)
Requirement already satisfied, skipping upgrade: six>=1.5 in c:\users\praful\appdata\local\programs\python\python38-32\lib\site-packages (from python-dateutil>=2.1->matplotlib) (1.15.0)
C:\thinkingmachines.in>

eg1 - Notepad

File Edit Format View Help

```
import matplotlib.pyplot
data=[10,20,30,5,60]
matplotlib.pyplot.plot(data)
matplotlib.pyplot.show()
```

Ln 1, Col 1 100% Windows (CRLF) UTF-8

eg1 - Notepad

File Edit Format View Help

```
import matplotlib.pyplot
data=[]
for x in range(10):
    data.append(x**3)
print(data)
matplotlib.pyplot.plot(data)
matplotlib.pyplot.show()
```

Ln 1, Col 1 100% Windows (CRLF) UTF-8

eg1 - Notepad

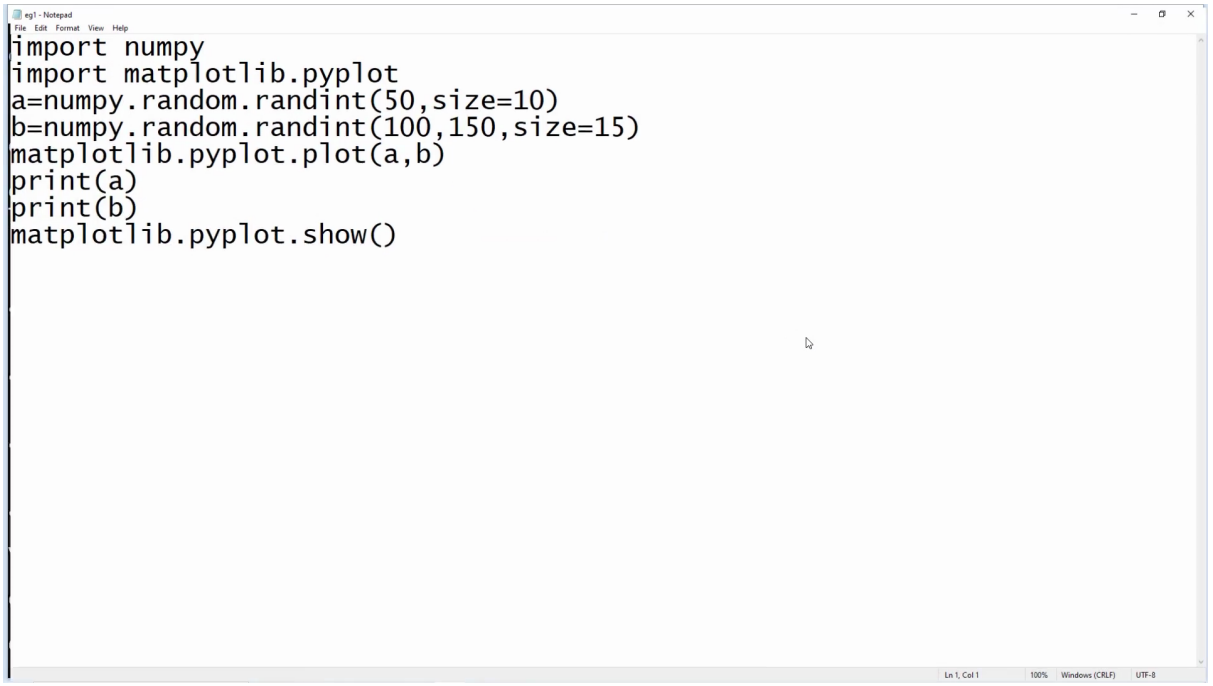
File Edit Format View Help

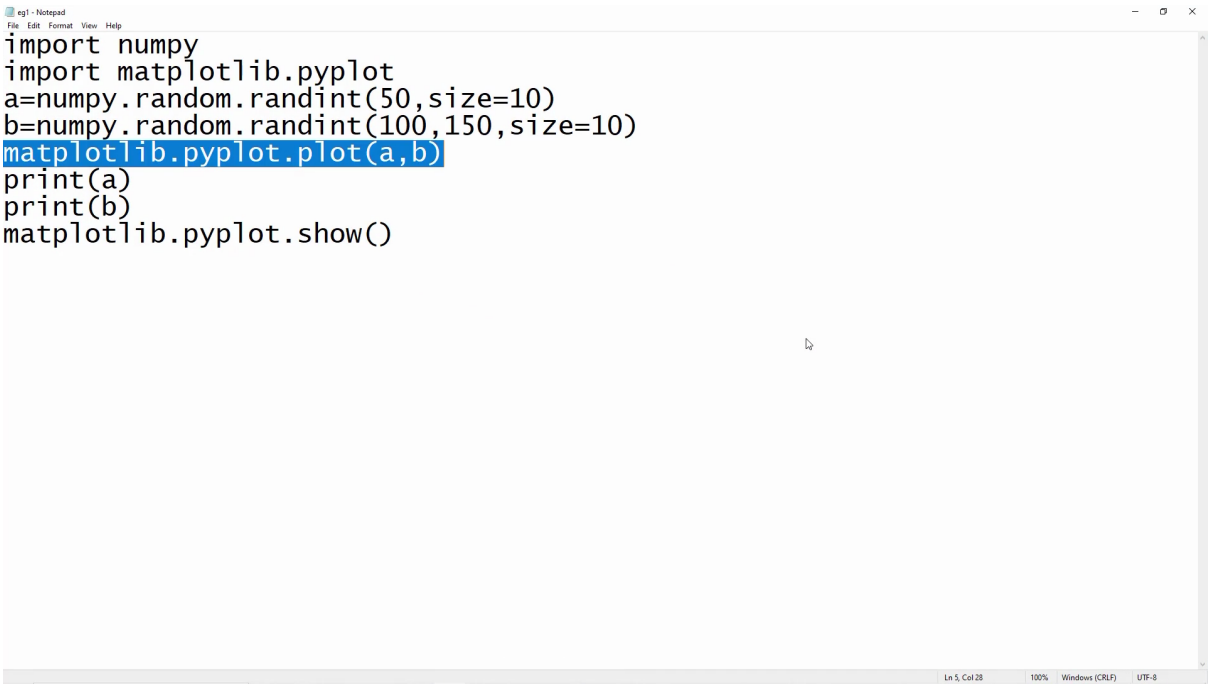
```
import numpy
import matplotlib.pyplot
a=numpy.random.randint(50,size=10)
b=numpy.random.randint(100,150,size=15)
matplotlib.pyplot.plot(a)
matplotlib.pyplot.plot(b)
print(a)
print(b)
matplotlib.pyplot.show()
```

Ln 1, Col 1 100% Windows (CRLF) UTF-8

Command Prompt - py eg1.py

```
[139 101 130 113 133 140 104 104 138 117 117 142 127 134 148]

C:\thinkingmachines.in>notepad eg1.py

C:\thinkingmachines.in>py eg1.py
Traceback (most recent call last):
  File "eg1.py", line 5, in <module>
    matplotlib.pyplot.plot(a,b)
  File "C:\Users\praful\AppData\Local\Programs\Python\Python38-32\lib\site-packages\matplotlib\pyplot.py", line 2840, in plot
    return gca().plot(
  File "C:\Users\praful\AppData\Local\Programs\Python\Python38-32\lib\site-packages\matplotlib\axes\_axes.py", line 1743, in plot
    lines = [*self._get_lines(*args, data=data, **kwargs)]
  File "C:\Users\praful\AppData\Local\Programs\Python\Python38-32\lib\site-packages\matplotlib\axes\_base.py", line 273, in __call__
    yield from self._plot_args(this, kwargs)
  File "C:\Users\praful\AppData\Local\Programs\Python\Python38-32\lib\site-packages\matplotlib\axes\_base.py", line 399, in _plot_args
    raise ValueError(f"x and y must have same first dimension, but "
ValueError: x and y must have same first dimension, but have shapes (10,) and (15,)

C:\thinkingmachines.in>notepad eg1.py

C:\thinkingmachines.in>py eg1.py
[22 20 45 19 26 28 47 25 45  0]
[129 107 135 103 130 118 129 103 105 106]
```


eg1 - Notepad
File Edit Format View Help
import numpy
import matplotlib.pyplot
a=numpy.random.randint(50,size=10)
b=numpy.random.randint(100,150,size=15)
matplotlib.pyplot.plot(a,b)
print(a)
print(b)
matplotlib.pyplot.show()
Ln 1, Col 1
100%
Windows (CRLF)
UTF-8


eg1 - Notepad
File Edit Format View Help
import numpy
import matplotlib.pyplot
a=numpy.random.randint(50,size=10)
b=numpy.random.randint(100,150,size=10)
matplotlib.pyplot.plot(a,b)
print(a)
print(b)
matplotlib.pyplot.show()
Ln 5, Col 28
100%
Windows (CRLF)
UTF-8

*eg1 - Notepad

File Edit Format View Help

```
import numpy
import matplotlib.pyplot
a=numpy.random.randint(50,size=10)
b=numpy.random.randint(100,150,size=10)
matplotlib.pyplot.plot(a,b) # find out what happens
print(a)
print(b)
matplotlib.pyplot.show()
c=[]
for x in a: c.append(x)
for x in b: c.append(x)
print(c)
matplotlib.pyplot.plot(c)
matplotlib.pyplot.show()
```

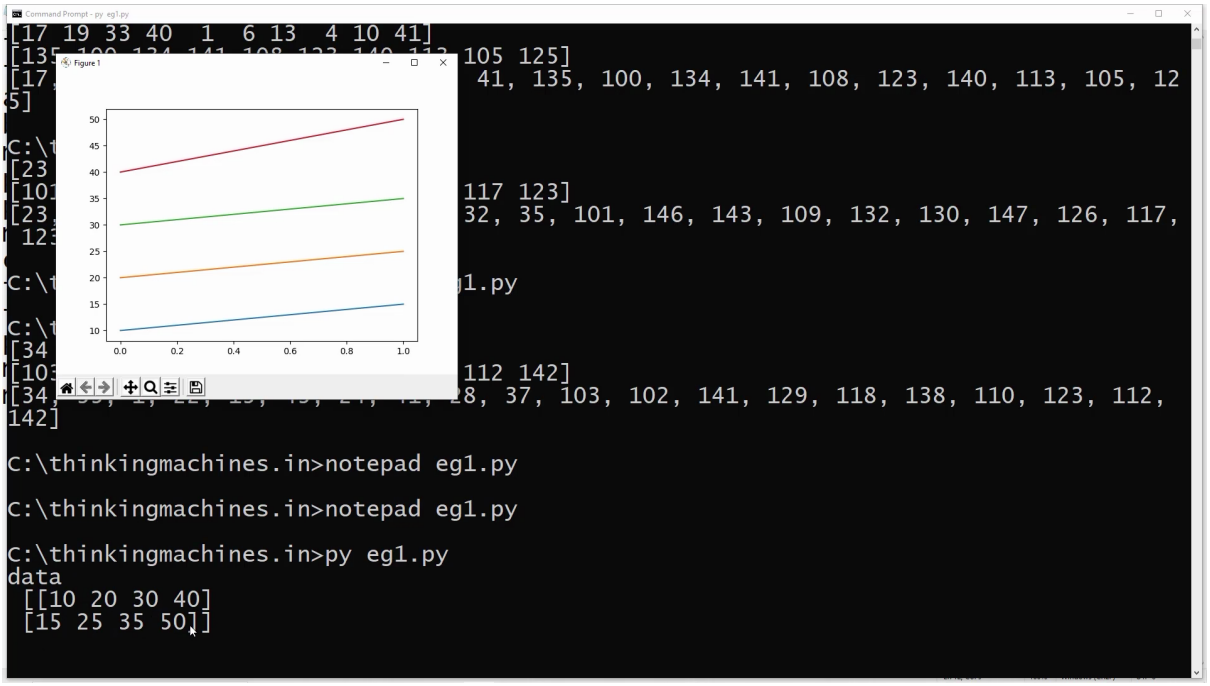
Ln 8, Col 9 100% Windows (CRLF) UTF-8

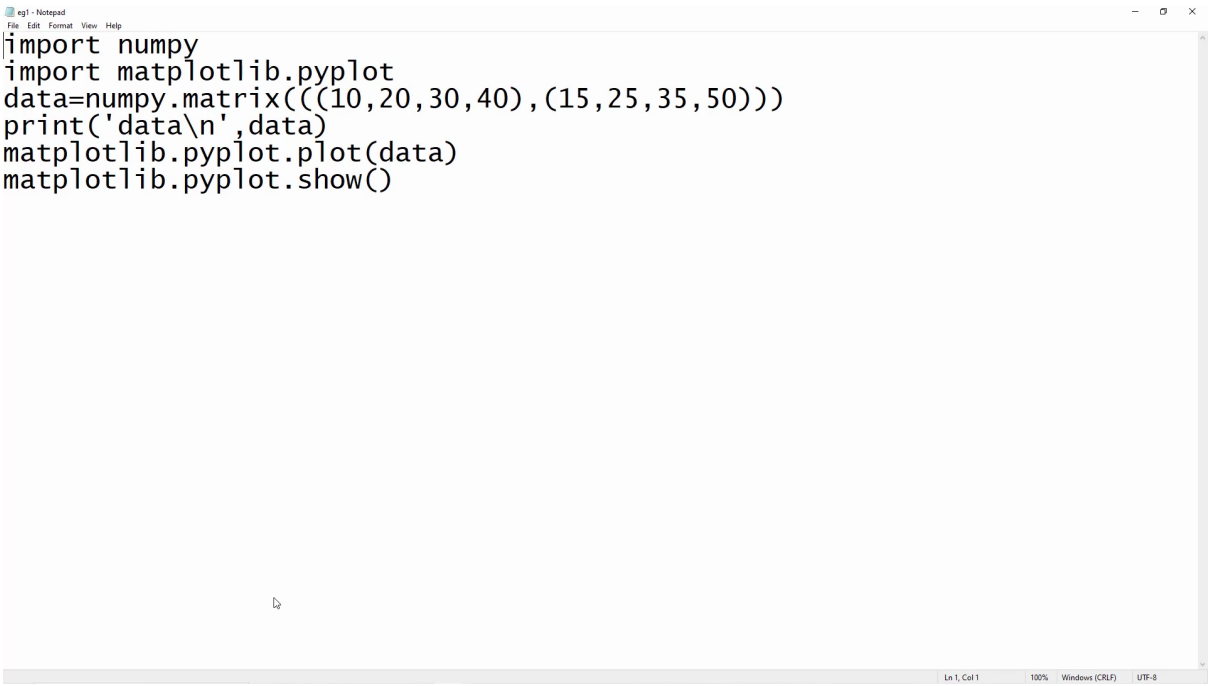
eg1 - Notepad

File Edit Format View Help

```
import numpy
import matplotlib.pyplot
a=numpy.random.randint(50,size=10)
b=numpy.random.randint(100,150,size=10)
matplotlib.pyplot.plot(a,b)
print(a)
print(b)
matplotlib.pyplot.show()
c=[]
for x in a: c.append(x)
for x in b: c.append(x)
print(c)
matplotlib.pyplot.plot(c)
matplotlib.pyplot.show()
```

Ln 13, Col 25 100% Windows (CRLF) UTF-8


Command Prompt - py eg1.py
[17 19 33 40 1 6 13 4 10 41]
105 125]
41, 135, 100, 134, 141, 108, 123, 140, 113, 105, 12
5]
117 123]
32, 35, 101, 146, 143, 109, 132, 130, 147, 126, 117,
1.py
112 142]
28, 37, 103, 102, 141, 129, 118, 138, 110, 123, 112,
142]
C:\thinkingmachines.in>notepad eg1.py
C:\thinkingmachines.in>notepad eg1.py
C:\thinkingmachines.in>py eg1.py
data
[[10 20 30 40]
[15 25 35 50]]
Figure 1
50
45
40
35
30
25
20
15
10
0.0
0.2
0.4
0.6
0.8
1.0


eg1 - Notepad
File Edit Format View Help
import numpy
import matplotlib.pyplot
data=numpy.matrix(((10,20,30,40),(15,25,35,50)))
print('data\n',data)
matplotlib.pyplot.plot(data)
matplotlib.pyplot.show()
Ln 1, Col 1
100%
Windows (CRLF)
UTF-8

eg1 - Notepad

File Edit Format View Help

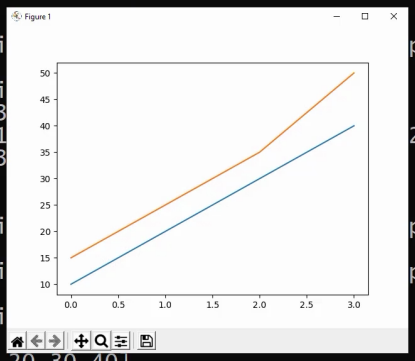
```
import numpy
import matplotlib.pyplot
data=numpy.matrix(((10,20,30,40),(15,25,35,50)))
print('data\n',data)
matplotlib.pyplot.plot(data.transpose())
matplotlib.pyplot.show()
```

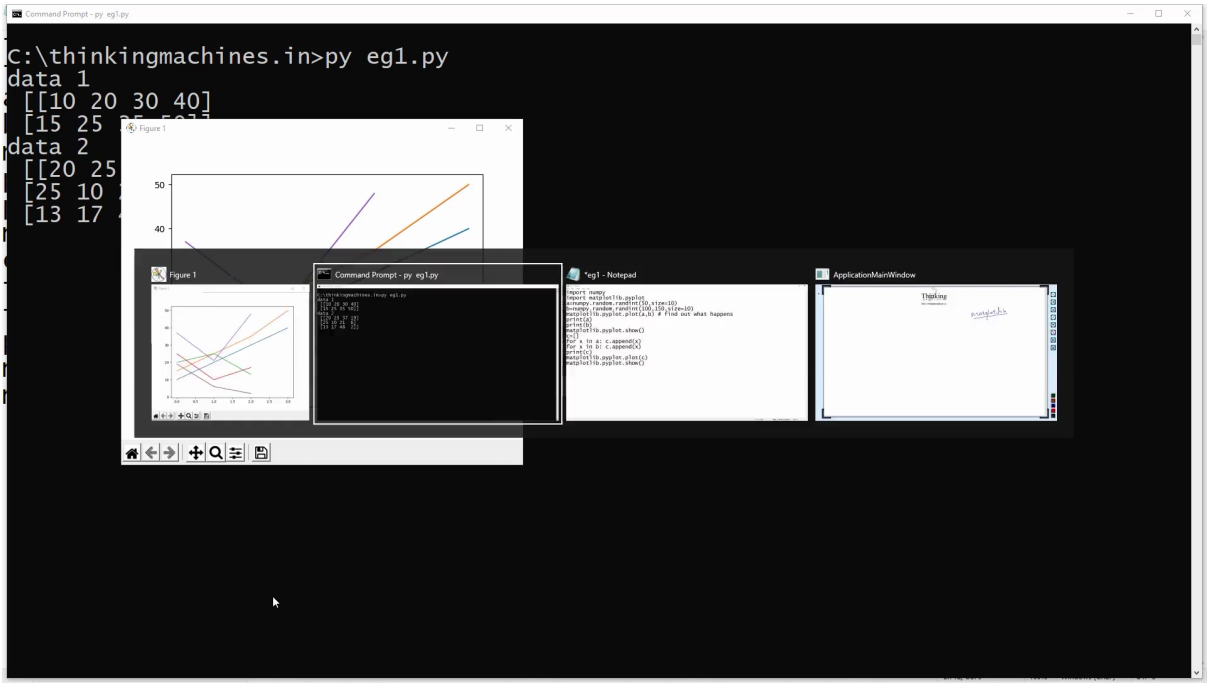
Ln 1, Col 1 100% Windows (CRLF) UTF-8

Command Prompt - py eg1.py

```
[101 146 143 109 132 130 147 126 117 123]
[23, 21, 21, 18, 15, 20, 21, 16, 32, 35, 101, 146, 143, 109, 132, 130, 147, 126, 117,
 123]

C:\thi                                                    py

C:\thi
[34 33
[103 1                                                    2 142]
[34, 3                                                     37, 103, 102, 141, 129, 118, 138, 110, 123, 112,
142]

C:\thi                                                    py

C:\thi                                                    py

C:\thi
data
 [[10 20 30 40]
 [15 25 35 50]]

C:\thinkingmachines.in>notepad eg1.py

C:\thinkingmachines.in>py eg1.py
data
 [[10 20 30 40]
 [15 25 35 50]]
```

Figure 1





eg1 - Notepad

File Edit Format View Help

```
import numpy
import matplotlib.pyplot
data1=numpy.matrix(((10,20,30,40),(15,25,35,50)))
print('data 1\n',data1)
matplotlib.pyplot.plot(data1.transpose())
data2=numpy.random.randint(50,size=(4,3)).transpose()
print('data 2\n',data2)
matplotlib.pyplot.plot(data2)
matplotlib.pyplot.show()
```

Ln 1, Col 1 100% Windows (CRLF) UTF-8

eg1 - Notepad

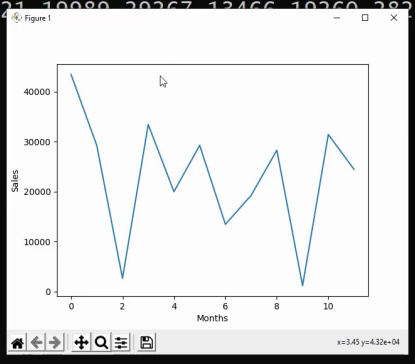
File Edit Format View Help

```
import numpy
import matplotlib.pyplot
data1=numpy.matrix(((10,20,30,40),(15,25,35,50)))
print('data 1\n',data1)
matplotlib.pyplot.plot(data1.transpose())
data2=numpy.random.randint(50,size=(4,3)).transpose()
print('data 2\n',data2)
matplotlib.pyplot.plot(data2)
matplotlib.pyplot.show()
```

Ln 12, Col 1 100% Windows (CRLF) UTF-8

Command Prompt - py eg1.py

```
C:\thinkingmachines.in>notepad eg1.py

C:\thinkingmachines.in>py eg1.py
[43437 29240  2679 33421 19989 29267 13466 19260 28294  1195 31430 24450]
```



eg1 - Notepad

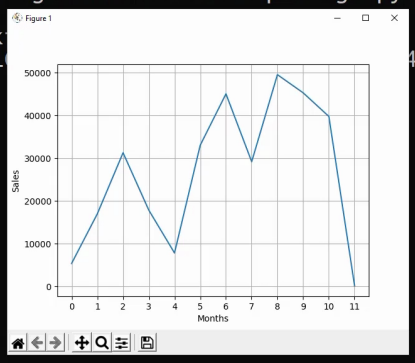
File Edit Format View Help

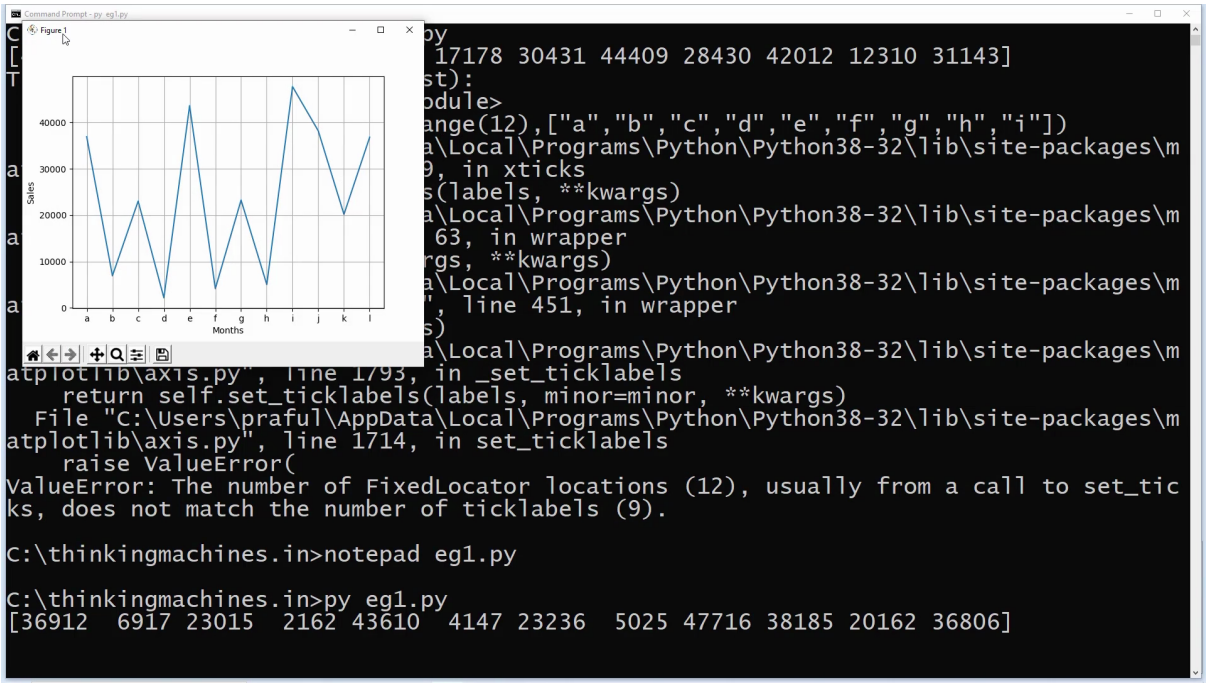
```
import numpy
import matplotlib.pyplot
sales=numpy.random.randint(50000,size=12)
print(sales)
matplotlib.pyplot.plot(sales)
matplotlib.pyplot.xlabel("Months")
matplotlib.pyplot.ylabel("Sales")
matplotlib.pyplot.grid(True)
matplotlib.pyplot.show()
```

Ln 1, Col 1 100% Windows (CRLF) UTF-8

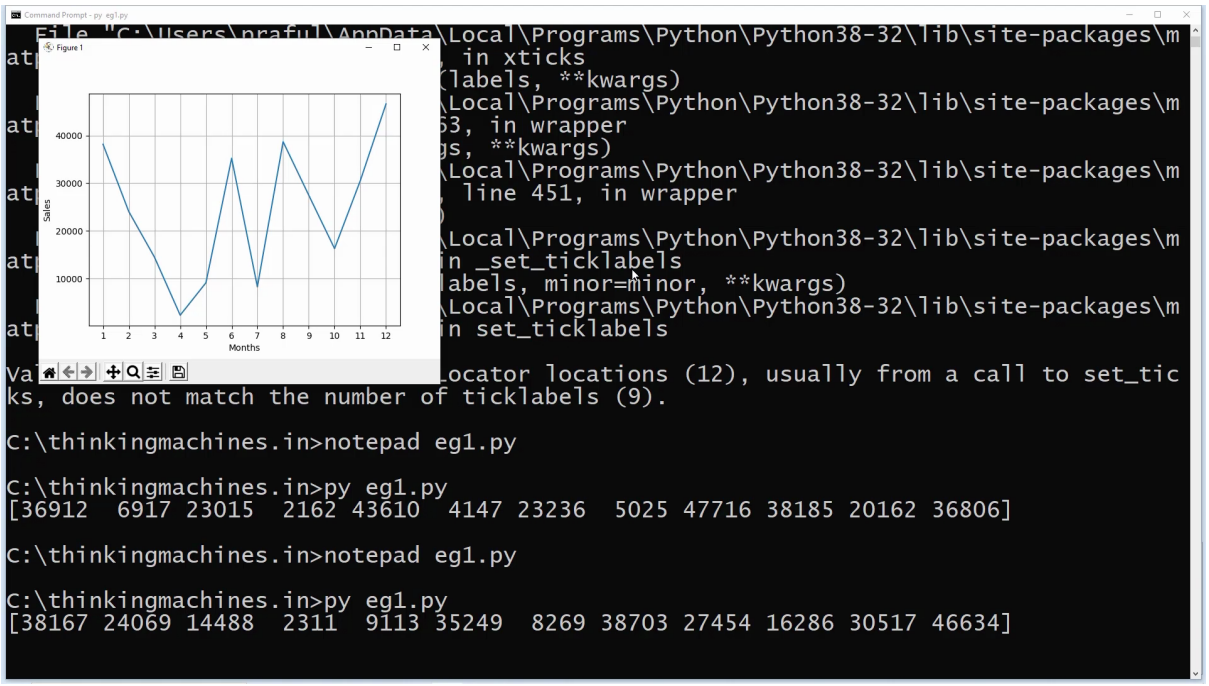
Command Prompt - py eg1.py

```
C:\>cd thinkingmachines.in

C:\thinkingmachines.in>notepad eg1.py

C:\think
[ 5402 1                                    45019 29168 49503 45266 39747   147]
```






```
C:\Users\praful\AppData\Local\Programs\Python\Python38-32\lib\site-packages\matplotlib\axis.py", line 1793, in _set_ticklabels
    return self.set_ticklabels(labels, minor=minor, **kwargs)
  File "C:\Users\praful\AppData\Local\Programs\Python\Python38-32\lib\site-packages\matplotlib\axis.py", line 1714, in set_ticklabels
    raise ValueError(
ValueError: The number of FixedLocator locations (12), usually from a call to set_ticks, does not match the number of ticklabels (9).

C:\thinkingmachines.in>notepad eg1.py

C:\thinkingmachines.in>py eg1.py
[36912  6917 23015  2162 43610  4147 23236  5025 47716 38185 20162 36806]
```




```
ks, does not match the number of ticklabels (9).

C:\thinkingmachines.in>notepad eg1.py

C:\thinkingmachines.in>py eg1.py
[36912  6917 23015  2162 43610  4147 23236  5025 47716 38185 20162 36806]

C:\thinkingmachines.in>notepad eg1.py

C:\thinkingmachines.in>py eg1.py
[38167 24069 14488  2311  9113 35249  8269 38703 27454 16286 30517 46634]
```

eg1 - Notepad

File Edit Format View Help

```
import numpy
import matplotlib.pyplot
sales=numpy.random.randint(50000,size=12)
print(sales)
matplotlib.pyplot.plot(sales)
matplotlib.pyplot.xlabel("Months")
matplotlib.pyplot.ylabel("Sales")
matplotlib.pyplot.grid(True)
matplotlib.pyplot.xticks(range(12),["a","b","c","d","e","f","g","h","i","
matplotlib.pyplot.show()
```

Ln 1, Col 1 100% Windows (CRLF) UTF-8

eg1 - Notepad

File Edit Format View Help

```
import numpy
import matplotlib.pyplot
sales=numpy.random.randint(50000,size=12)
print(sales)
matplotlib.pyplot.plot(sales,color='r')
matplotlib.pyplot.xlabel("Months")
matplotlib.pyplot.ylabel("Sales")
matplotlib.pyplot.grid(True)
matplotlib.pyplot.xticks(range(12),range(1,13))
matplotlib.pyplot.title("Sales Predictions for year 2021")
matplotlib.pyplot.show()
```

Ln 1, Col 1 100% Windows (CRLF) UTF-8

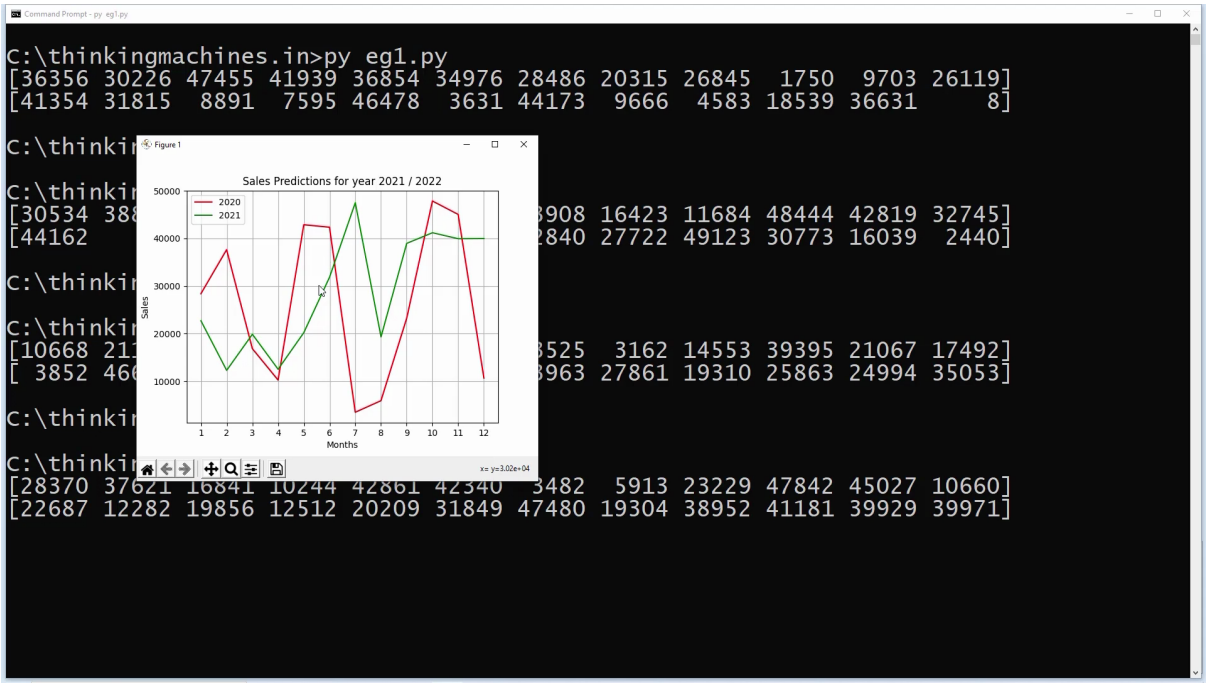
```
C:\thinkingmachines.in>py eg1.py
[13142 23082 33505 47196 25934 12971  2343 29258  5563   566 17938 36295]
[13876 40693  1762 27829 15575 33387  8553 26548  3517 46300 36362 44542]
```

eg1 - Notepad

File Edit Format View Help

```
import numpy
import matplotlib.pyplot
sales2020=numpy.random.randint(50000,size=12)
sales2021=numpy.random.randint(50000,size=12)
print(sales2020)
print(sales2021)
matplotlib.pyplot.plot(sales2020,color='r',label="2020")
matplotlib.pyplot.plot(sales2021,color='g',label="2021")
matplotlib.pyplot.xlabel("Months")
matplotlib.pyplot.ylabel("Sales")
matplotlib.pyplot.grid(True)
matplotlib.pyplot.legend()
matplotlib.pyplot.xticks(range(12),range(1,13))
matplotlib.pyplot.title("Sales Predictions for year 2021 / 2022")
matplotlib.pyplot.show()
```

Ln 1, Col 1 100% Windows (CRLF) UTF-8


Command Prompt - py eg1.py
C:\thinkingmachines.in>py eg1.py
[36356 30226 47455 41939 36854 34976 28486 20315 26845 1750 9703 26119]
[41354 31815 8891 7595 46478 3631 44173 9666 4583 18539 36631   8]
Figure 1
Sales Predictions for year 2021 / 2022
2020
2021
Sales
Months
50000
40000
30000
20000
10000
1 2 3 4 5 6 7 8 9 10 11 12
x= y=3.02e+04

eg1 - Notepad

File Edit Format View Help

```
import numpy
import matplotlib.pyplot
sales2020=numpy.random.randint(50000,size=12)
sales2021=numpy.random.randint(50000,size=12)
print(sales2020)
print(sales2021)
matplotlib.pyplot.plot(sales2020,color='r',label="2020")
matplotlib.pyplot.plot(sales2021,color='g',label="2021")
matplotlib.pyplot.xlabel("Months")
matplotlib.pyplot.ylabel("Sales")
matplotlib.pyplot.grid(True)
matplotlib.pyplot.legend(loc="best")
#matplotlib.pyplot.legend(loc="upper left")

matplotlib.pyplot.xticks(range(12),range(1,13))
matplotlib.pyplot.title("Sales Predictions for year 2021 / 2022")
matplotlib.pyplot.show()
```

Ln 13, Col 1 100% Windows (CRLF) UTF-8

eg1 - Notepad

File Edit Format View Help

```
import numpy
import matplotlib.pyplot
sales2020=numpy.random.randint(50000,size=12)
sales2021=numpy.random.randint(50000,size=12)
print(sales2020)
print(sales2021)
matplotlib.pyplot.plot(sales2020,color='r',label="2020")
matplotlib.pyplot.plot(sales2021,color='g',label="2021")
matplotlib.pyplot.xlabel("Months")
matplotlib.pyplot.ylabel("Sales")
matplotlib.pyplot.grid(True)
matplotlib.pyplot.legend(loc="best")
#matplotlib.pyplot.legend(loc="upper left")
matplotlib.pyplot.xticks(range(12),range(1,13))
matplotlib.pyplot.title("Sales Predictions for year 2021 / 2022")
matplotlib.pyplot.show()
```

Ln 14, Col 1 100% Windows (CRLF) UTF-8