Python Programming - Lab - 12

March 11, 2025

Python Programming - 2301CS404

Lab - 12

OM BHUT | 23010101033 | 122

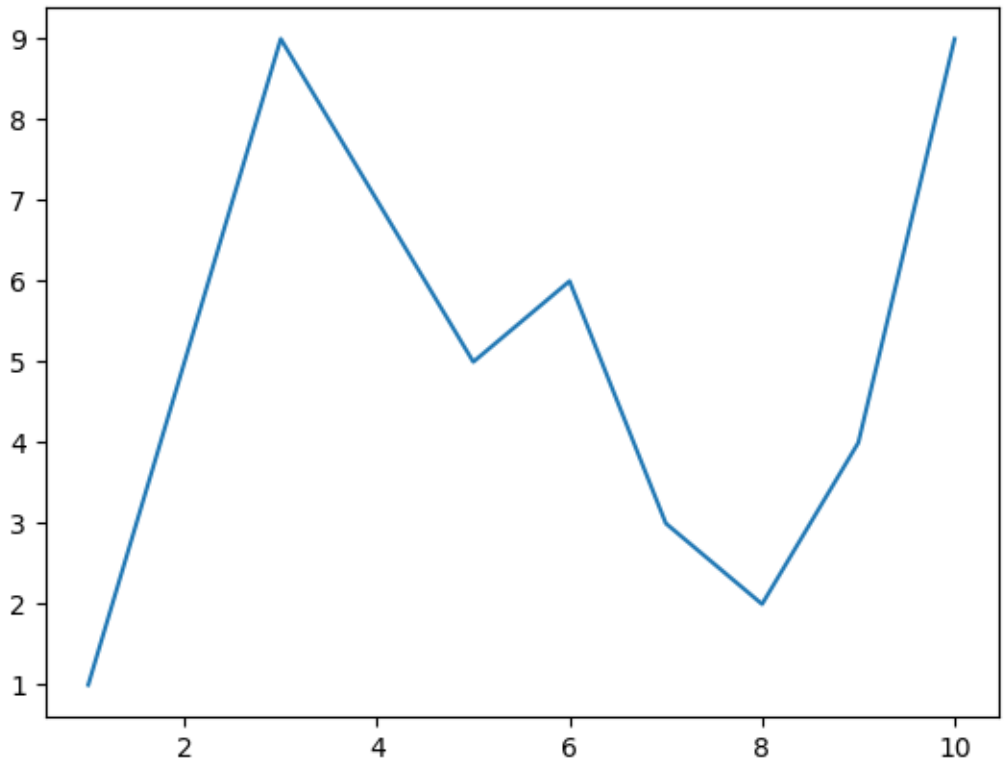
[4]:
```
!pip install matplotlib
```

```
Collecting matplotlib
  Using cached matplotlib-3.10.1-cp311-cp311-win_amd64.whl (8.1 MB)
Collecting contourpy>=1.0.1 (from matplotlib)
  Using cached contourpy-1.3.1-cp311-cp311-win_amd64.whl (219 kB)
Collecting cycler>=0.10 (from matplotlib)
  Using cached cycler-0.12.1-py3-none-any.whl (8.3 kB)
Collecting fonttools>=4.22.0 (from matplotlib)
  Using cached fonttools-4.56.0-cp311-cp311-win_amd64.whl (2.2 MB)
Collecting kiwisolver>=1.3.1 (from matplotlib)
  Using cached kiwisolver-1.4.8-cp311-cp311-win_amd64.whl (71 kB)
Requirement already satisfied: numpy>=1.23 in c:\python311\lib\site-packages
(from matplotlib) (2.2.3)
Requirement already satisfied: packaging>=20.0 in
c:\users\student\appdata\roaming\python\python311\site-packages (from
matplotlib) (24.2)
Requirement already satisfied: pillow>=8 in c:\python311\lib\site-packages (from
matplotlib) (11.1.0)
Requirement already satisfied: pyparsing>=2.3.1 in c:\python311\lib\site-
packages (from matplotlib) (3.2.1)
Requirement already satisfied: python-dateutil>=2.7 in
c:\users\student\appdata\roaming\python\python311\site-packages (from
matplotlib) (2.9.0.post0)
Requirement already satisfied: six>=1.5 in
c:\users\student\appdata\roaming\python\python311\site-packages (from python-
dateutil>=2.7->matplotlib) (1.17.0)
Installing collected packages: kiwisolver, fonttools, cycler, contourpy,
matplotlib

ERROR: Could not install packages due to an OSError: [WinError 5] Access is
denied: 'C:\\Python311\\share'
Consider using the `--user` option or check the permissions.
```

```
[notice] A new release of pip is available: 23.1.2 -> 25.0.1
[notice] To update, run: python.exe -m pip install --upgrade pip
```

[15]:
```
#import matplotlib below

import matplotlib.pyplot as plt
import random
```

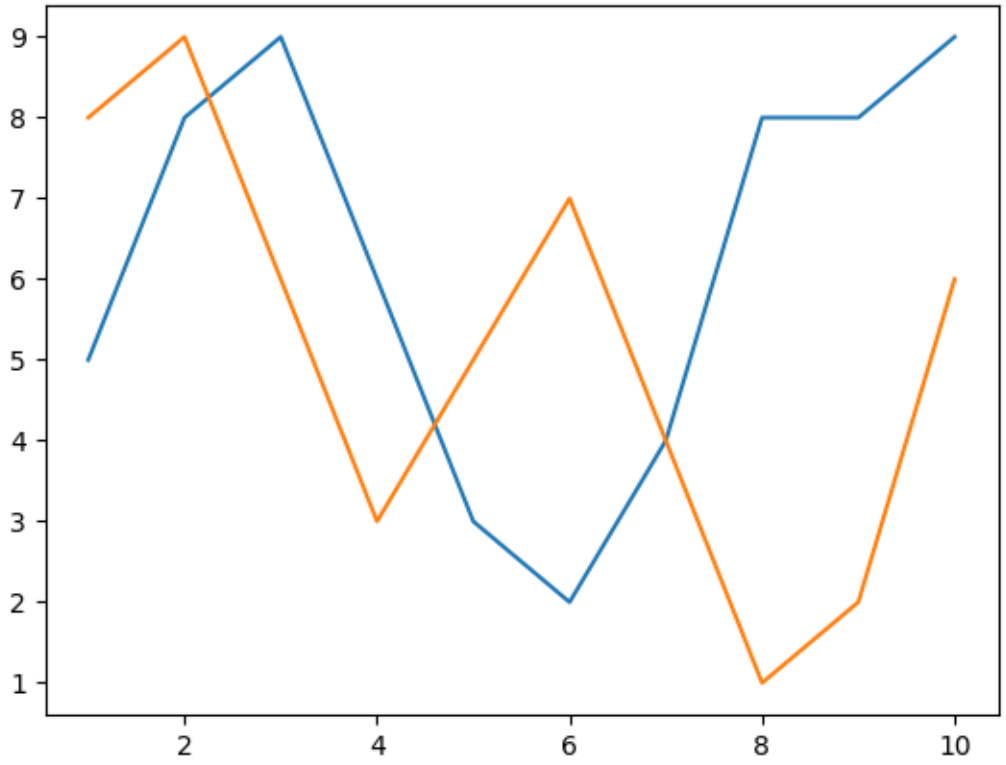
[3]:
```
x = range(1,11)
y = [1,5,9,7,5,6,3,2,4,9]

# write a code to display the line chart of above x & y

plt.plot(x,y)
plt.show()
```



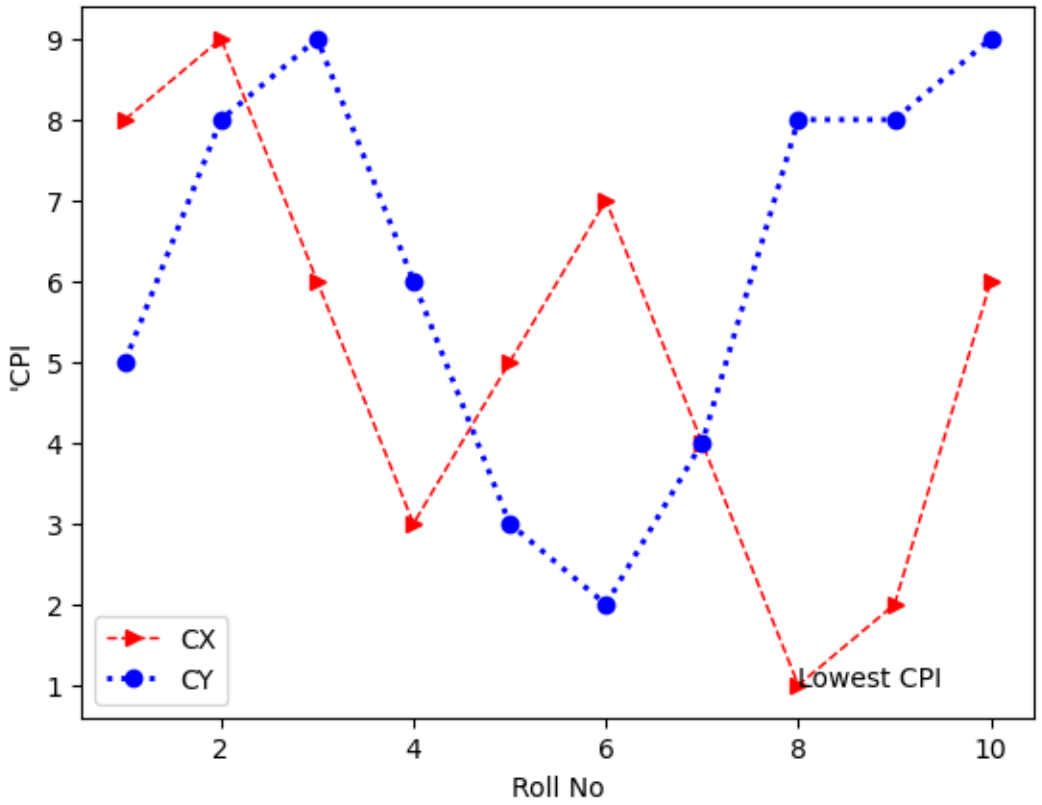
[4]:
```
x = [1,2,3,4,5,6,7,8,9,10]
cxMarks = [5,8,9,6,3,2,4,8,8,9]
cyMarks = [8,9,6,3,5,7,4,1,2,6]

# write a code to display two lines in a line chart (data given above)
```

```
plt.plot(x,cxMarks)
plt.plot(x,cyMarks)
```

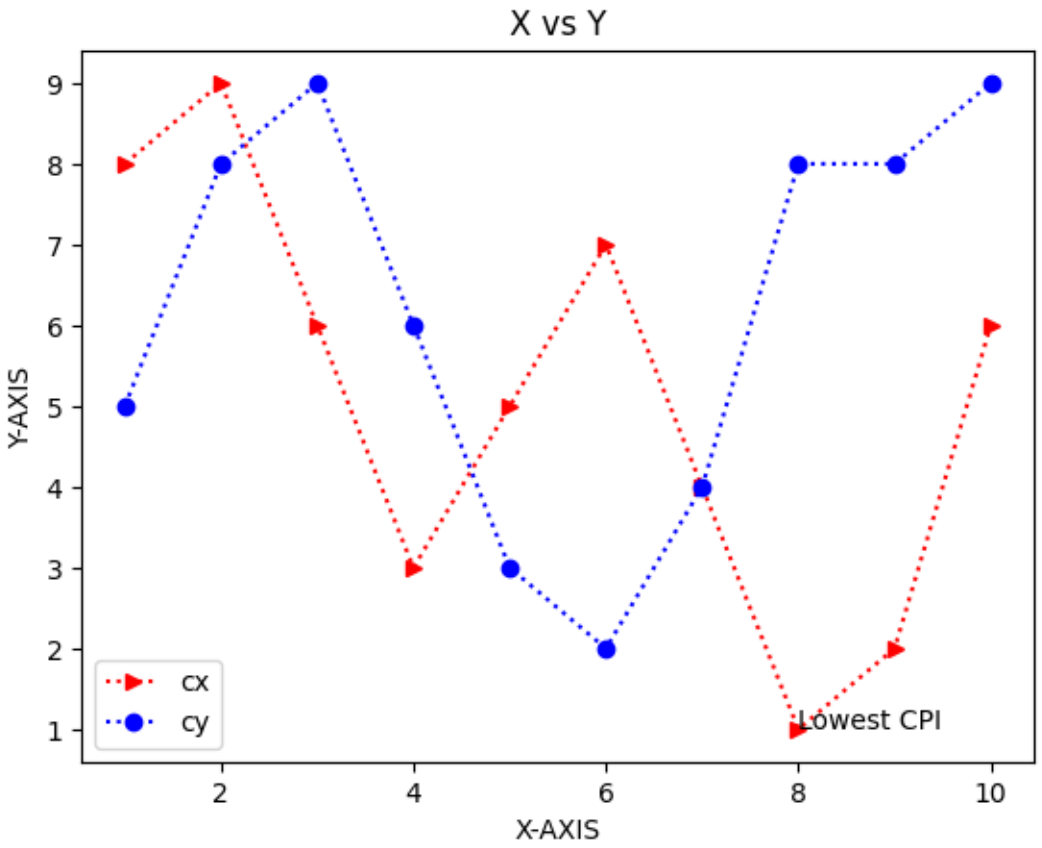
[4]: [<matplotlib.lines.Line2D at 0x1f28a0adf10>]



[13]:
```
x = range(1,11,1)
cxMarks= [8,9,6,3,5,7,4,1,2,6]
cyMarks= [5,8,9,6,3,2,4,8,8,9]


# write a code to generate below graph
```

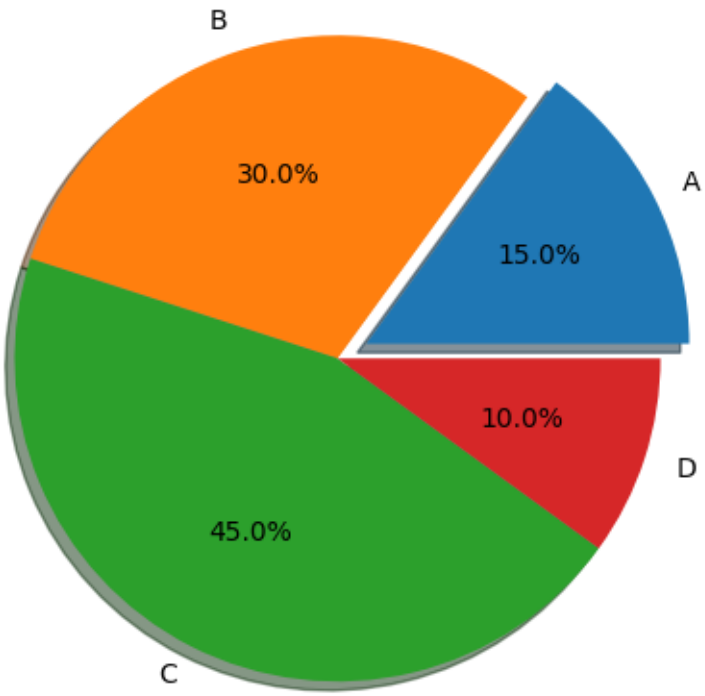


[11]:
```
x = range(1,11,1)
cxMarks= [8,9,6,3,5,7,4,1,2,6]
cyMarks= [5,8,9,6,3,2,4,8,8,9]


# write a code to generate below graph
plt.plot(x,cxMarks,c="r",marker=">",ls=":",label="cx")
plt.plot(x,cyMarks,c="b",marker="o",ls=":",label="cy")
plt.xlabel("X-AXIS")
plt.ylabel("Y-AXIS")
plt.title("X vs Y")
plt.annotate("Lowest CPI", xy=[8,1])
plt.legend()
plt.show()
```



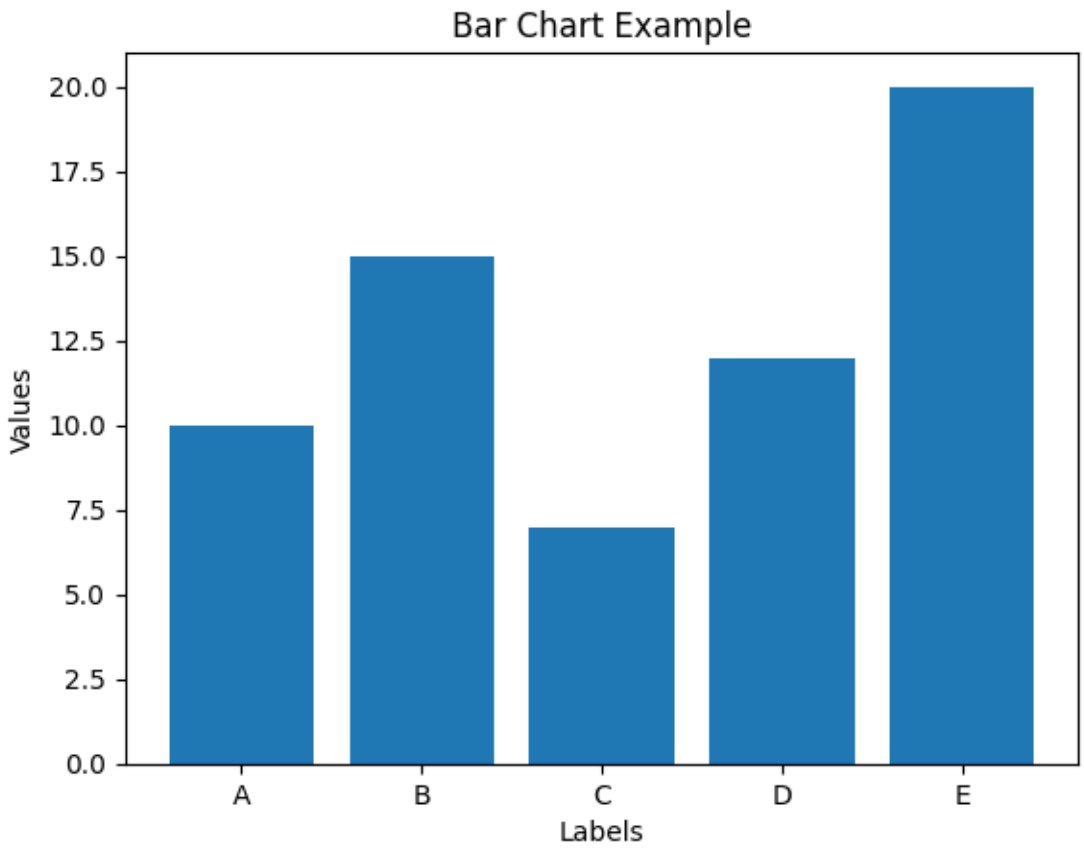
0.0.1 04) WAP to demonstrate the use of Pie chart.

[12]:
```
labels = ['A', 'B', 'C', 'D']
sizes = [15, 30, 45, 10]
explode = [0.1, 0, 0, 0]

plt.pie(sizes, explode=explode, labels=labels, autopct='%1.1f%%', shadow=True)
plt.axis('equal')
plt.show()
```



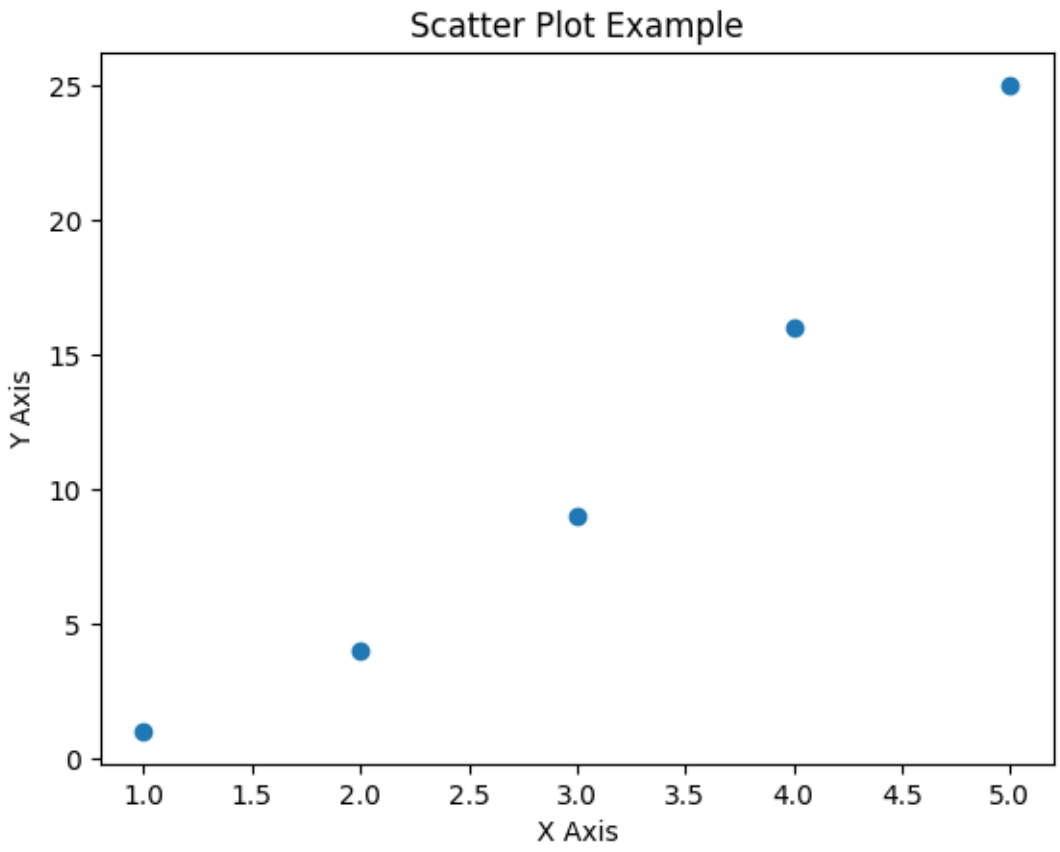
0.0.2 05) WAP to demonstrate the use of Bar chart.

[13]:
```
labels = ['A', 'B', 'C', 'D', 'E']
values = [10, 15, 7, 12, 20]

plt.bar(labels, values)

plt.title('Bar Chart Example')
plt.xlabel('Labels')
plt.ylabel('Values')

plt.show()
```



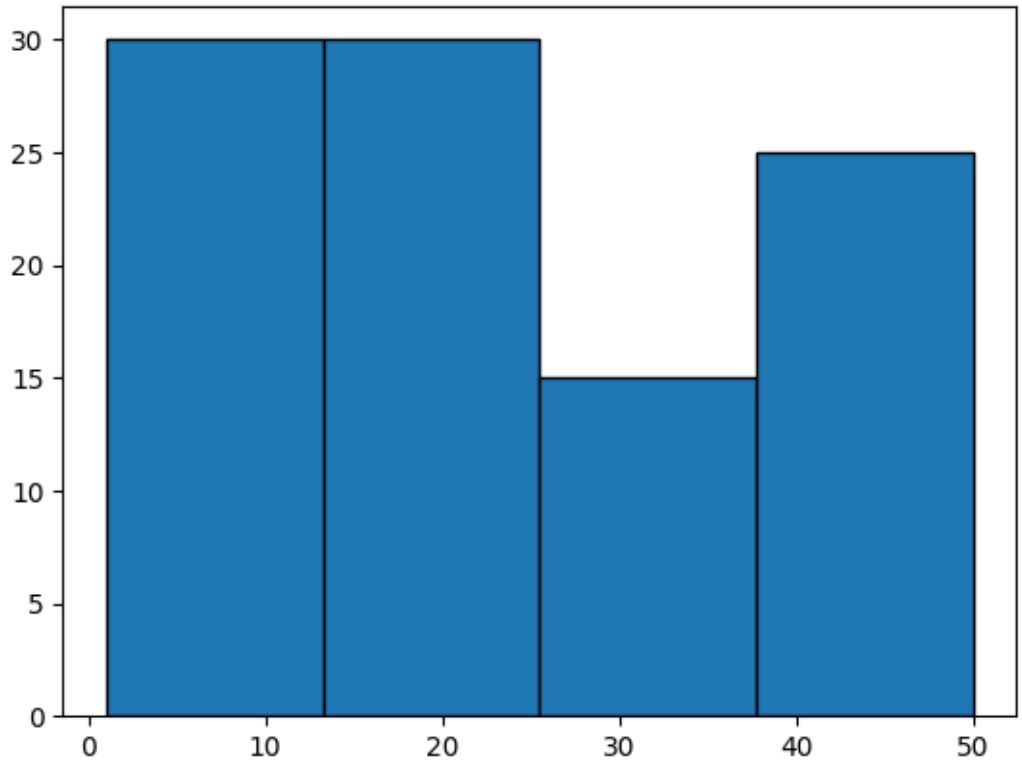
0.0.3 06) WAP to demonstrate the use of Scatter Plot.

[14]:
```
x = [1, 2, 3, 4, 5]
y = [1, 4, 9, 16, 25]

plt.scatter(x, y)

plt.title('Scatter Plot Example')
plt.xlabel('X Axis')
plt.ylabel('Y Axis')

plt.show()
```



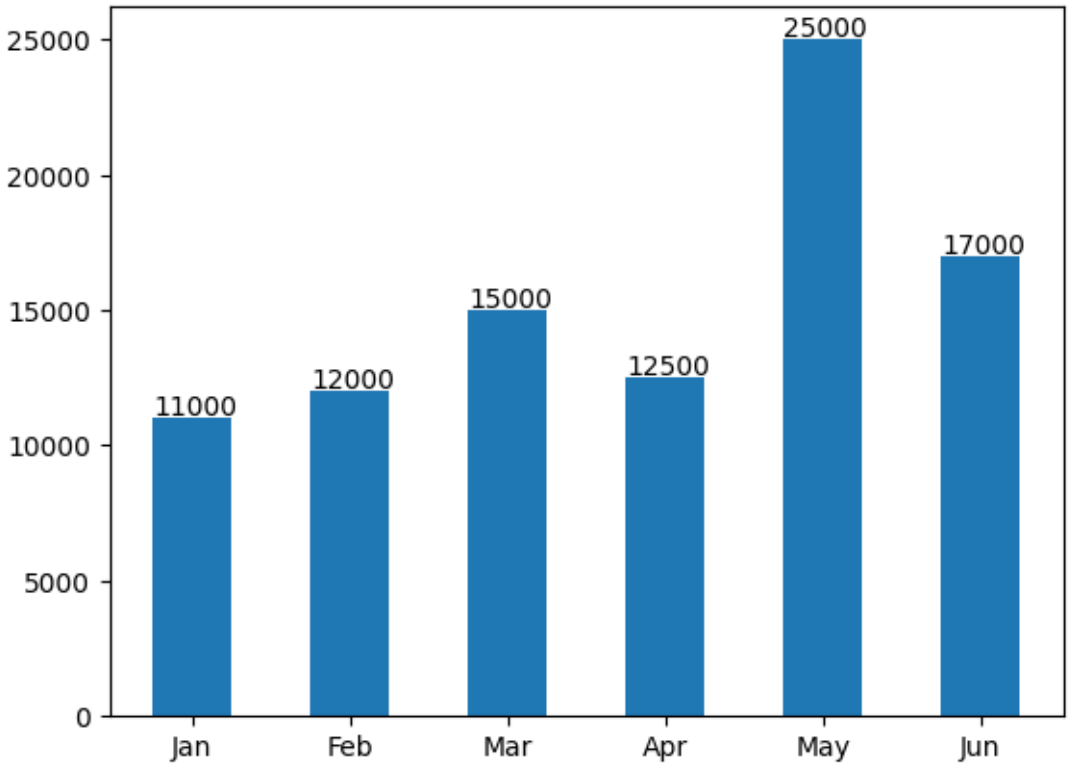
0.0.4 07) WAP to demonstrate the use of Histogram.

[17]:
```
random.seed(5)
age = [random.randint(1,50) for i in range(100)]
plt.hist(age, edgecolor="k", bins=6,histtype="bar")
plt.show()
```



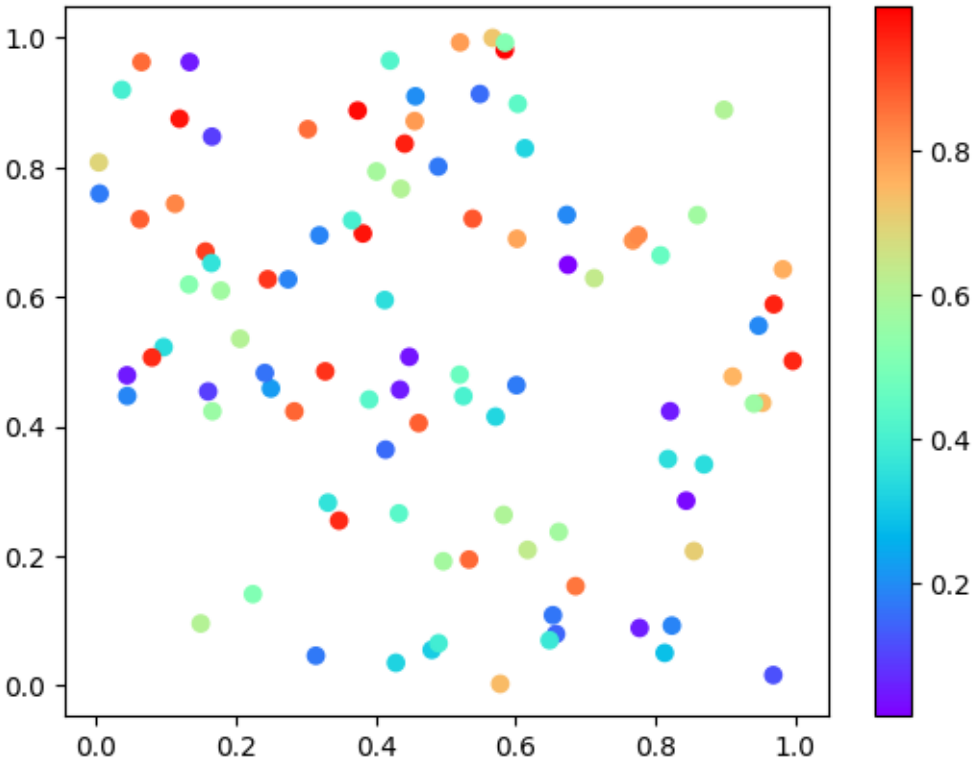
0.0.5 08) WAP to display the value of each bar in a bar chart using Matplotlib.

[18]:
```
mon = ["Jan", "Feb", "Mar", "Apr", "May", "Jun"]
visiters = [11000, 12000, 15000, 12500, 25000, 17000]
bars = plt.bar(mon, visiters, width=0.5)
for i in bars:
    yc = i.get_height()
    plt.text(i.get_x(), yc+100, f"{yc}")
plt.show()
```



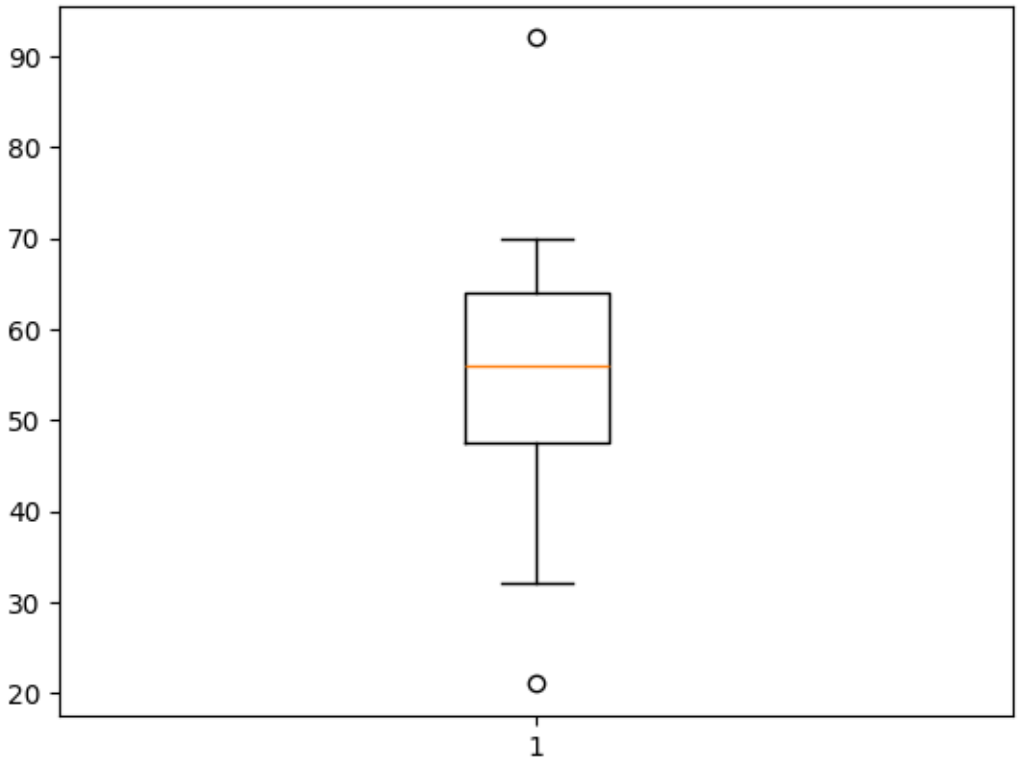
0.0.6 09) WAP create a Scatter Plot with several colors in Matplotlib?

[21]:
```
random.seed(10)
x = [random.random() for i in range(100)]
y = [random.random() for i in range(100)]
z = [random.random() for i in range(100)]
plt.scatter(x,y, c=z,cmap="rainbow")
plt.colorbar()
plt.show()
```



0.0.7 10) WAP to create a Box Plot.

[32]:
```
# random.seed(10)
# x = [random.random() for i in range(5000)]
# y = [random.random() for i in range(100)]
plt.boxplot([50,45,52,63,70,21,56,68,54,57,35,62,65,92,32])

# plt.boxplot(x,vert=True,widths=0.3)
plt.show()
```


90
80
70
60
50
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20
1

[ ]: