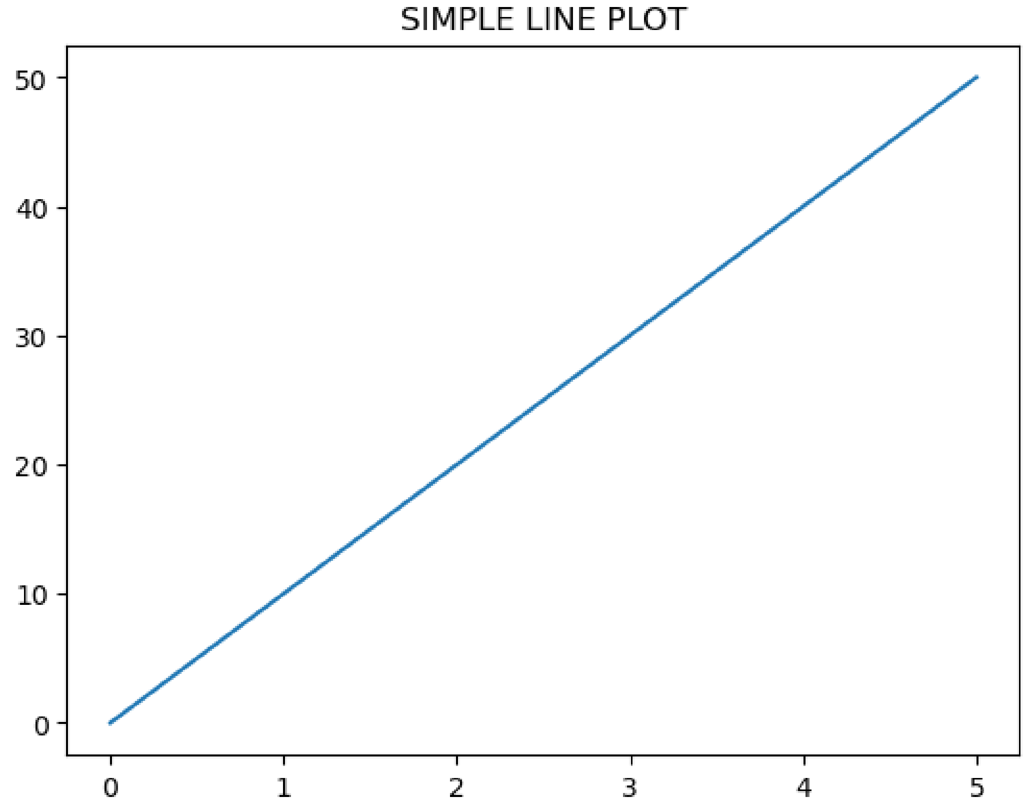
revanth-matplotlib

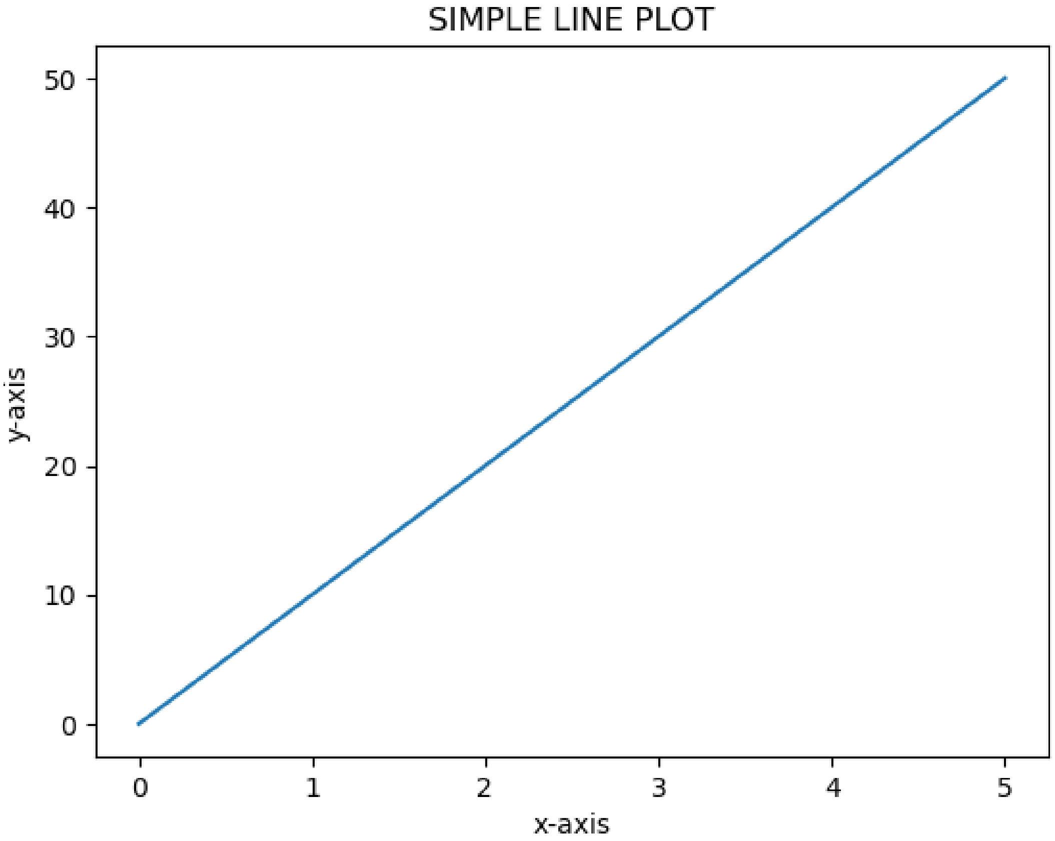
September 4, 2023

[2]:
```
from matplotlib import pyplot as plt
```

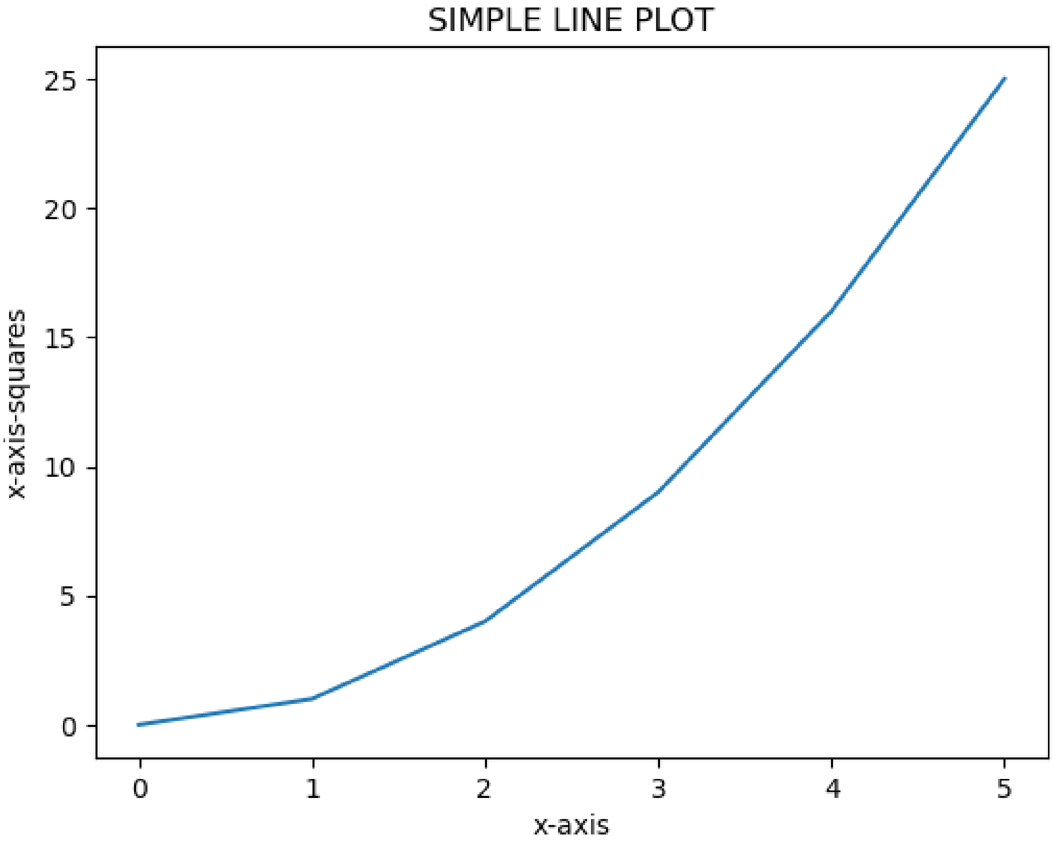
[3]:
```
x=[0,1,2,3,4,5]
y=[0,10,20,30,40,50]
plt.plot(x,y)
plt.title("SIMPLE LINE PLOT")
plt.show()
```



[4]:
```
x=[0,1,2,3,4,5]
y=[0,10,20,30,40,50]
plt.plot(x,y)
plt.title("SIMPLE LINE PLOT")
plt.xlabel("x-axis")
plt.ylabel("y-axis")
plt.show()
```

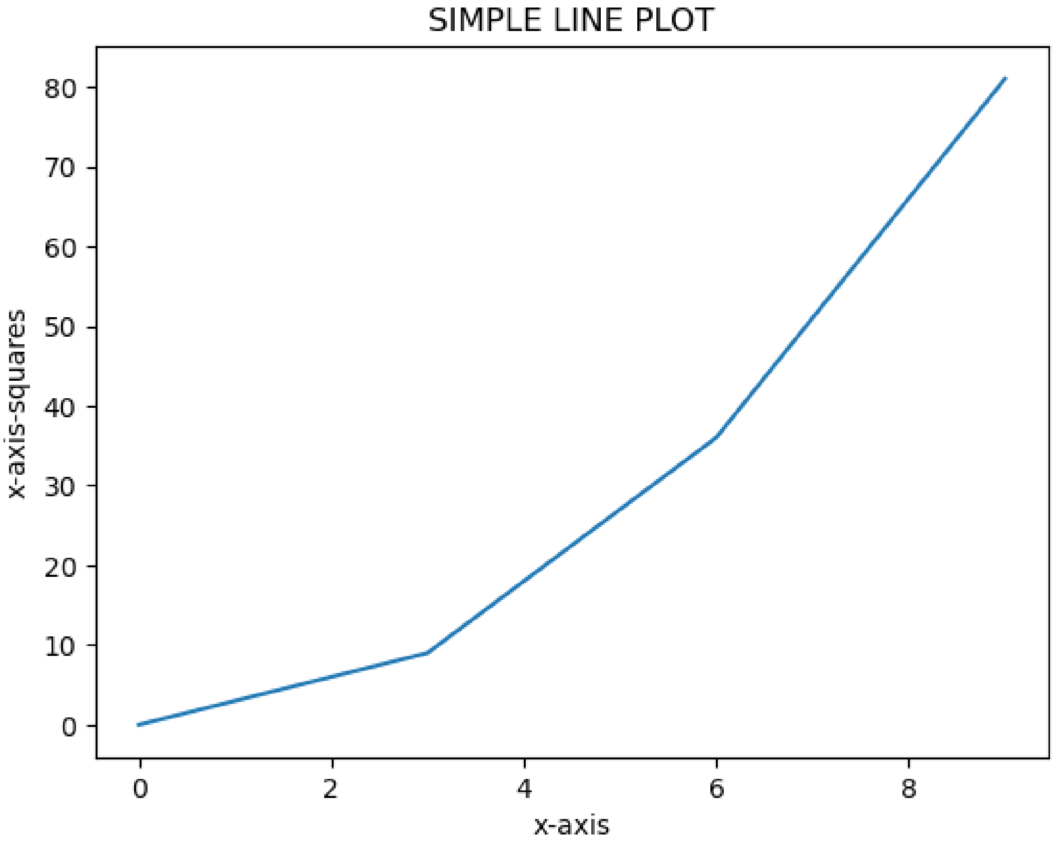


[6]:
```
x=[0,1,2,3,4,5]
y=[i**2 for i in x]
plt.plot(x,y)
plt.title("SIMPLE LINE PLOT")
plt.xlabel('x-axis')
plt.ylabel('x-axis-squares')
plt.show()
```



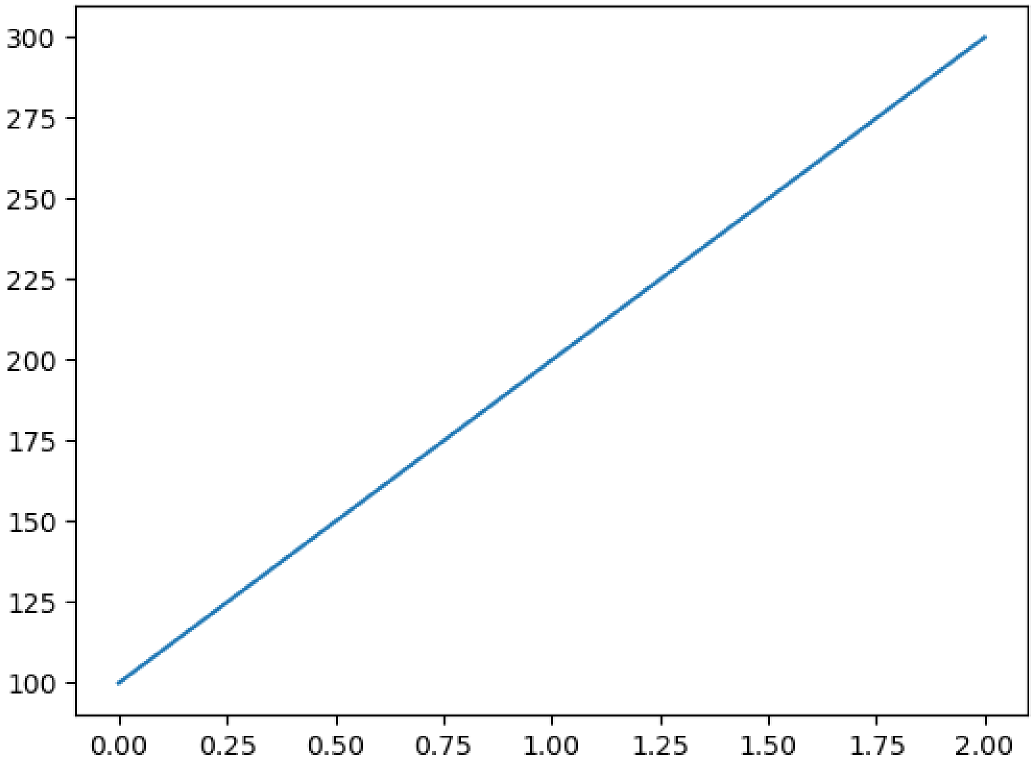
using numpy

[10]:
```
import numpy as np

x=np.arange(0,10,3)
y=[i**2 for i in x]
plt.plot(x,y)
plt.title("SIMPLE LINE PLOT")
plt.xlabel('x-axis')
plt.ylabel('x-axis-squares')
plt.show()
```



only giving one axis

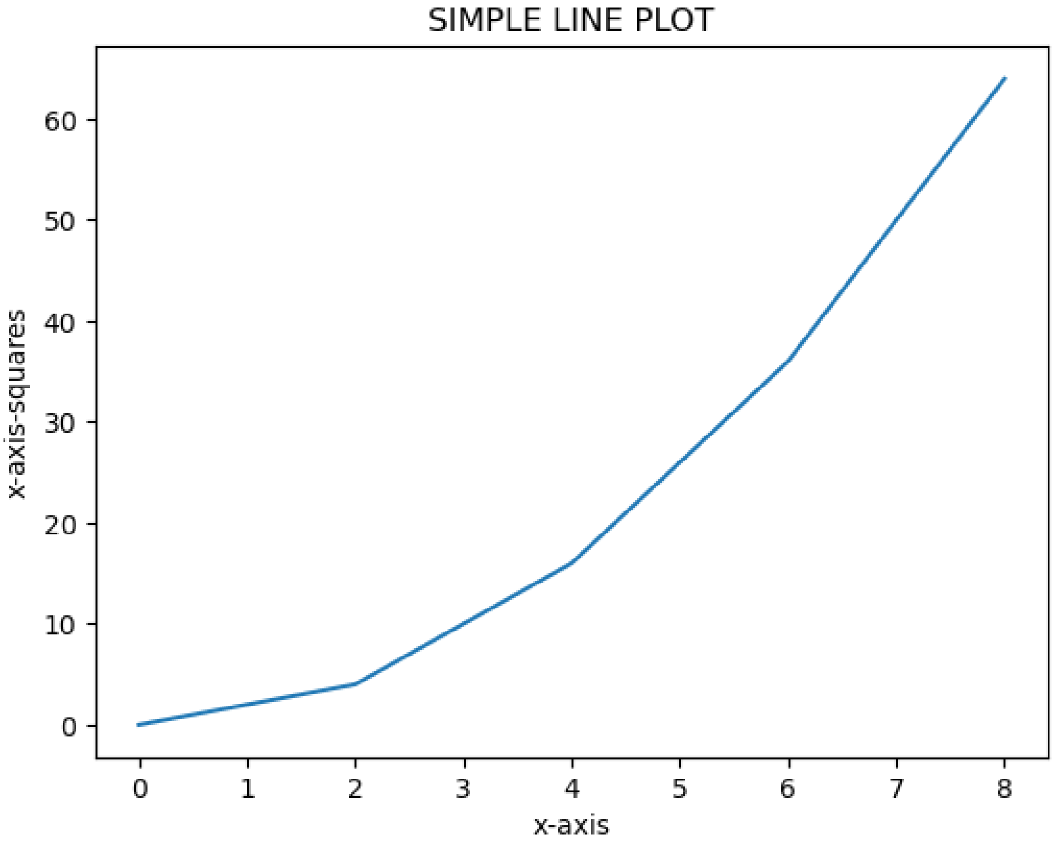
```
[11]: plt.plot([100,200,300])
      plt.show()
```



[12]:

```
import numpy as np

x=np.arange(0,10,2)
y=[i**2 for i in x]
print(x,y)
plt.plot(x,y)
plt.title("SIMPLE LINE PLOT")
plt.xlabel('x-axis')
plt.ylabel('x-axis-squares')
plt.show()
```

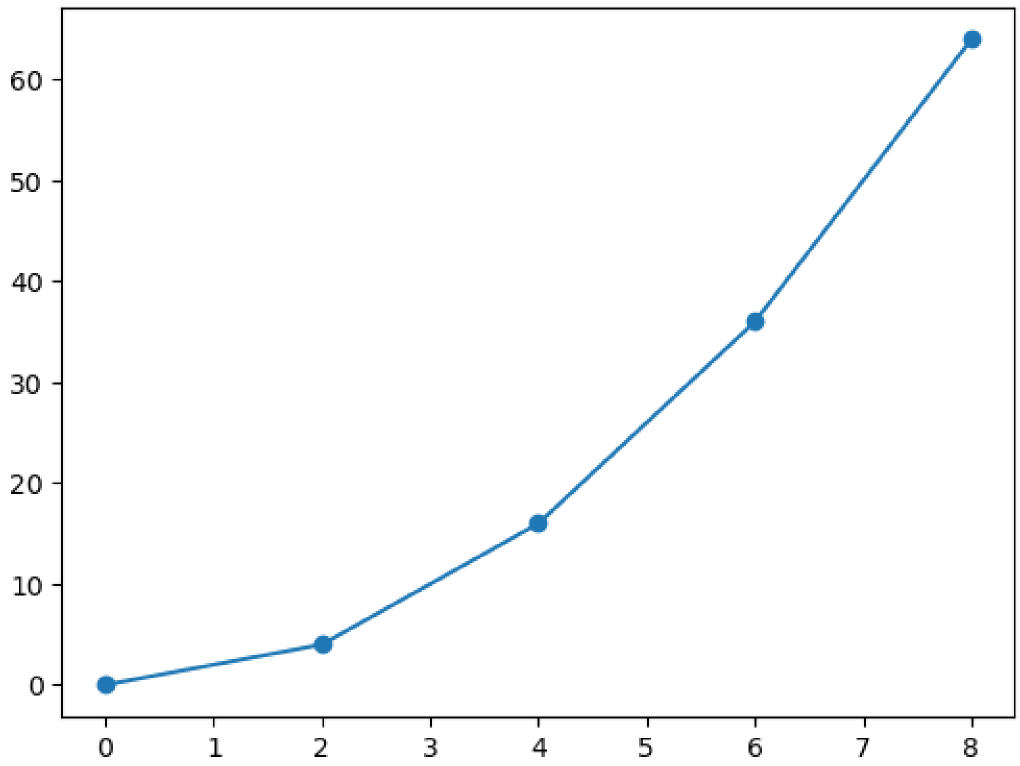
```
[0 2 4 6 8] [0, 4, 16, 36, 64]
```



markers

```
[13]: x=np.arange(0,10,2)
      y=x**2
      print(x,y)
      plt.plot(x,y,marker="o")
      plt.show()
```

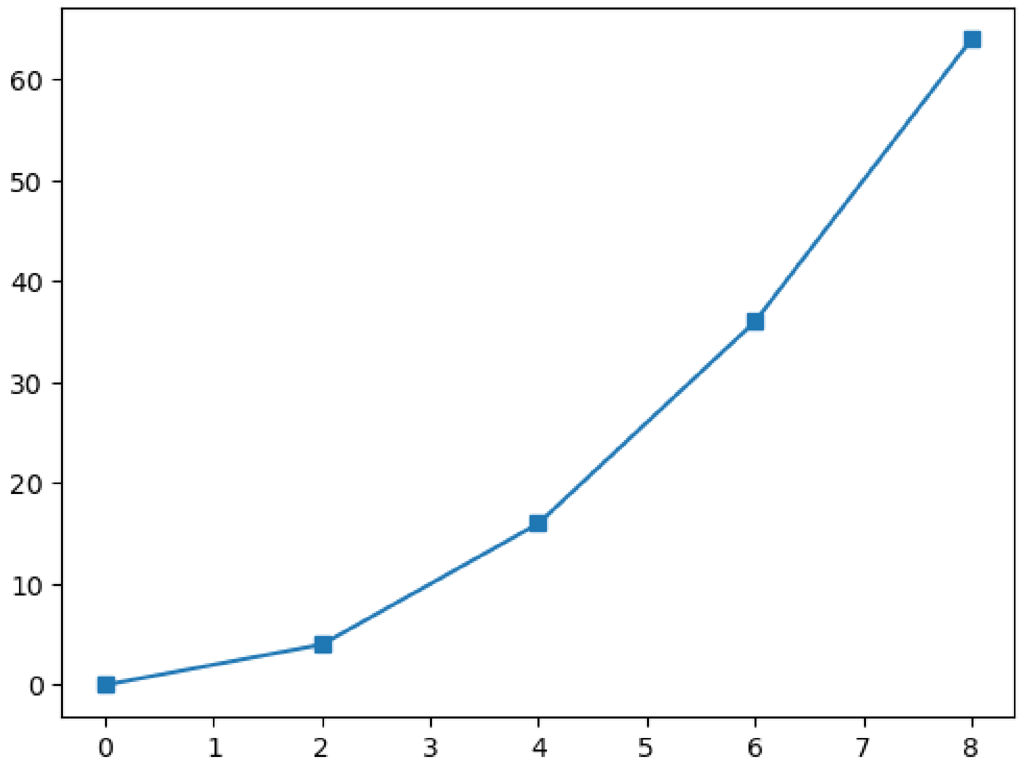
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[14]:

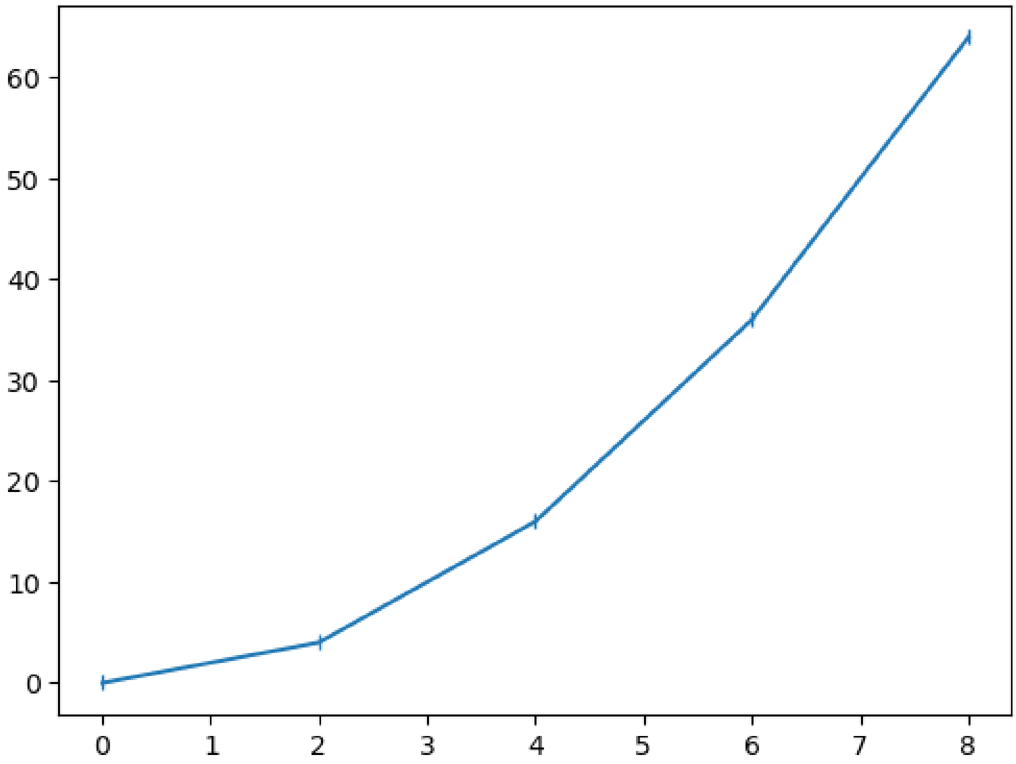
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="s")
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[15]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="|")
plt.show()
```

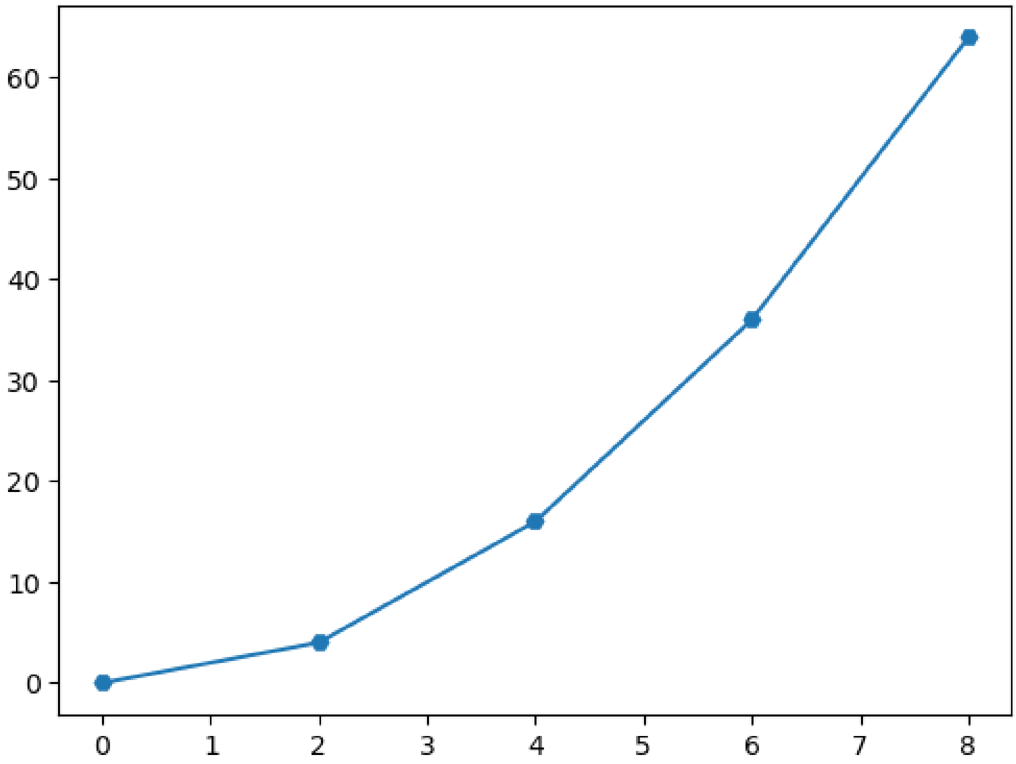
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[16]:

```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="H")
plt.show()
```

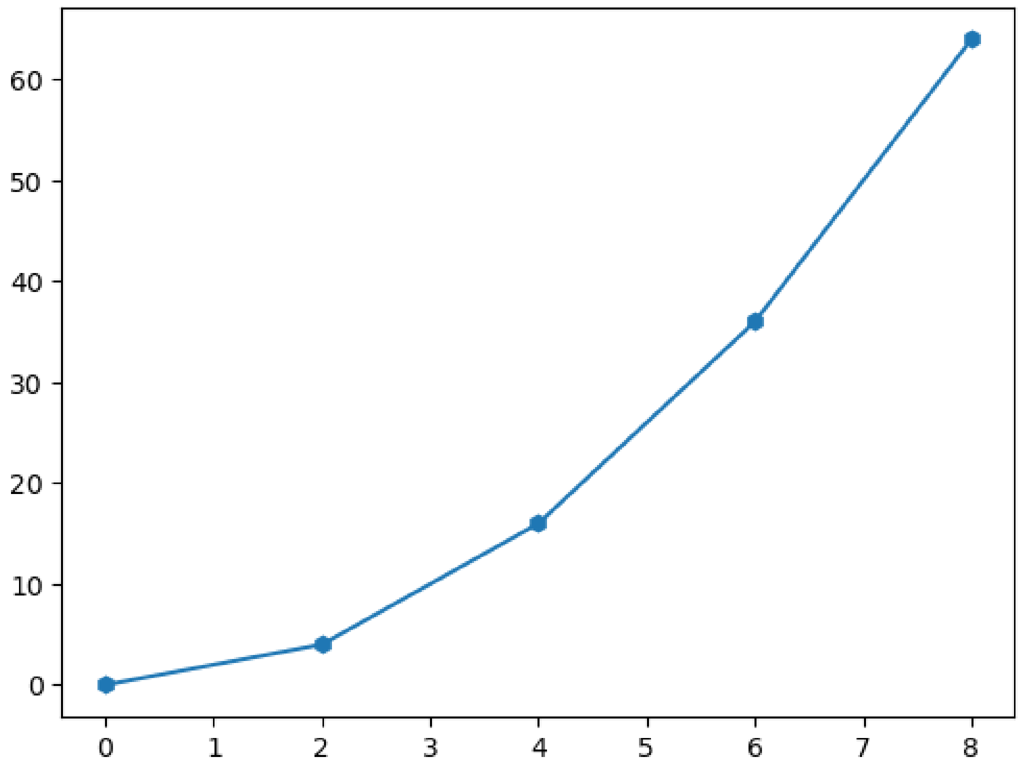
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[17]:

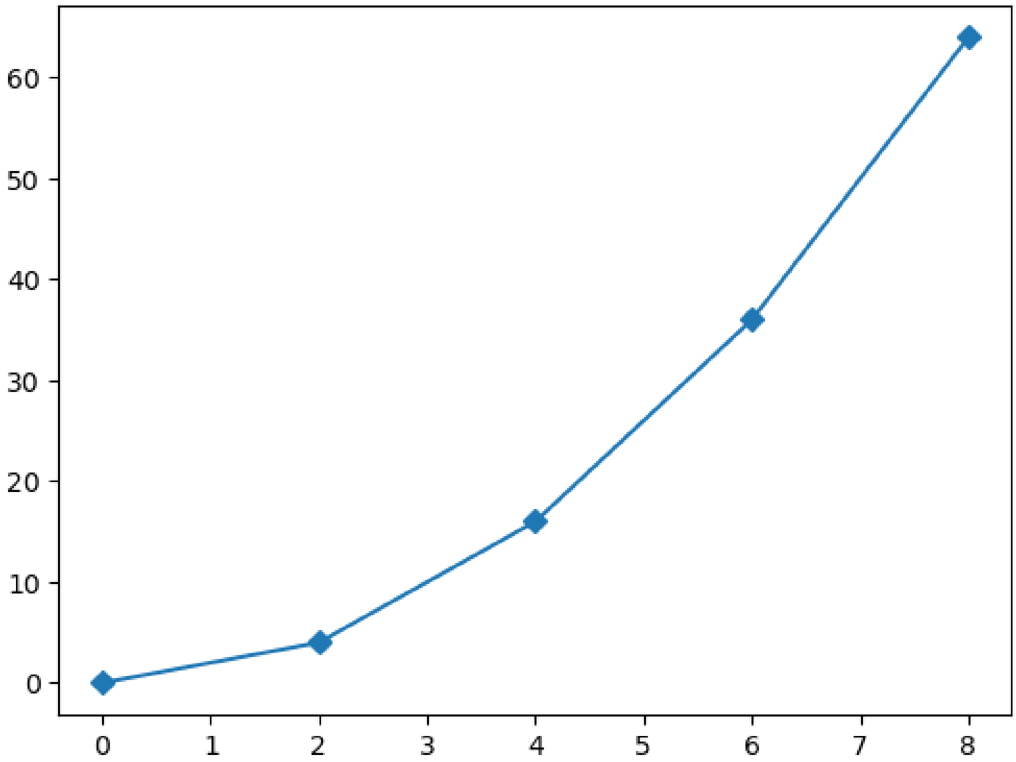
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="h")
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



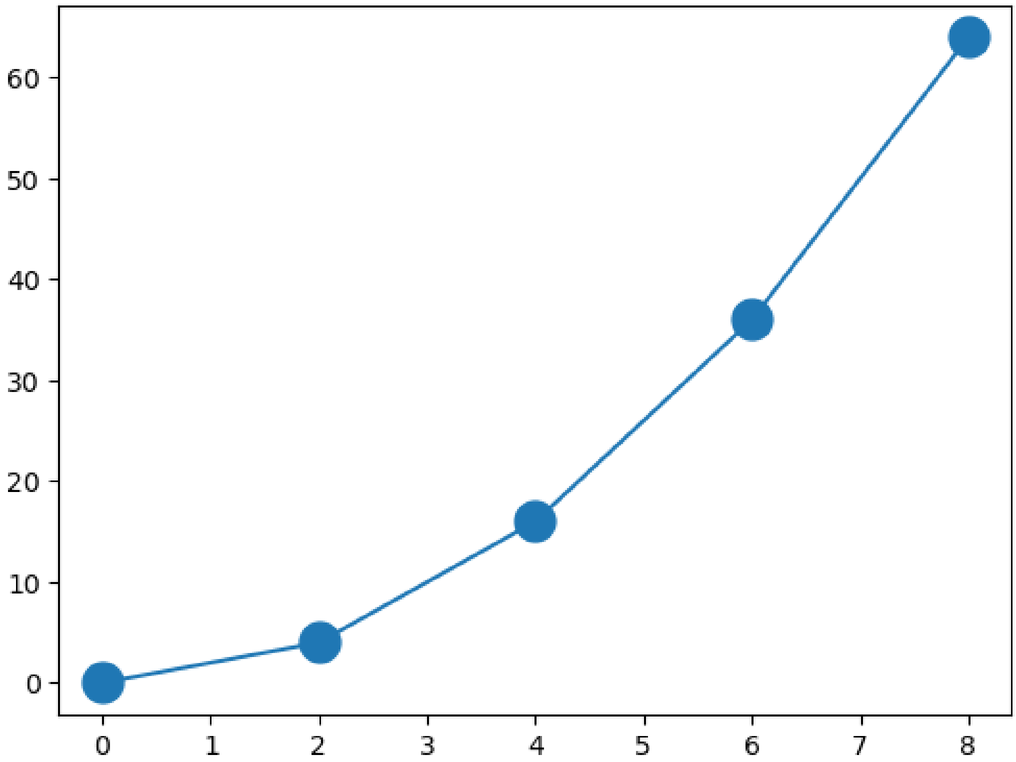
```
[18]: x=np.arange(0,10,2)
      y=x**2
      print(x,y)
      plt.plot(x,y,marker="D")
      plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



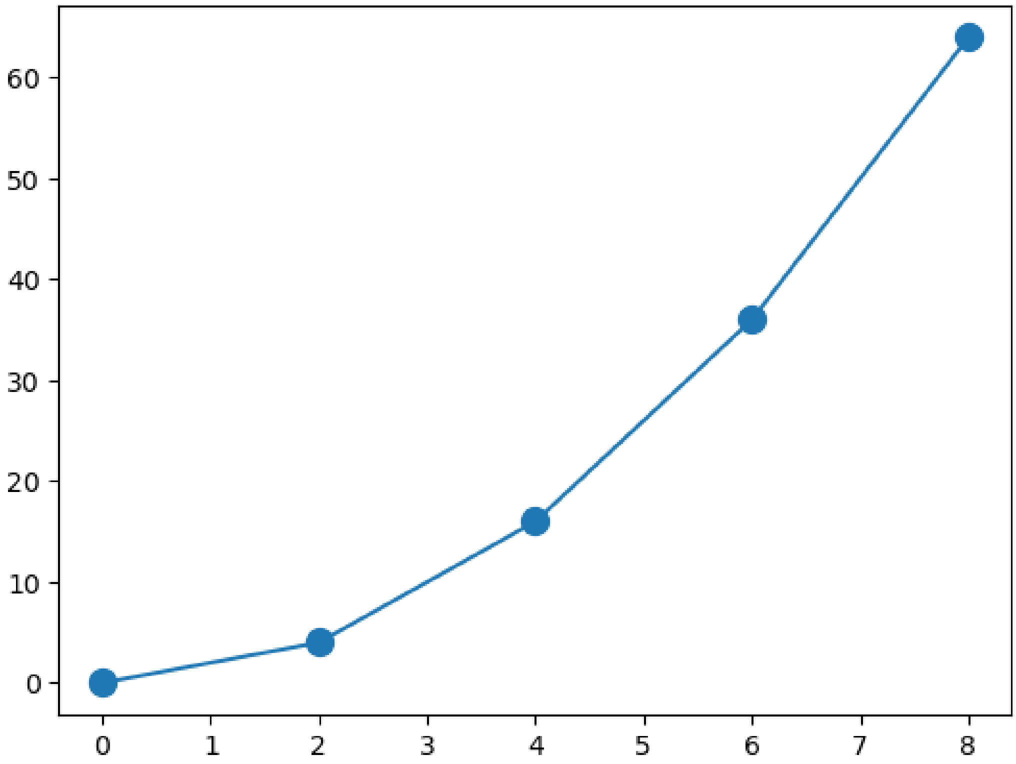
[19]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="o",ms='15')
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[20]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="o",ms="10")
plt.show()
```

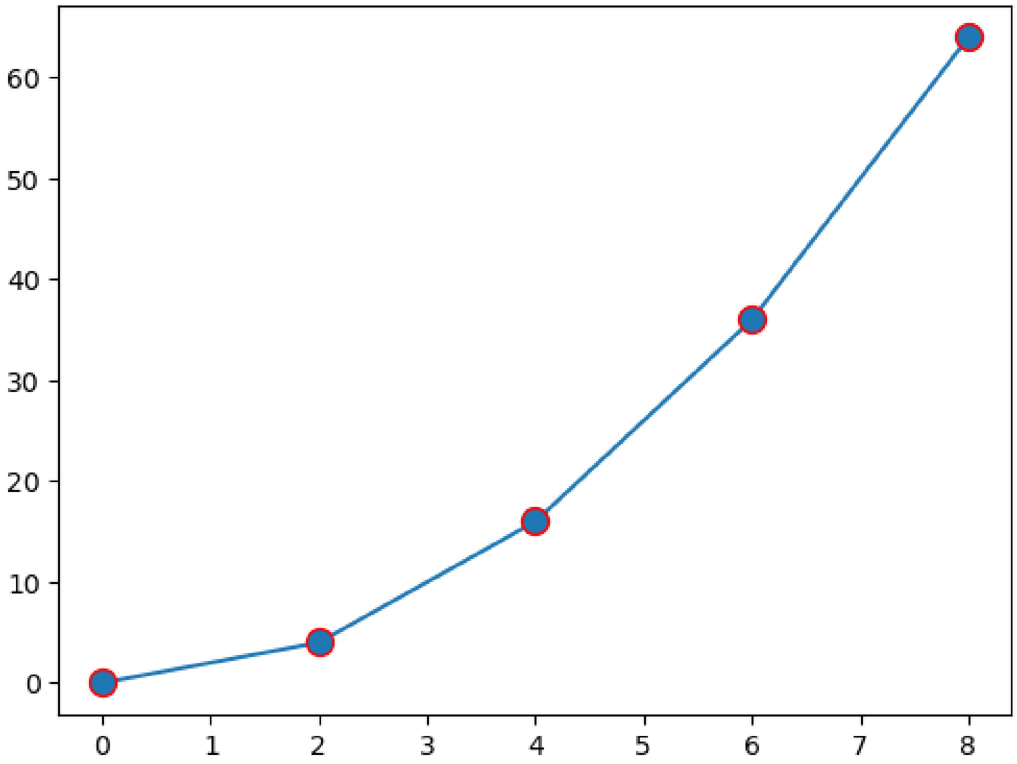
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[21]:

```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="o",ms="10",mec="r")
plt.show()
```

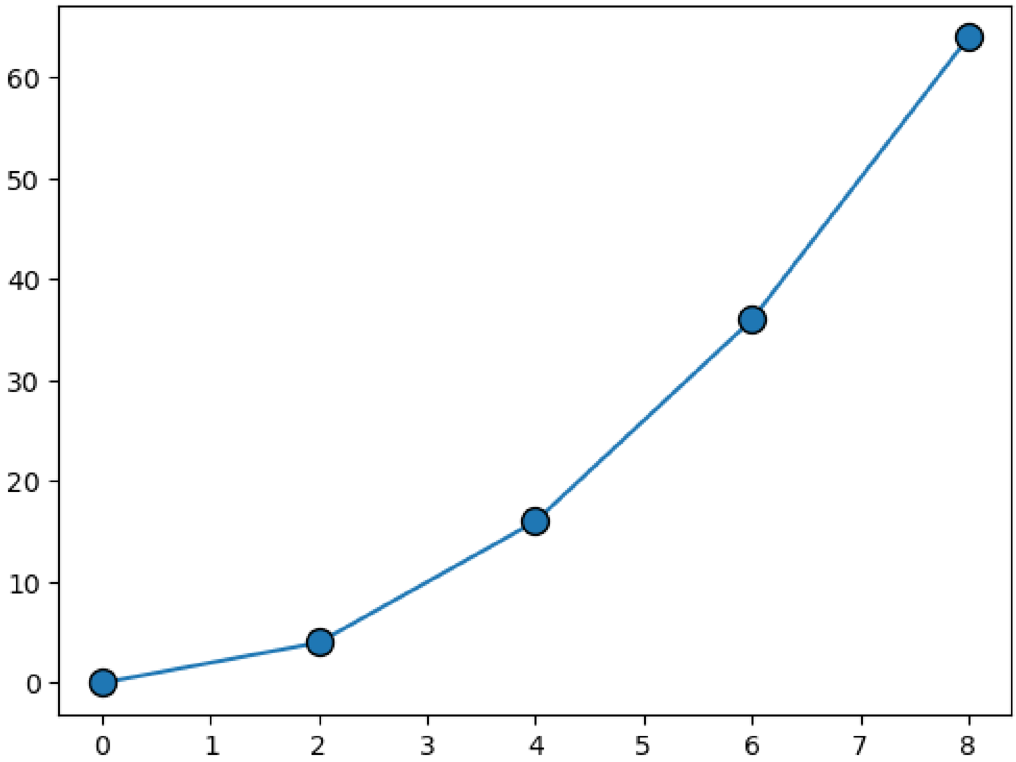
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[22]:

```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="o",ms="10",mec="k")
plt.show()
```

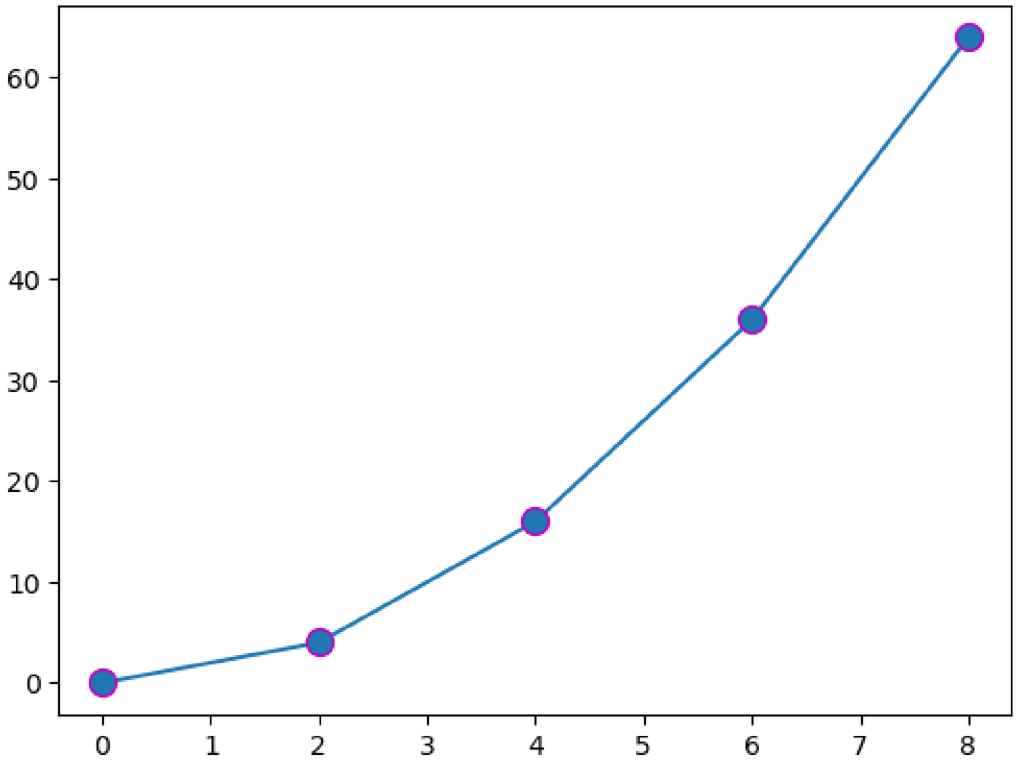
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[24]:

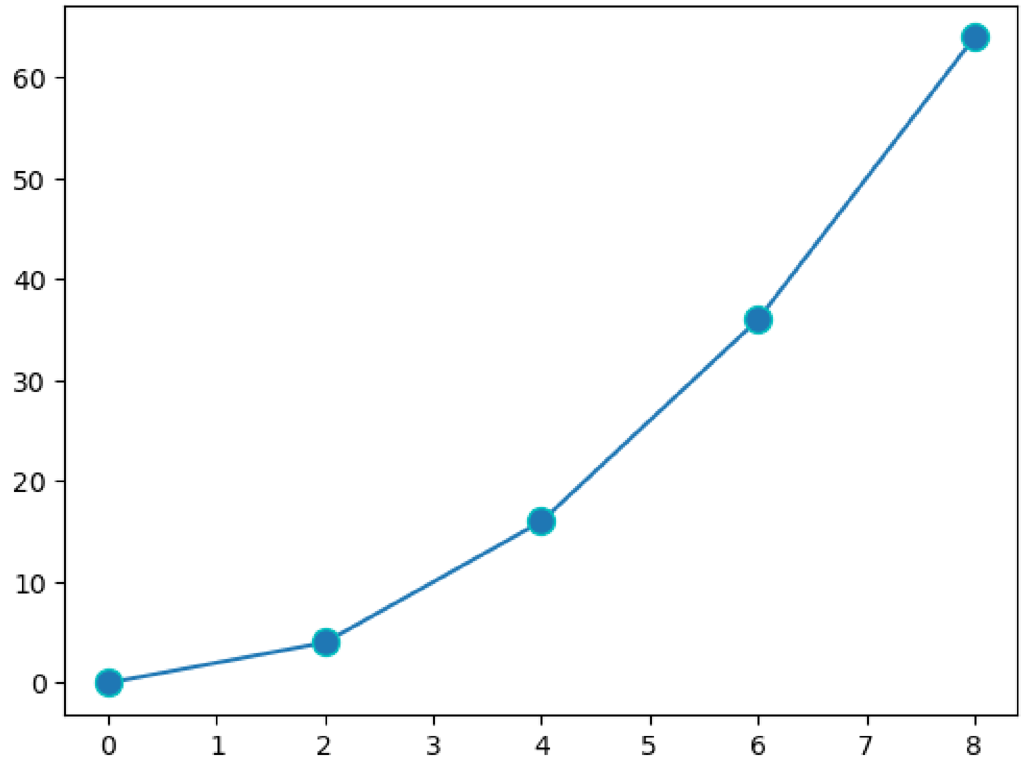
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="o",ms="10",mec="m")
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[25]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="o",ms="10",mec="c")
plt.show()
```

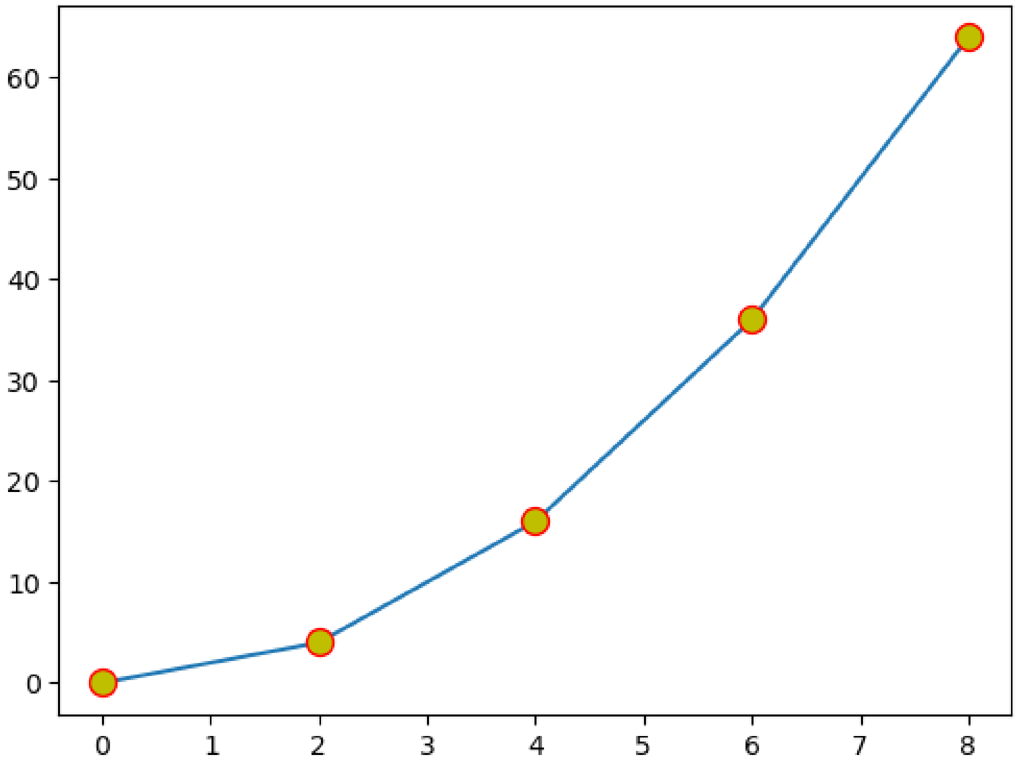
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[26]:

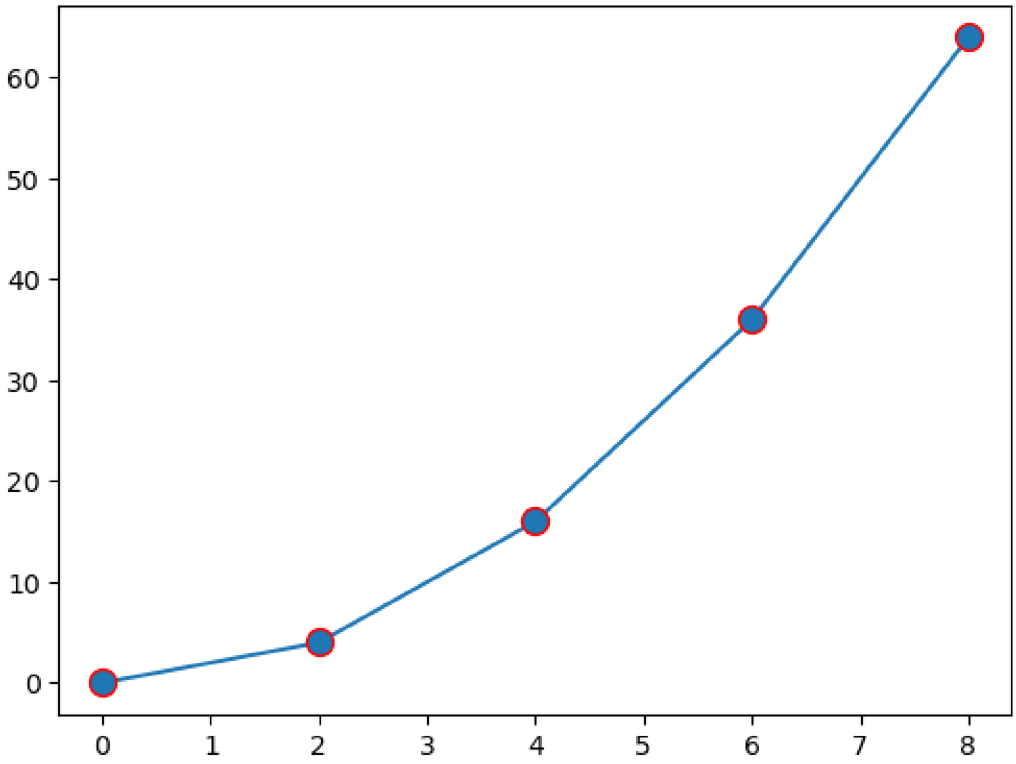
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="o",ms="10",mec="r",mfc="y")
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



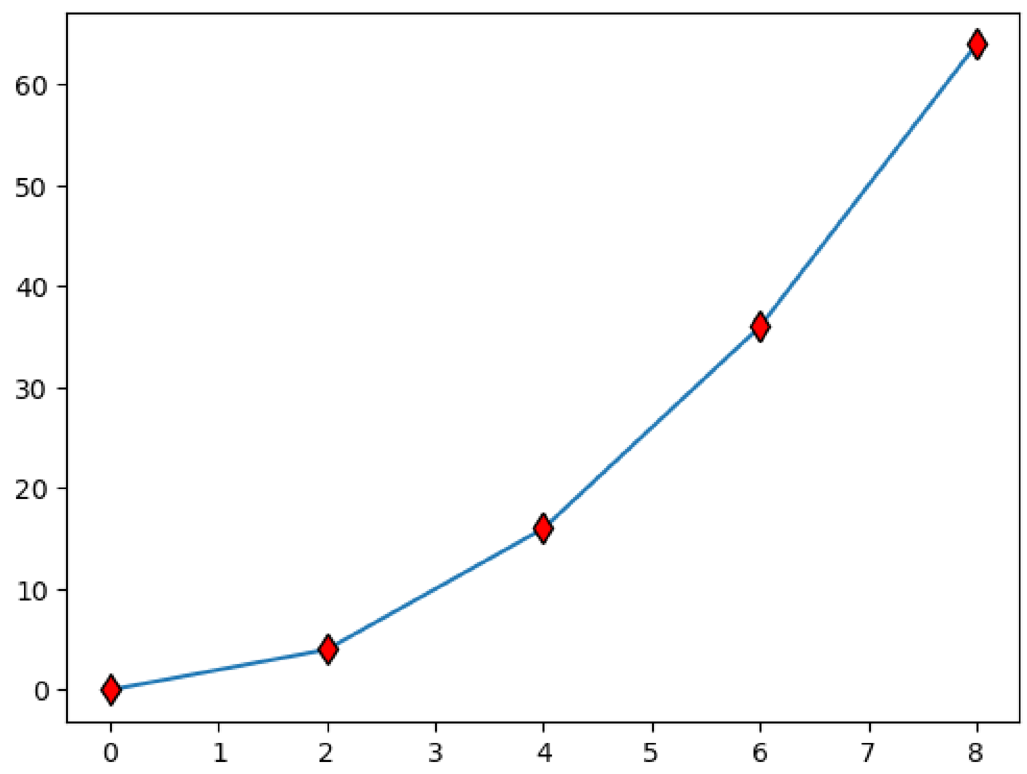
[27]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="o",ms="10",mec="r")
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



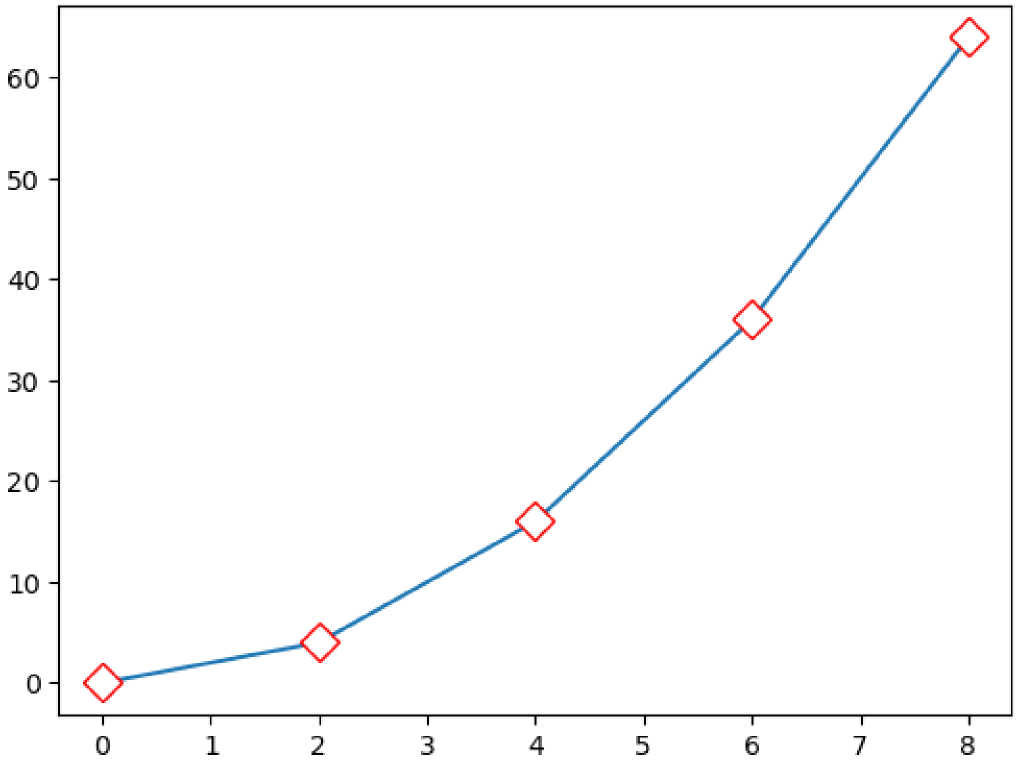
```
[29]: x=np.arange(0,10,2)
      y=x**2
      print(x,y)
      plt.plot(x,y,marker="d",ms="8",mec="k",mfc="r")
      plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[30]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,marker="D",ms="10",mec="r",mfc="w")
plt.show()
```

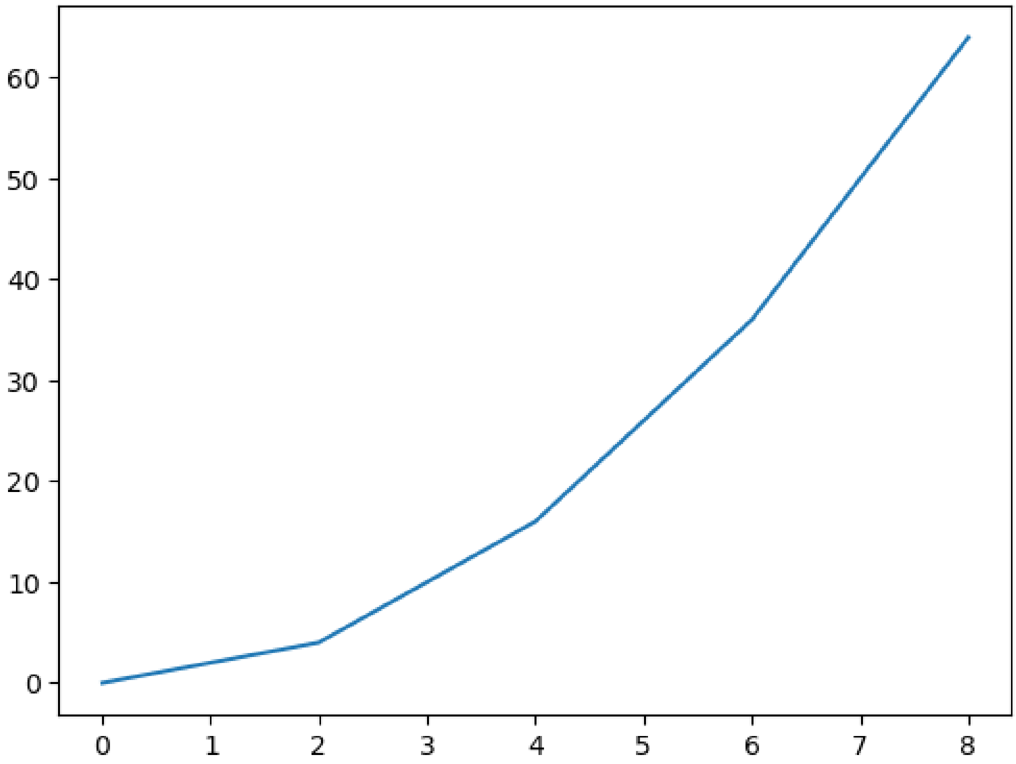
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



lines in graph size,color,width

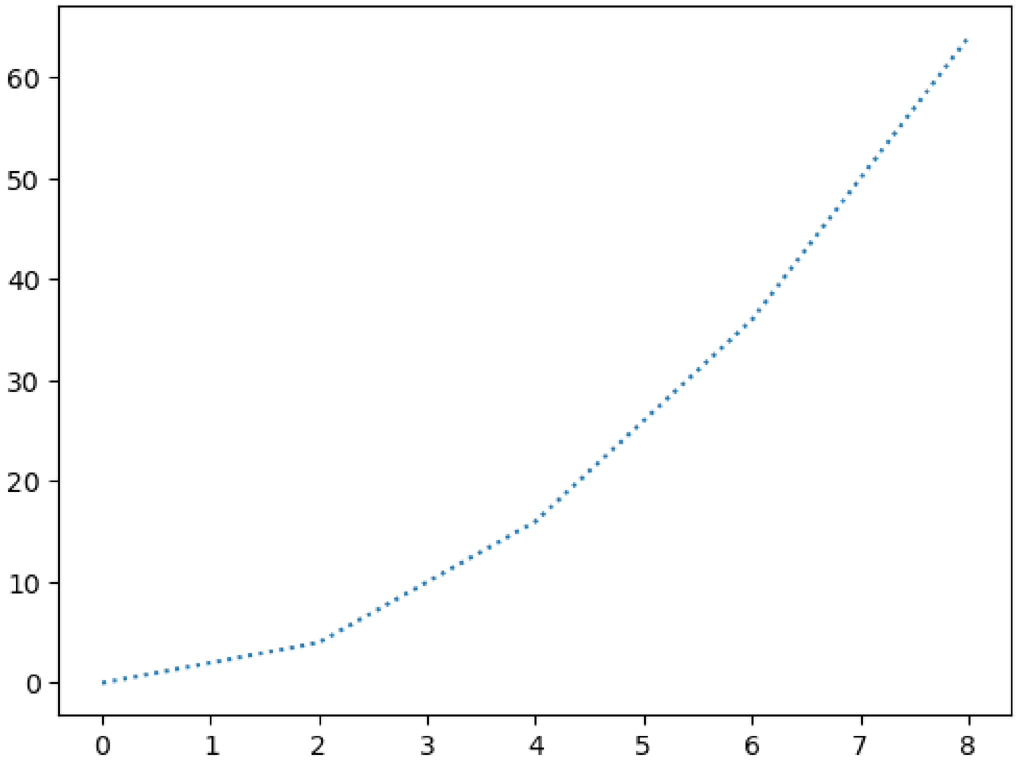
[32]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y)
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



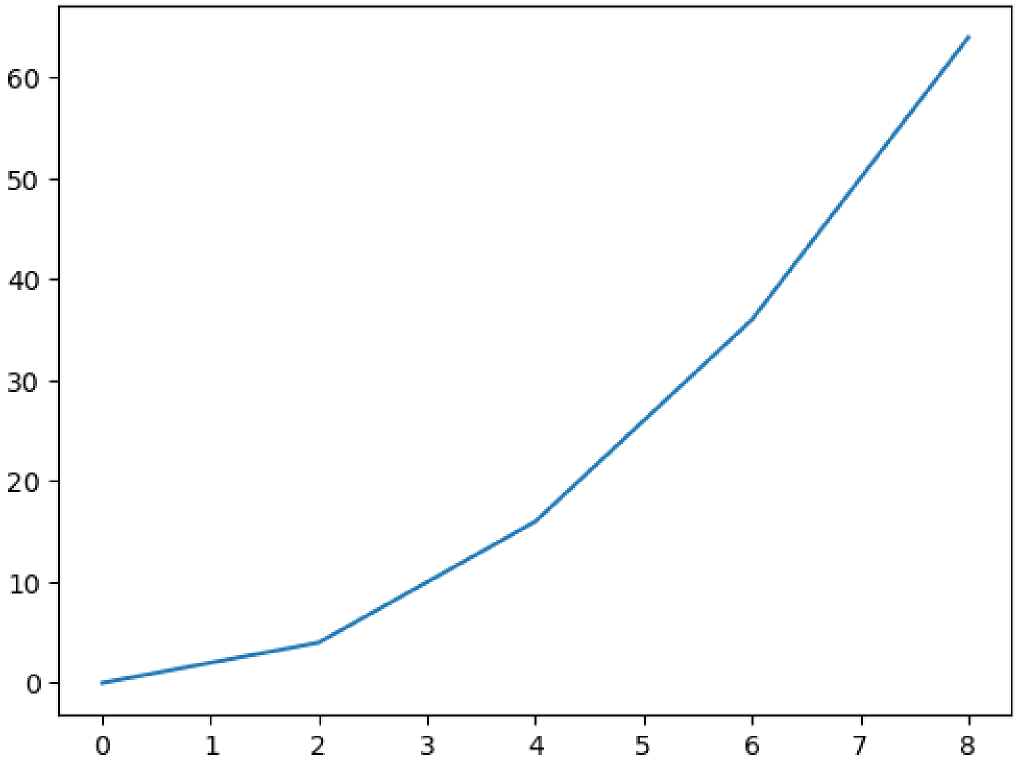
[33]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,ls="dotted")
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[34]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,ls="solid")
plt.show()
```

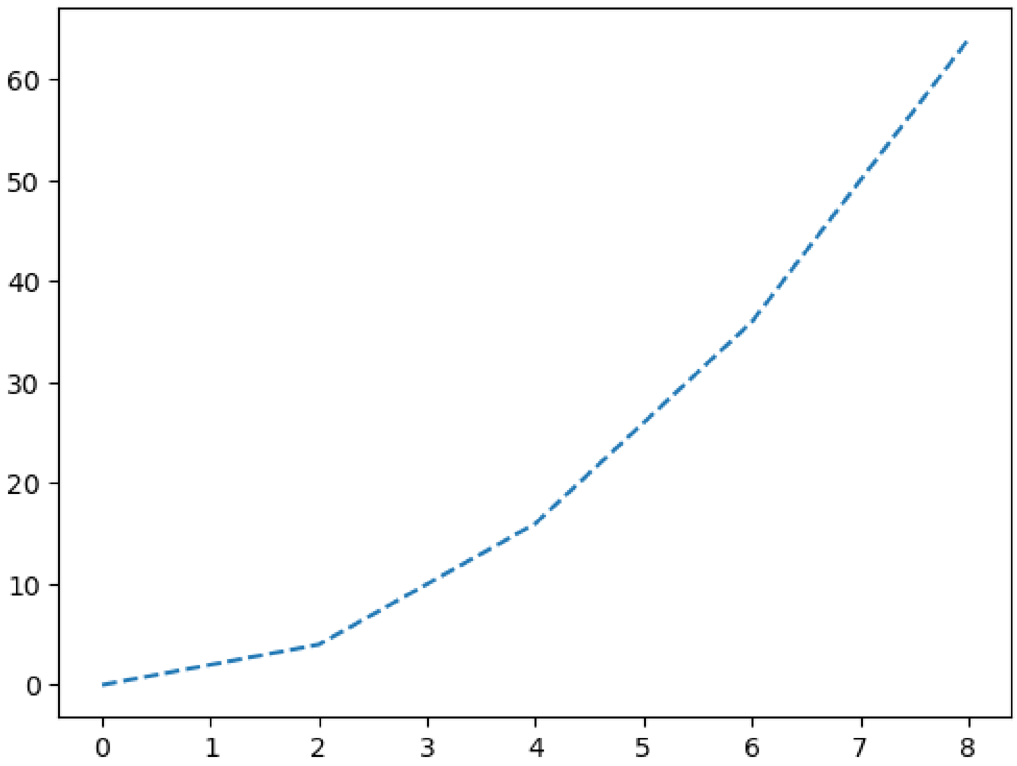
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



[35]:

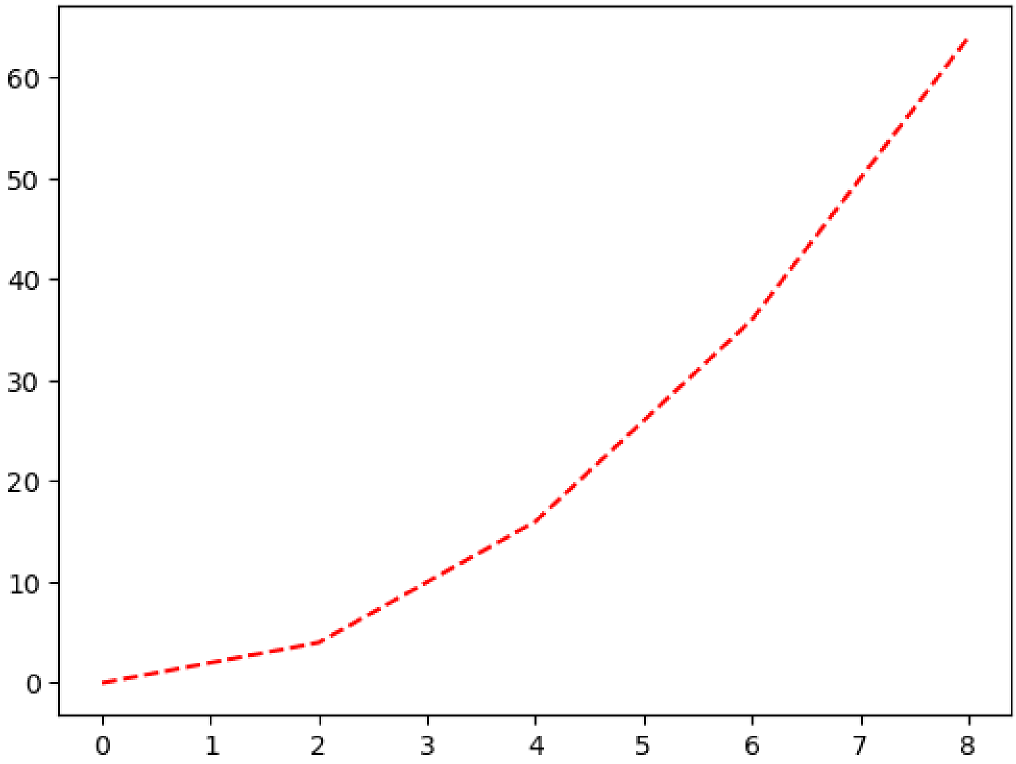
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,ls='dashed')
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



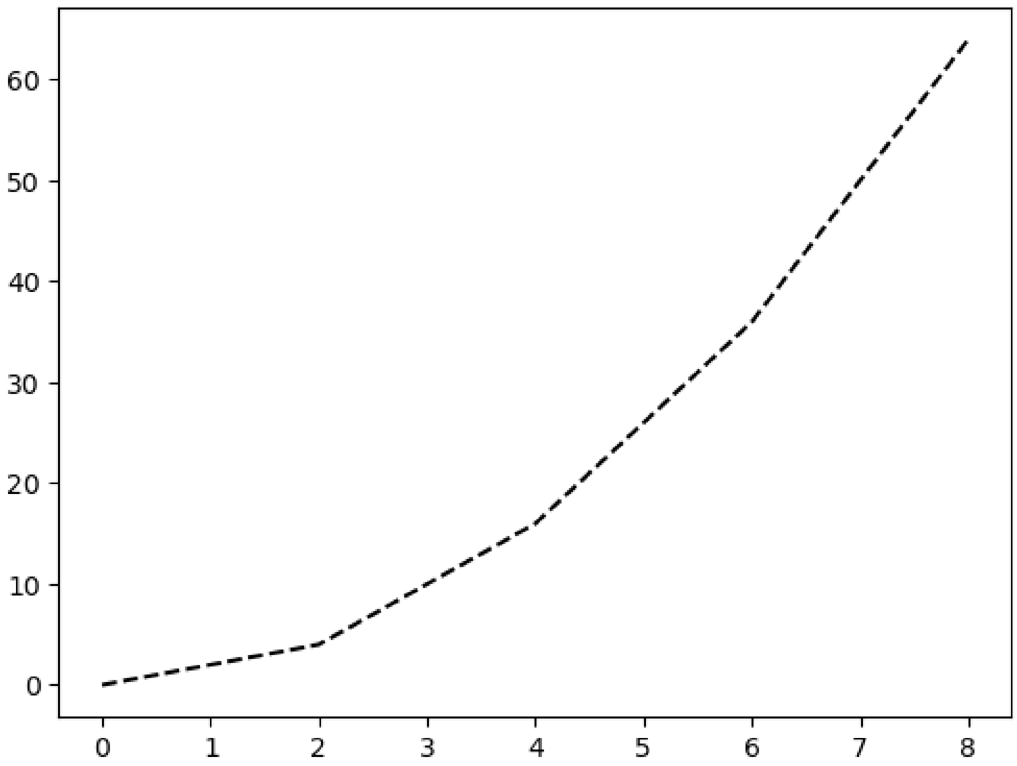
[36]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,ls='dashed',c='r')
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



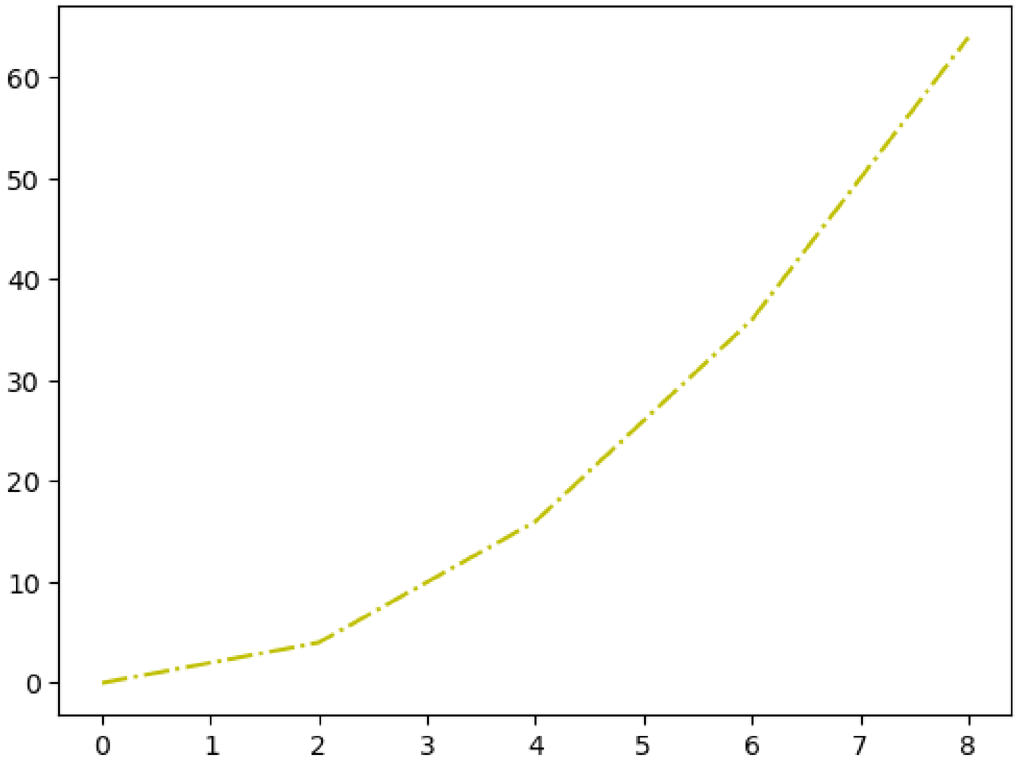
[37]:
```
x=np.arange(0,10,2)
y=x**2
print(x,y)
plt.plot(x,y,ls='dashed',c='k')
plt.show()
```

```
[0 2 4 6 8] [ 0  4 16 36 64]
```



```
[39]: x=np.arange(0,10,2)
      y=x**2
      print(x,y)
      plt.plot(x,y,ls='dashdot',c='y')
      plt.show()
```

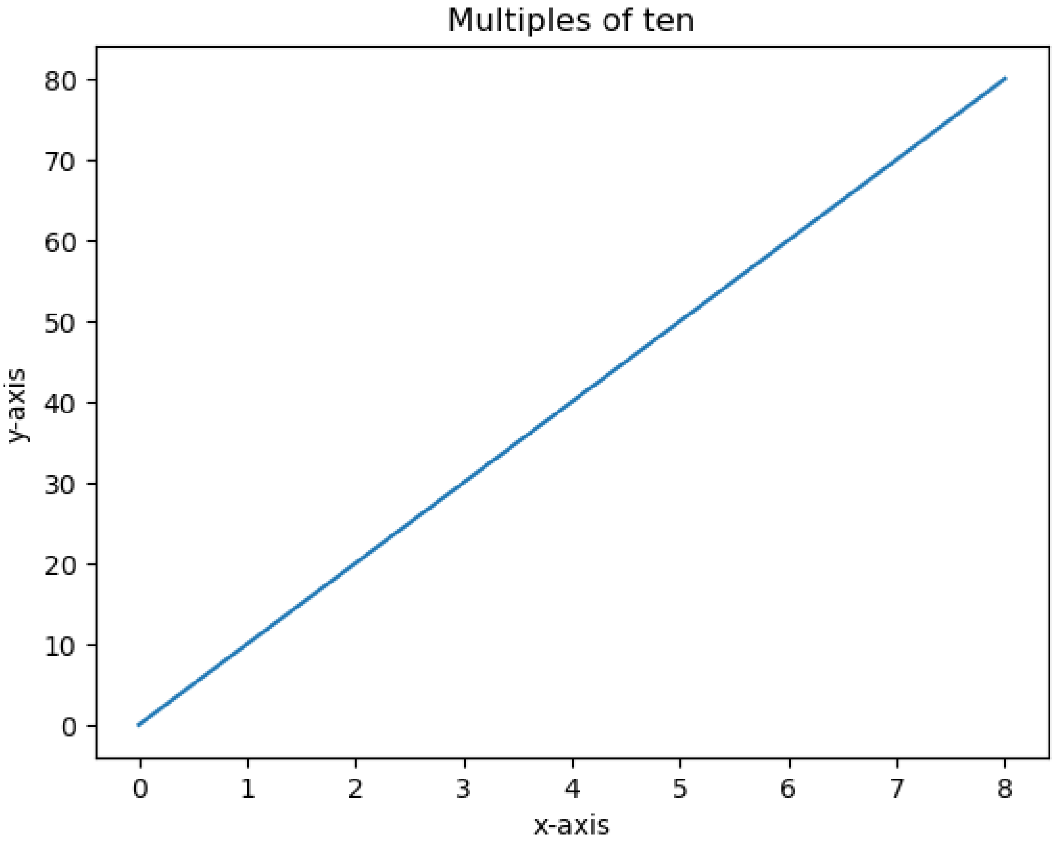
```
[0 2 4 6 8] [ 0  4 16 36 64]
```



Front properties on line graph

```
[41]: x=np.arange(0,10,2)
      y=x*10
      plt.title("Multiples of ten")
      plt.xlabel('x-axis')
      plt.ylabel('y-axis')
      plt.plot(x,y)
      plt.show
```

```
[41]: <function matplotlib.pyplot.show(close=None, block=None)>
```

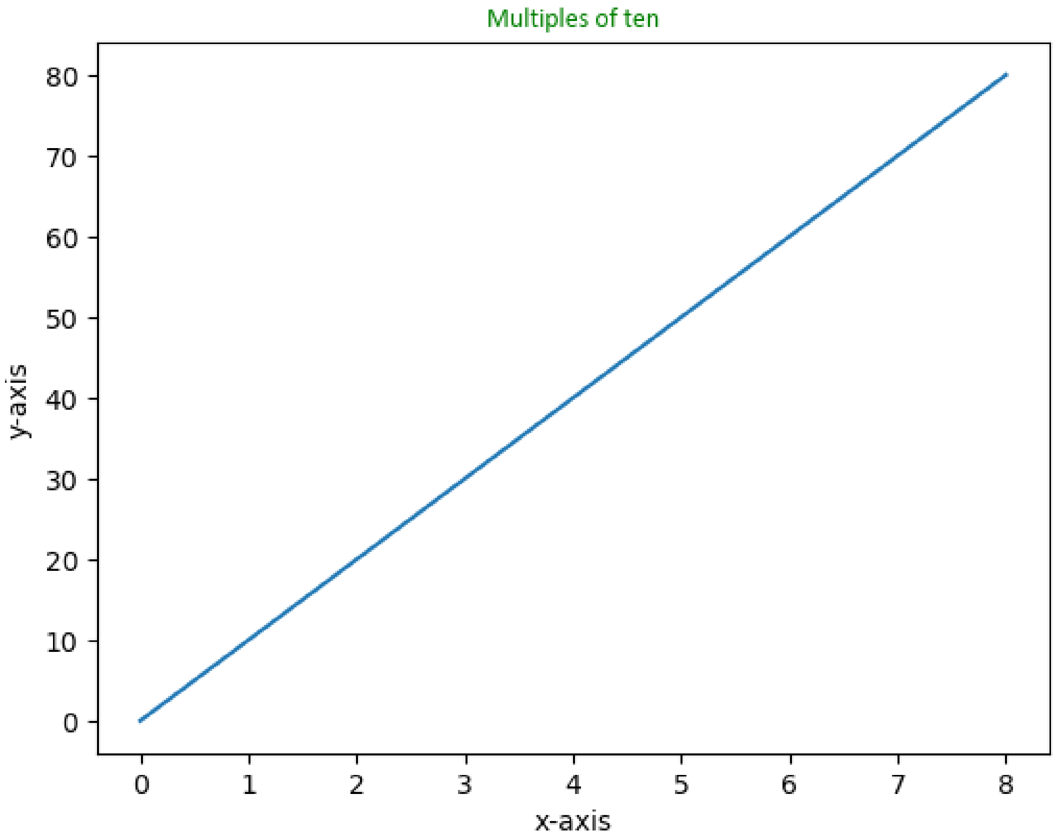


[42]:

```
x=np.arange(0,10,2)
y=x*10
f1={'family':'arial','color':'red','size':15}
f1={'family':'calibri','color':'green','size':10}
plt.title("Multiples of ten",fontdict=f1)
plt.xlabel('x-axis')
plt.ylabel('y-axis')
plt.plot(x,y)
plt.show
```

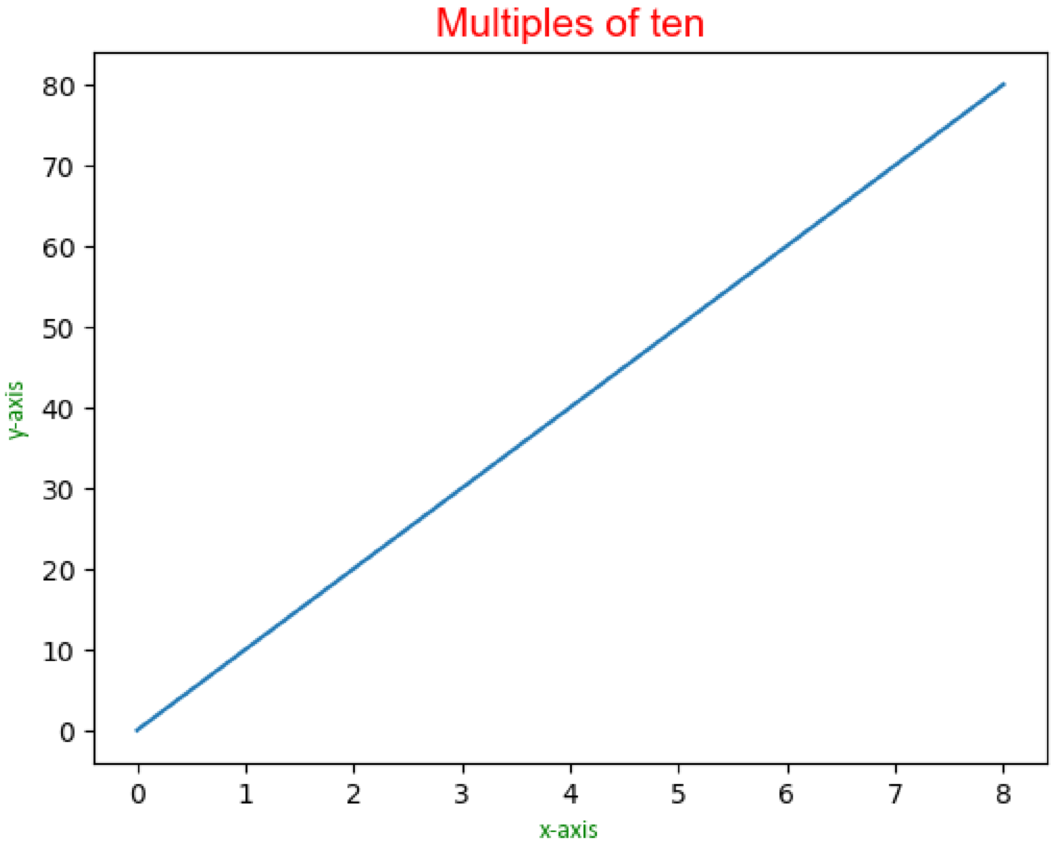
[42]:

```
<function matplotlib.pyplot.show(close=None, block=None)>
```



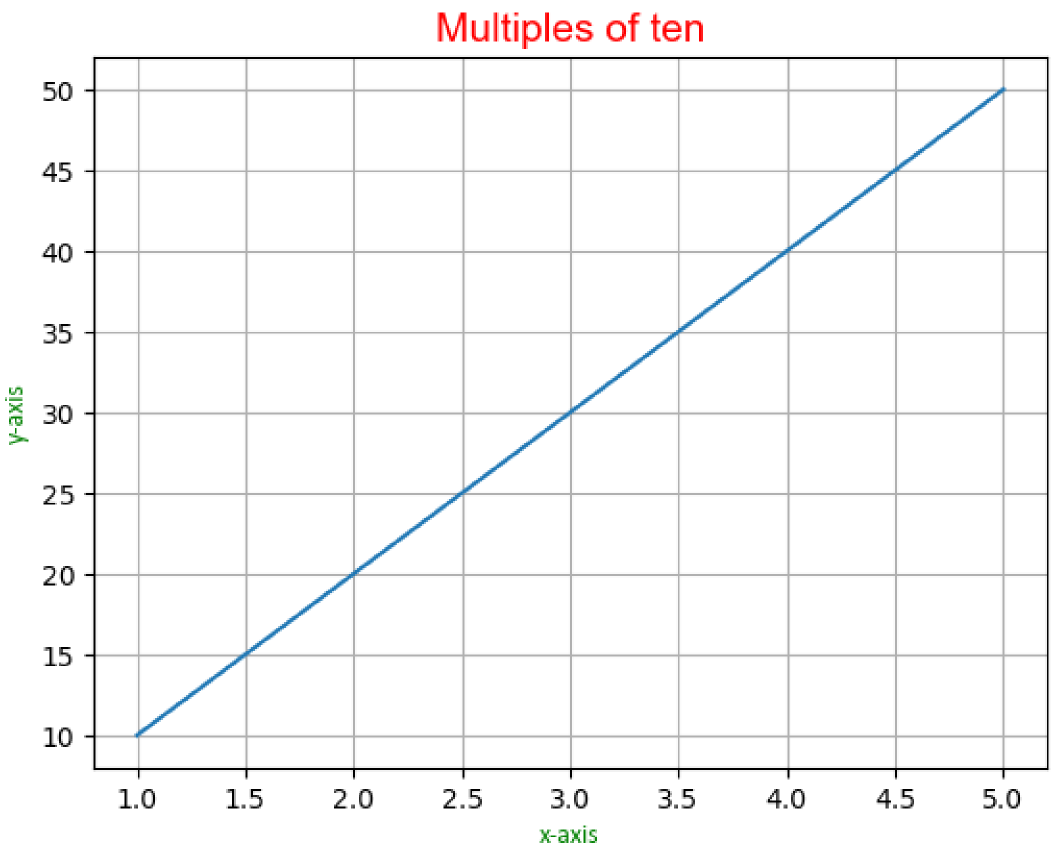
```
[43]: x=np.arange(0,10,2)
      y=x*10
      f1={'family':'arial','color':'red','size':15}
      f2={'family':'calibri','color':'green','size':10}
      plt.title("Multiples of ten",fontdict=f1)
      plt.xlabel('x-axis',f2)
      plt.ylabel('y-axis',f2)
      plt.plot(x,y)
      plt.show
```

```
[43]: <function matplotlib.pyplot.show(close=None, block=None)>
```



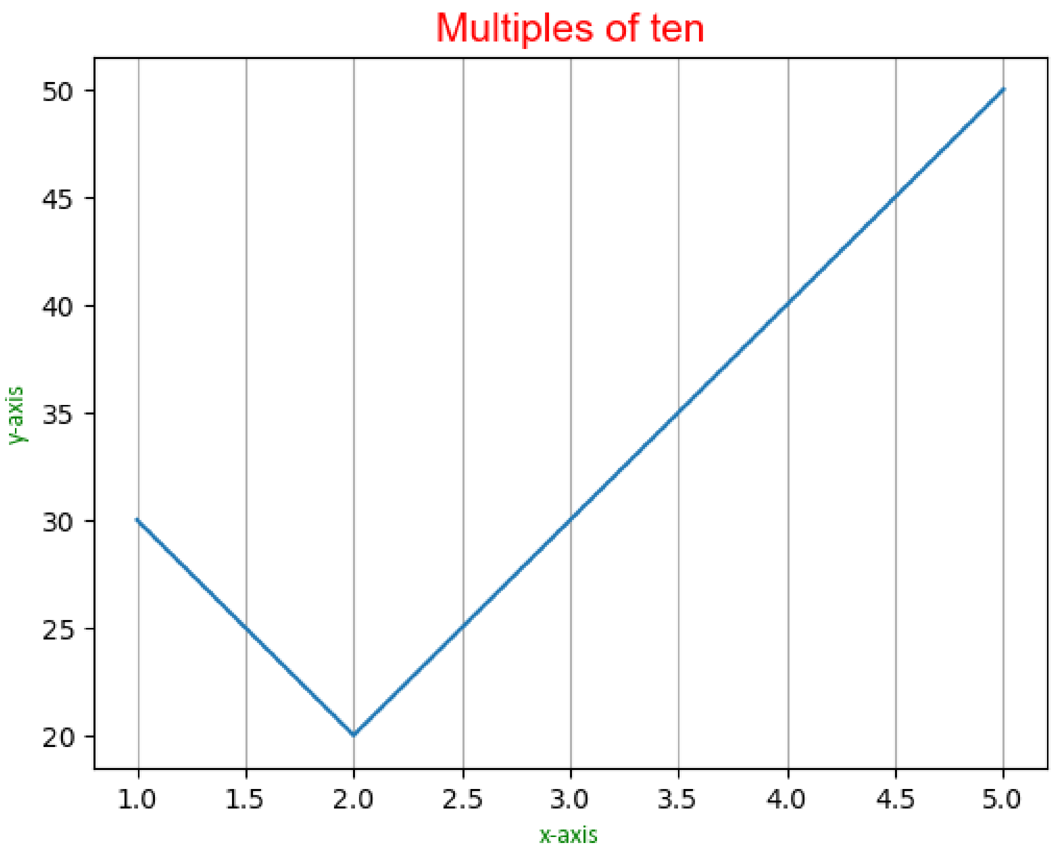
Grid lines

[44]:
```
x=[1,2,3,4,5]
y=[10,20,30,40,50]
f1={'family':'arial','color':'red','size':15}
f2={'family':'calibri','color':'green','size':10}
plt.title("Multiples of ten",fontdict=f1)
plt.xlabel('x-axis',f2)
plt.ylabel('y-axis',f2)
plt.plot(x,y)
plt.grid()
plt.show()
```



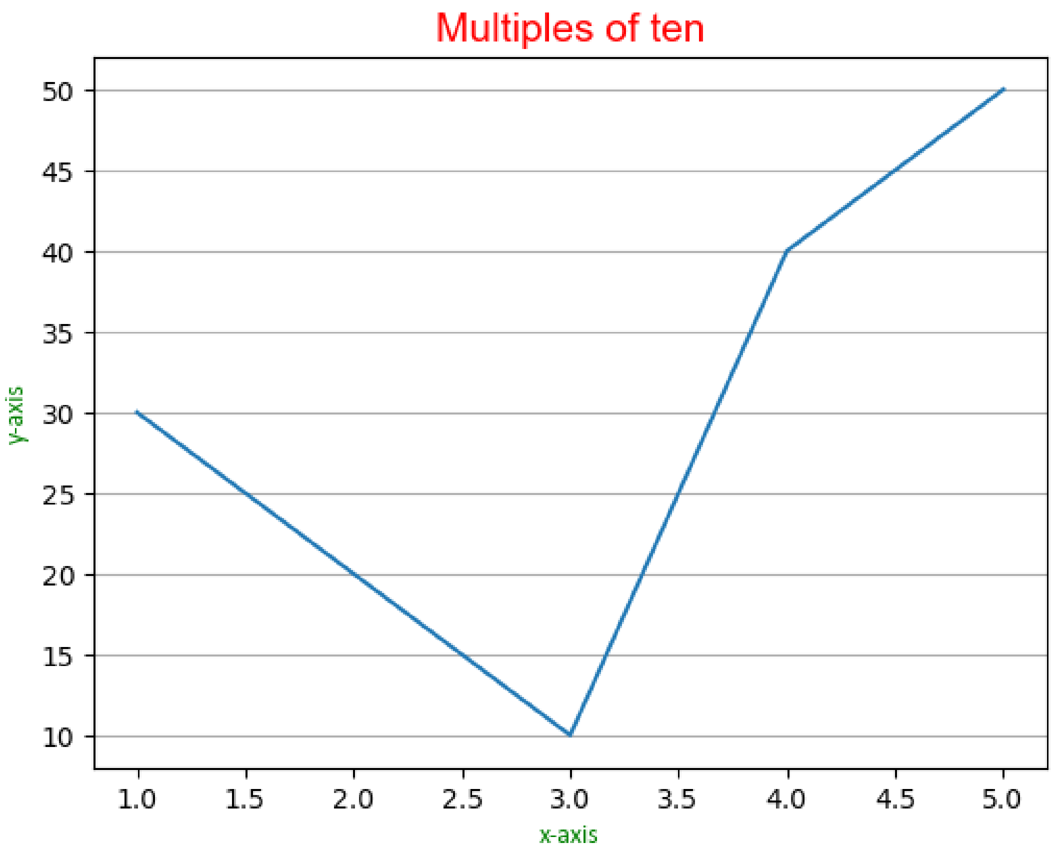
[45]:

```
x=[1,2,3,4,5]
y=[30,20,30,40,50]
f1={'family':'arial','color':'red','size':15}
f2={'family':'calibri','color':'green','size':10}
plt.title("Multiples of ten",fontdict=f1)
plt.xlabel('x-axis',f2)
plt.ylabel('y-axis',f2)
plt.plot(x,y)
plt.grid(axis='x')
plt.show()
```



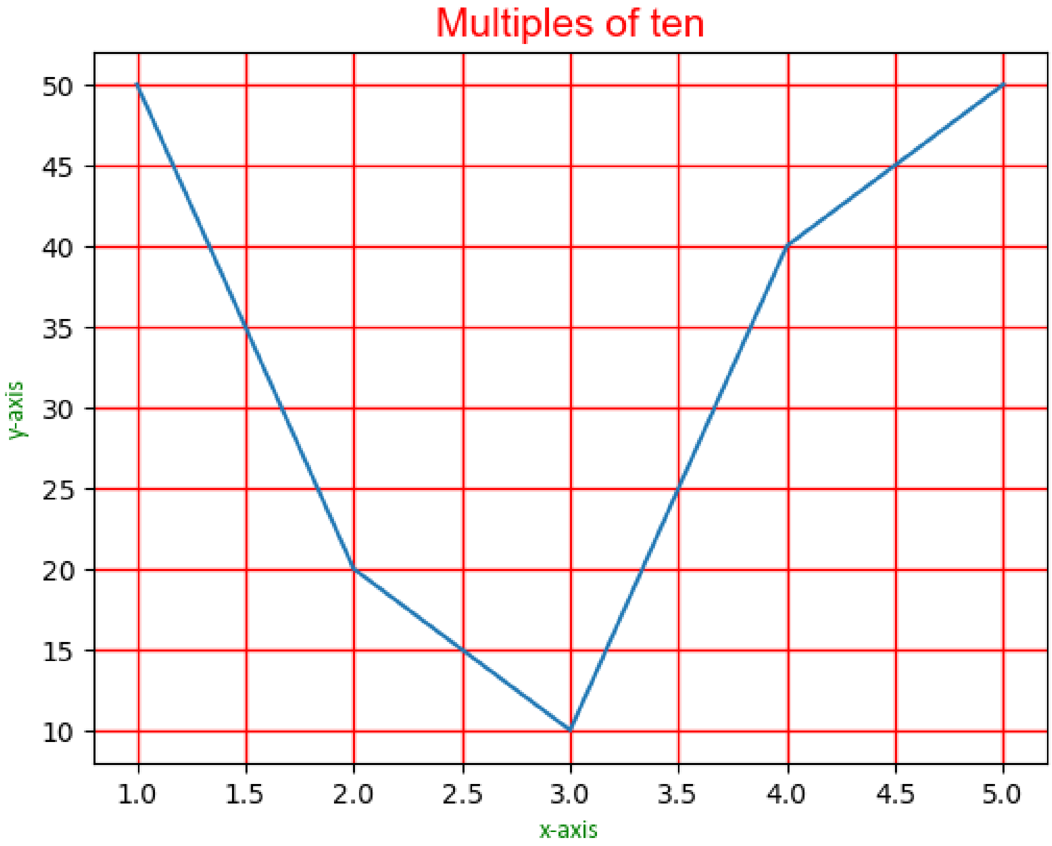
[46]:

```
x=[1,2,3,4,5]
y=[30,20,10,40,50]
f1={'family':'arial','color':'red','size':15}
f2={'family':'calibri','color':'green','size':10}
plt.title("Multiples of ten",fontdict=f1)
plt.xlabel('x-axis',f2)
plt.ylabel('y-axis',f2)
plt.plot(x,y)
plt.grid(axis='y')
plt.show()
```

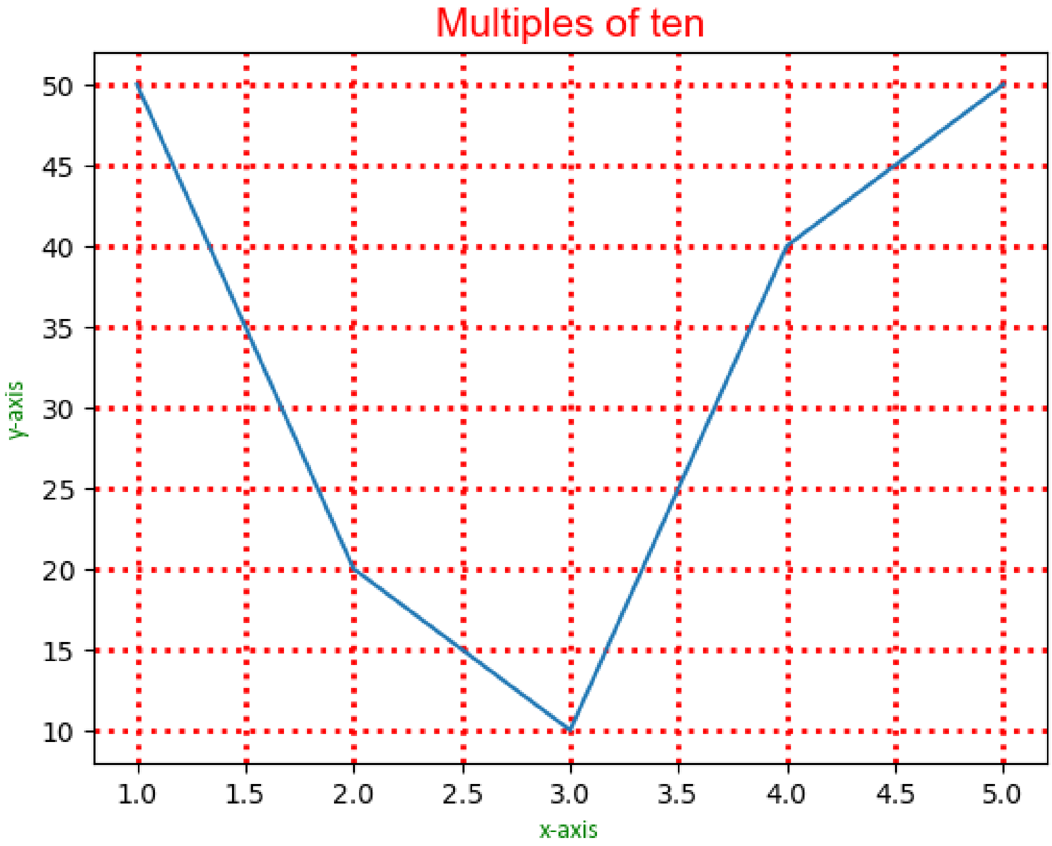


[48]:

```
x=[1,2,3,4,5]
y=[50,20,10,40,50]
f1={'family':'arial','color':'red','size':15}
f2={'family':'calibri','color':'green','size':10}
plt.title("Multiples of ten",fontdict=f1)
plt.xlabel('x-axis',f2)
plt.ylabel('y-axis',f2)
plt.plot(x,y)
plt.grid(axis='both',lw='1',c='r')
plt.show()
```

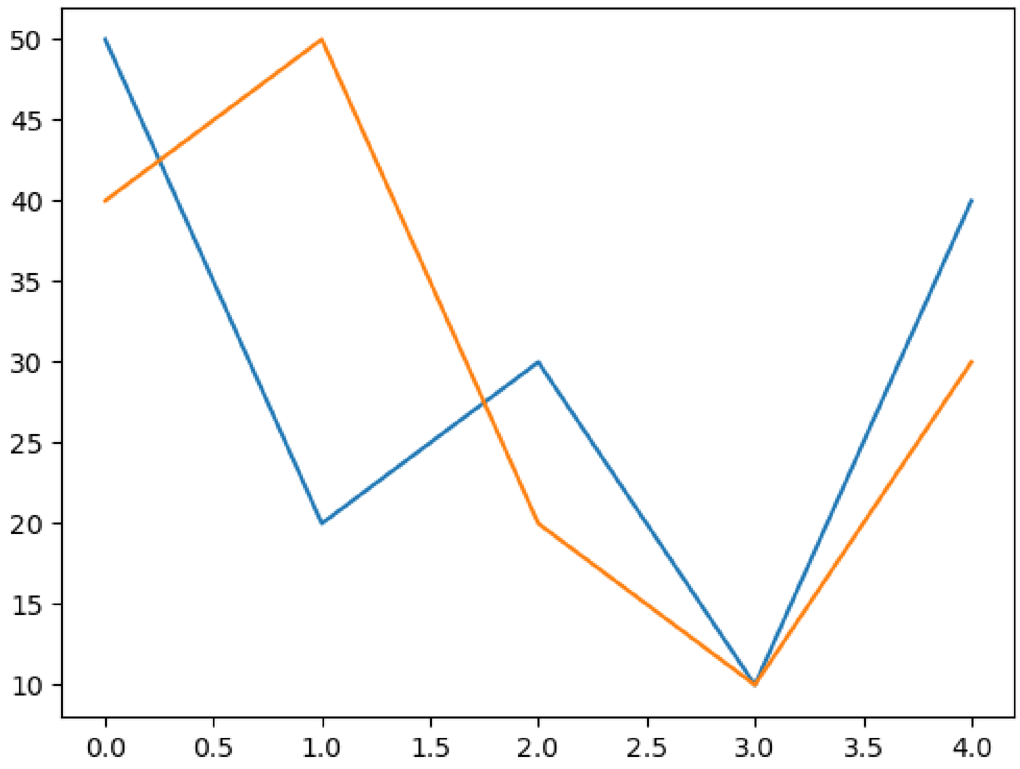


```
[50]: x=[1,2,3,4,5]
      y=[50,20,10,40,50]
      f1={'family':'arial','color':'red','size':15}
      f2={'family':'calibri','color':'green','size':10}
      plt.title("Multiples of ten",fontdict=f1)
      plt.xlabel('x-axis',f2)
      plt.ylabel('y-axis',f2)
      plt.plot(x,y)
      plt.grid(axis='both',lw='2',c='r',ls='dotted')
      plt.show()
```



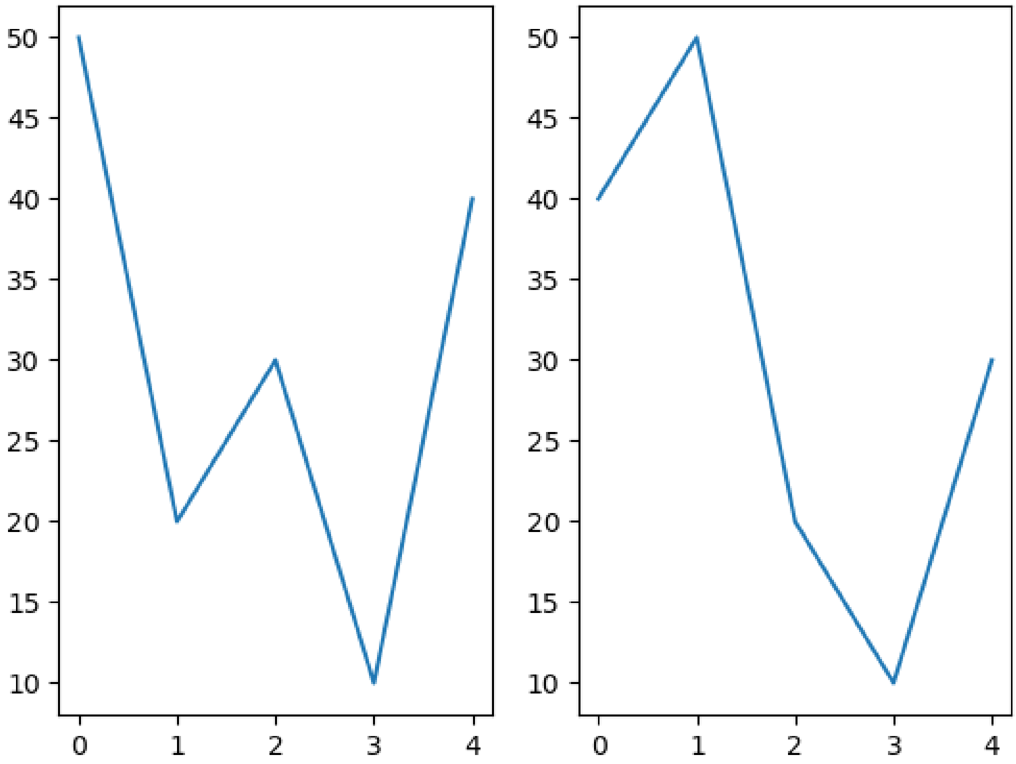
subplots

```
[51]: x=[0,1,2,3,4]
      y1=[50,20,30,10,40]
      y2=[40,50,20,10,30]
      plt.plot(x,y1,x,y2)
      plt.show()
```



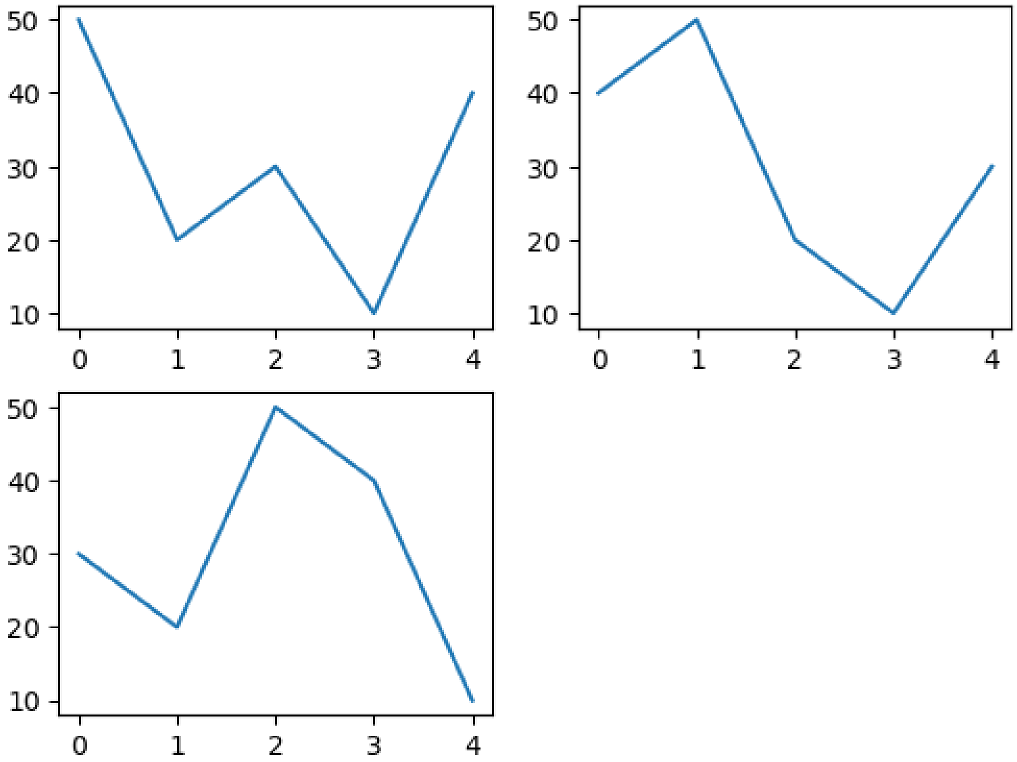
[52]:

```
x=[0,1,2,3,4]
y1=[50,20,30,10,40]
y2=[40,50,20,10,30]
plt.subplot(1,2,1)
plt.plot(x,y1)
plt.subplot(1,2,2)
plt.plot(x,y2)
plt.show()
```

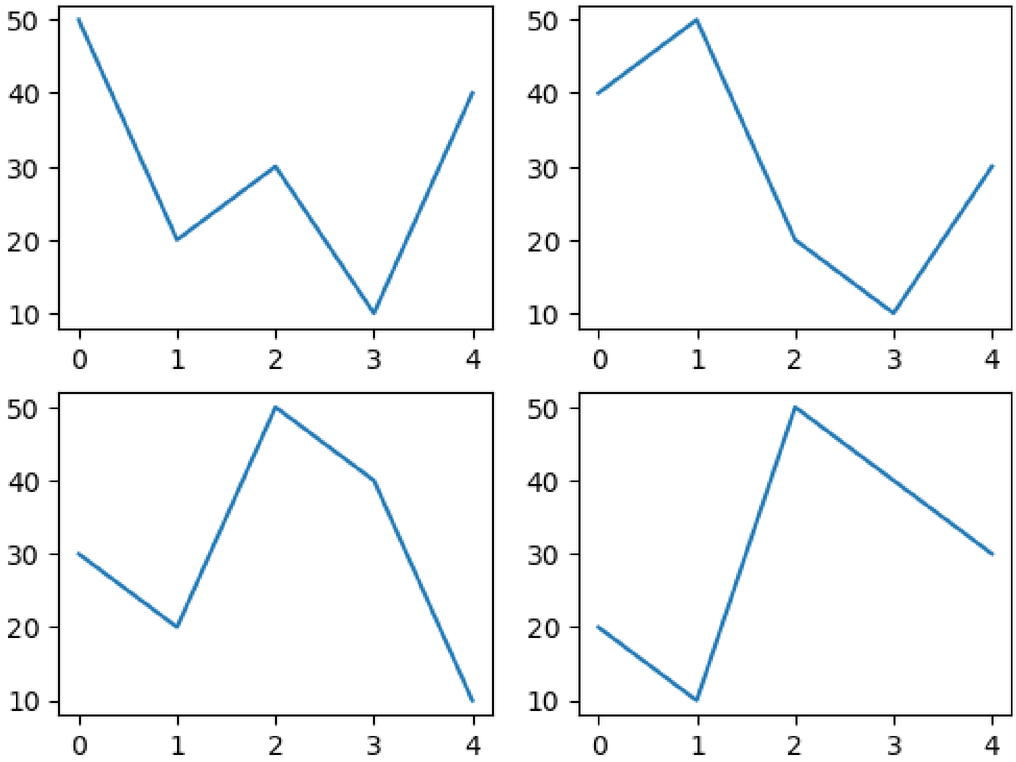


[53]:

```
x=[0,1,2,3,4]
y1=[50,20,30,10,40]
y2=[40,50,20,10,30]
y3=[30,20,50,40,10]

plt.subplot(2,2,1)
plt.plot(x,y1)

plt.subplot(2,2,2)
plt.plot(x,y2)

plt.subplot(2,2,3)
plt.plot(x,y3)

plt.show()
```

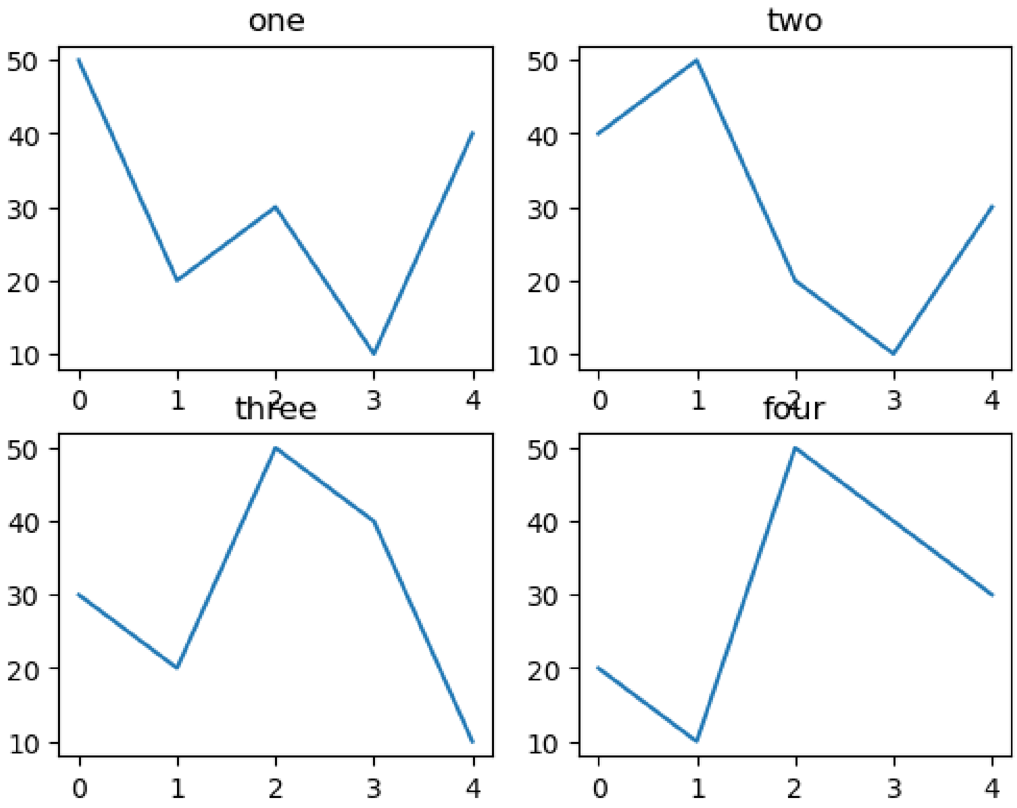


```
[55]: x=[0,1,2,3,4]
      y1=[50,20,30,10,40]
      y2=[40,50,20,10,30]
      y3=[30,20,50,40,10]
      y4=[20,10,50,40,30]
      plt.subplot(2,2,1)
      plt.plot(x,y1)

      plt.subplot(2,2,2)
      plt.plot(x,y2)

      plt.subplot(2,2,3)
      plt.plot(x,y3)

      plt.subplot(2,2,4)
      plt.plot(x,y4)

      plt.show()
```



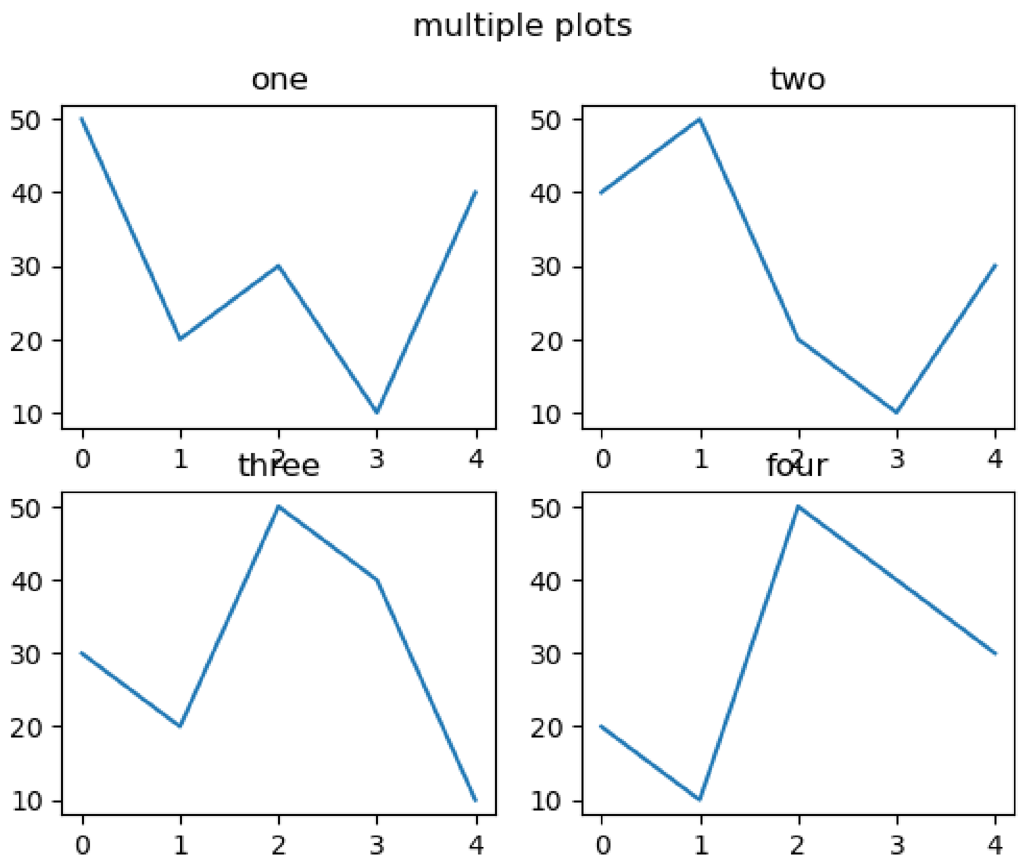
[56]:

```
x=[0,1,2,3,4]
y1=[50,20,30,10,40]
y2=[40,50,20,10,30]
y3=[30,20,50,40,10]
y4=[20,10,50,40,30]
plt.subplot(2,2,1)
plt.plot(x,y1)
plt.title('one')
plt.subplot(2,2,2)
plt.plot(x,y2)
plt.title('two')
plt.subplot(2,2,3)
plt.plot(x,y3)
plt.title('three')
plt.subplot(2,2,4)
plt.plot(x,y4)
plt.title('four')
plt.show()
```



[59]:

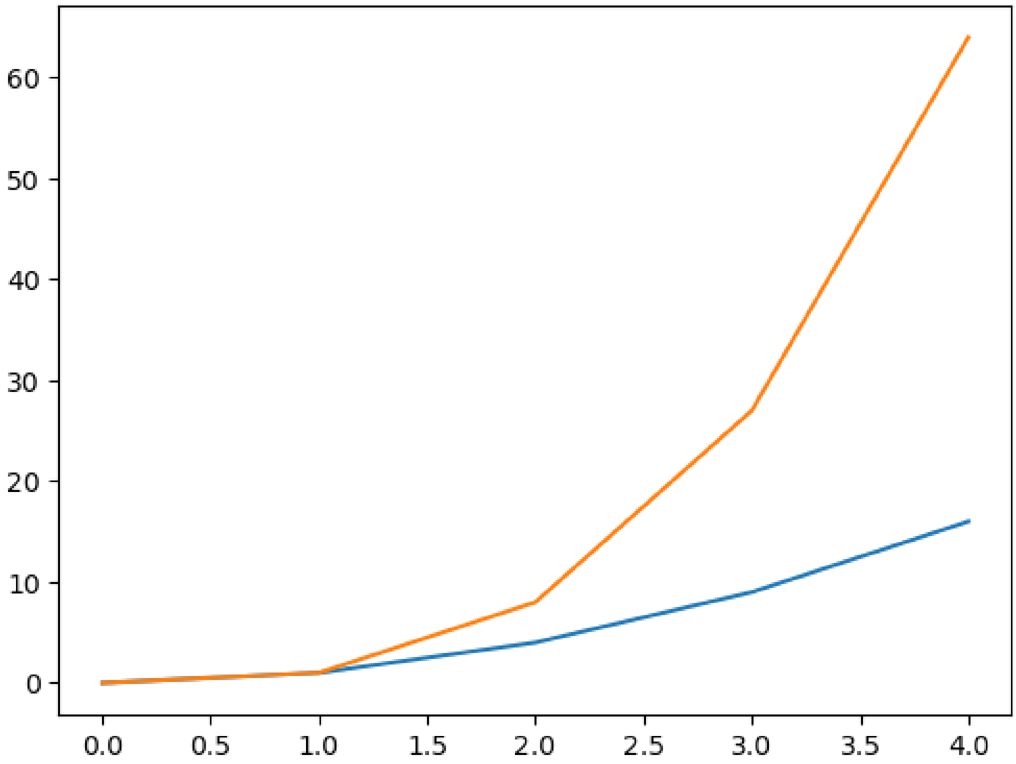
```
x=[0,1,2,3,4]
y1=[50,20,30,10,40]
y2=[40,50,20,10,30]
y3=[30,20,50,40,10]
y4=[20,10,50,40,30]
plt.suptitle('multiple plots')
plt.subplot(2,2,1)
plt.plot(x,y1)
plt.title('one')
plt.subplot(2,2,2)
plt.plot(x,y2)
plt.title('two')
plt.subplot(2,2,3)
plt.plot(x,y3)
plt.title('three')
plt.subplot(2,2,4)
plt.plot(x,y4)
plt.title('four')
plt.show()
```



Legend funxtion

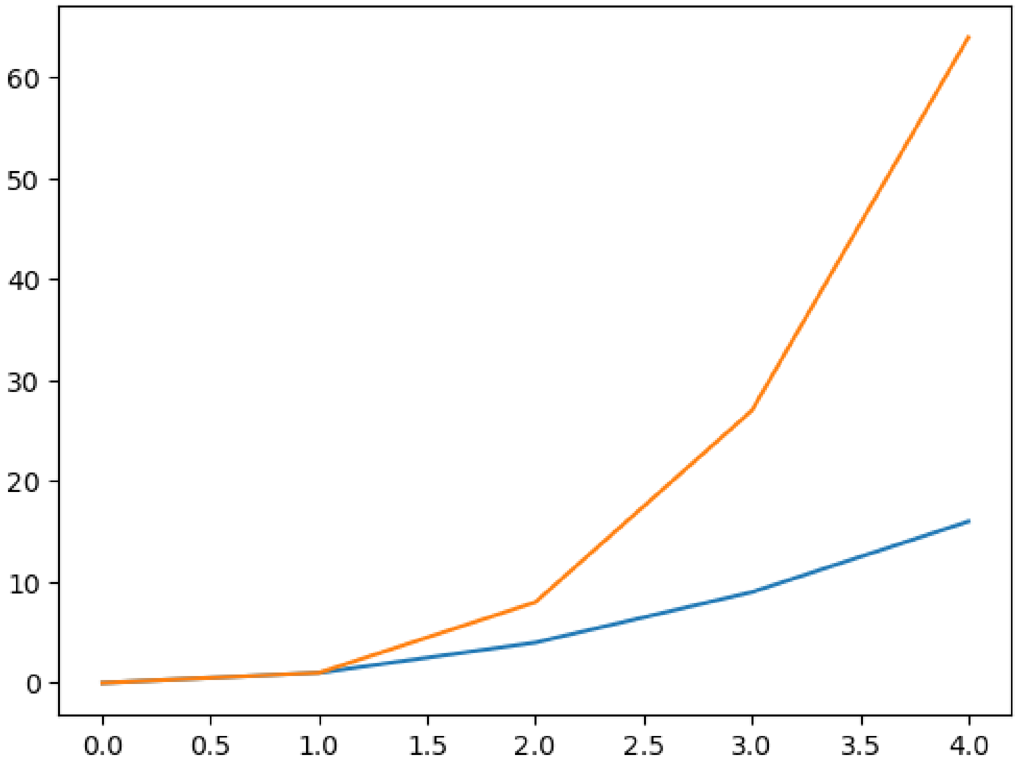
[60]:

```
x=np.arange(0,5,1)
y1=x**2
y2=x**3
plt.plot(x,y1,x,y2)
plt.show()
```



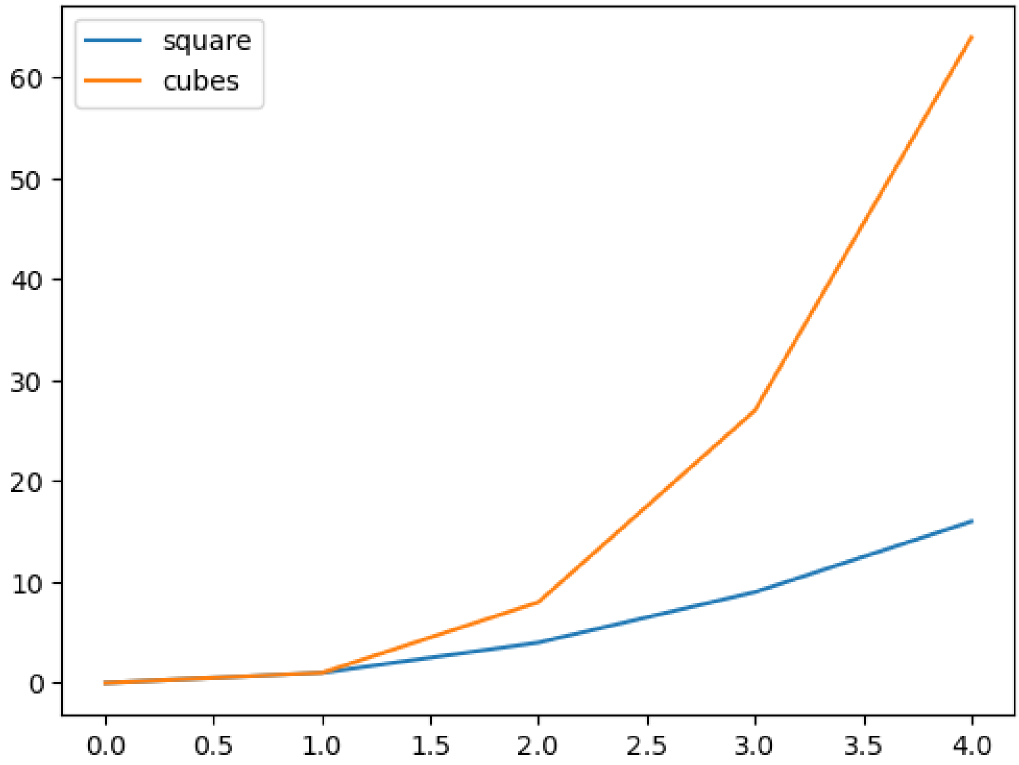
[61]:

```
x=np.arange(0,5,1)
y1=x**2
y2=x**3
plt.plot(x,y1,label='square')
plt.plot(x,y2,label='cubes')
plt.show()
```



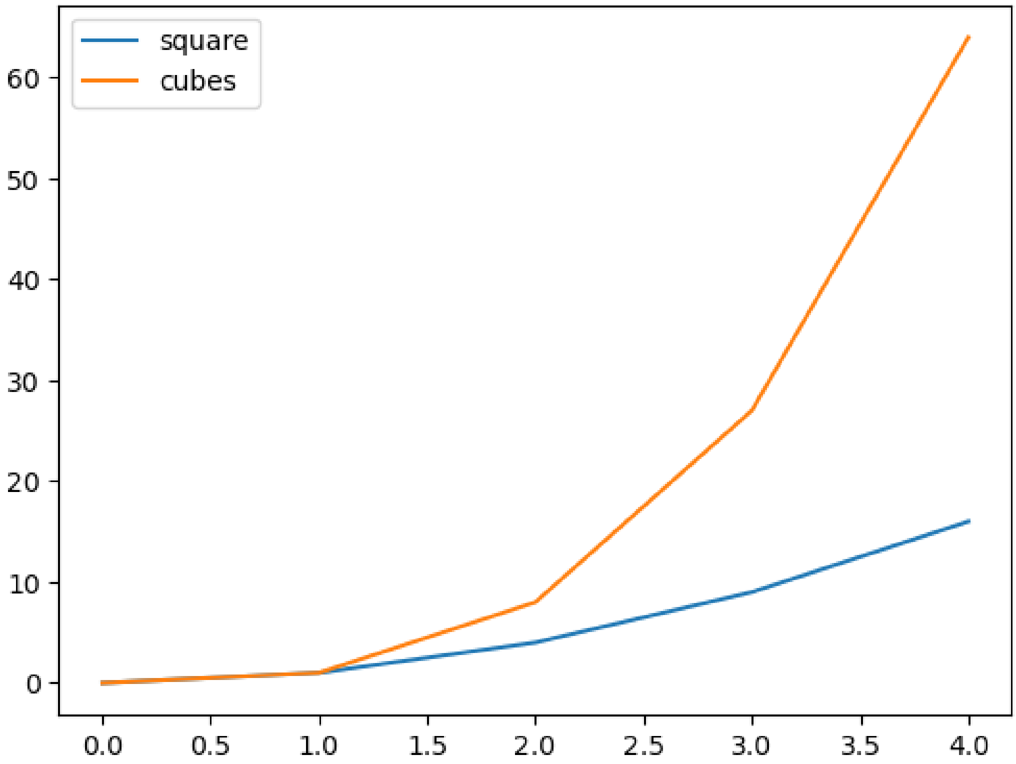
[62]:

```
x=np.arange(0,5,1)
y1=x**2
y2=x**3
plt.plot(x,y1,label='square')
plt.plot(x,y2,label='cubes')
plt.legend()
plt.show()
```



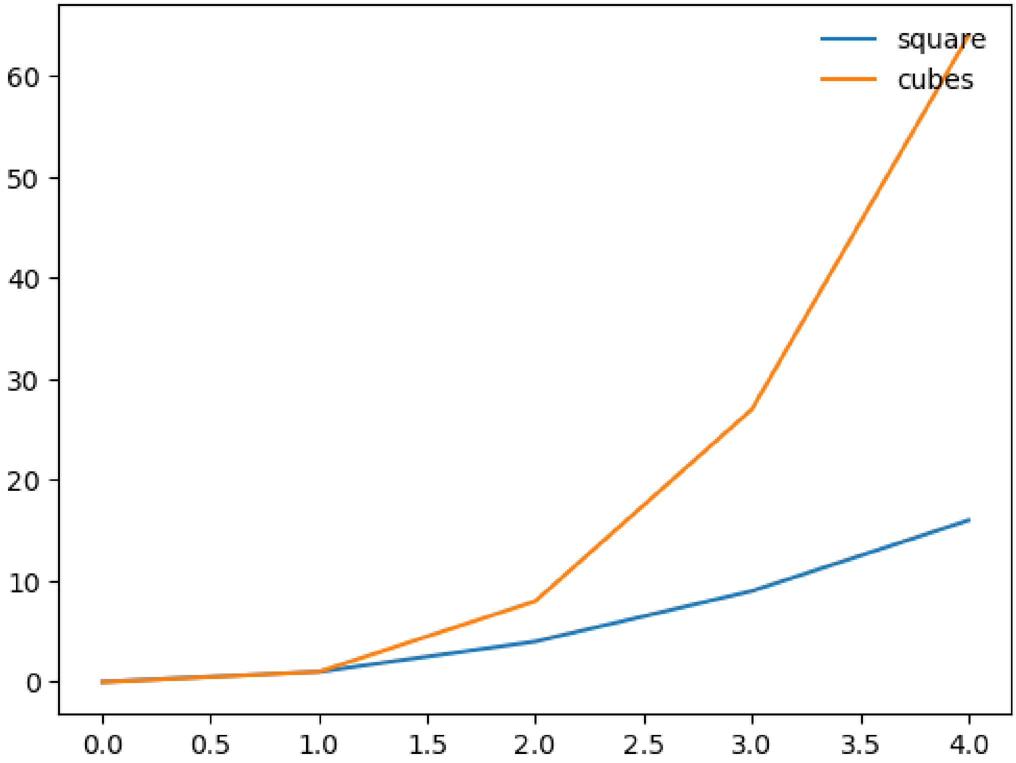
[141]:

```
loc1 = ['square','cubes']
x=np.arange(0,5,1)
y1=x**2
y2=x**3
plt.plot(x,y1)
plt.plot(x,y2)
plt.legend(loc1)
plt.show()
```



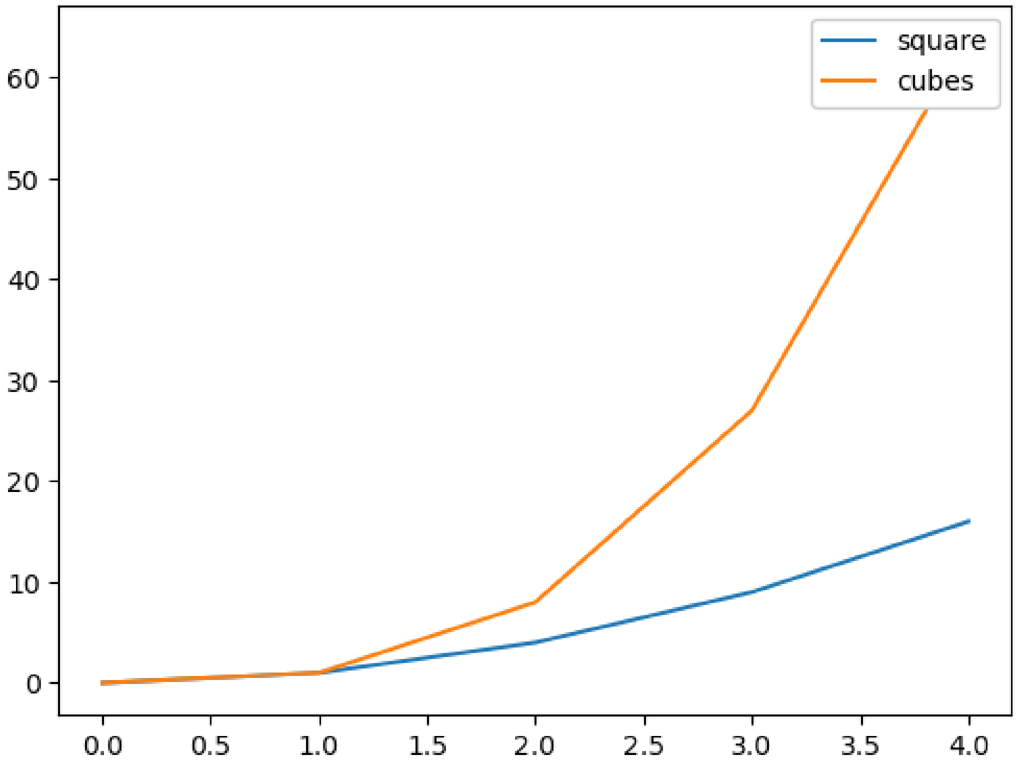
[68]:

```
x=np.arange(0,5,1)
y1=x**2
y2=x**3
plt.plot(x,y1,label='square')
plt.plot(x,y2,label='cubes')
plt.legend(loc='upper right',framealpha=0)
plt.show()
```

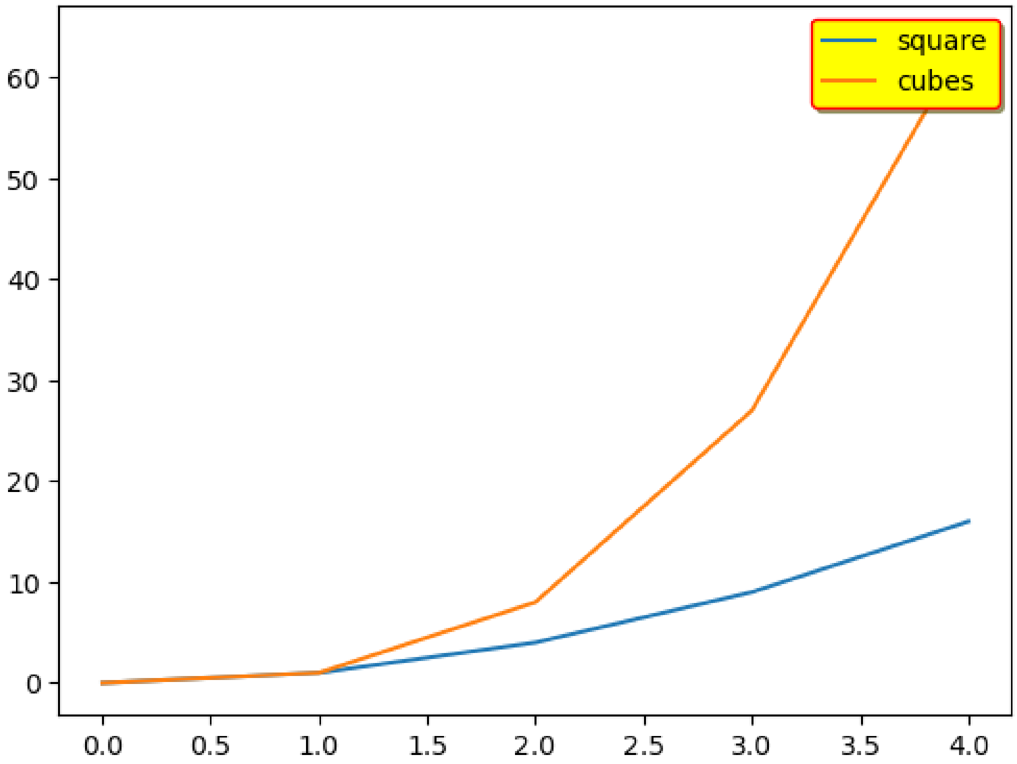


[69]:

```
x=np.arange(0,5,1)
y1=x**2
y2=x**3
plt.plot(x,y1,label='square')
plt.plot(x,y2,label='cubes')
plt.legend(loc='upper right',framealpha=1)
plt.show()
```



[73]:
```
x=np.arange(0,5,1)
y1=x**2
y2=x**3
plt.plot(x,y1,label='square')
plt.plot(x,y2,label='cubes')
plt.legend(loc='upper␣
 ↪right',framealpha=1,facecolor='yellow',edgecolor='red',fancybox=True,shadow=True,fontsize=1
plt.show()
```

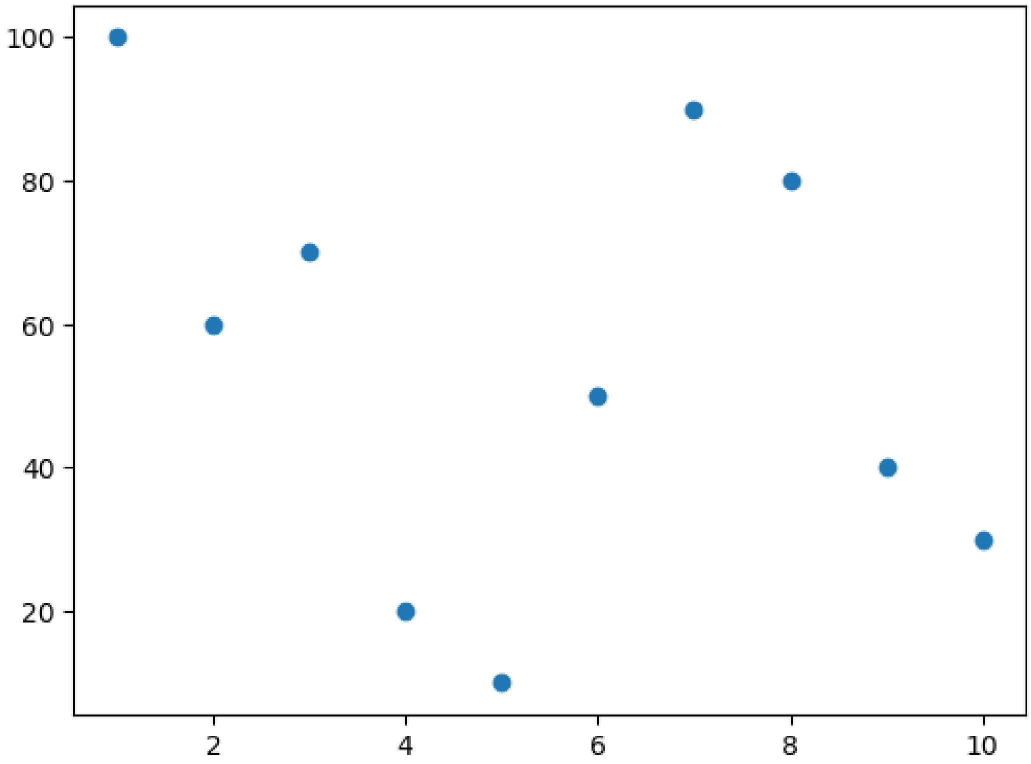


Scatter Plot

[74]:
```
import random
```

[78]:
```
x=[1,2,3,4,5,6,7,8,9,10]
y=[10,20,30,40,50,60,70,80,90,100]

random.shuffle(y)
print(x,y)
plt.scatter(x,y)
plt.show()
```

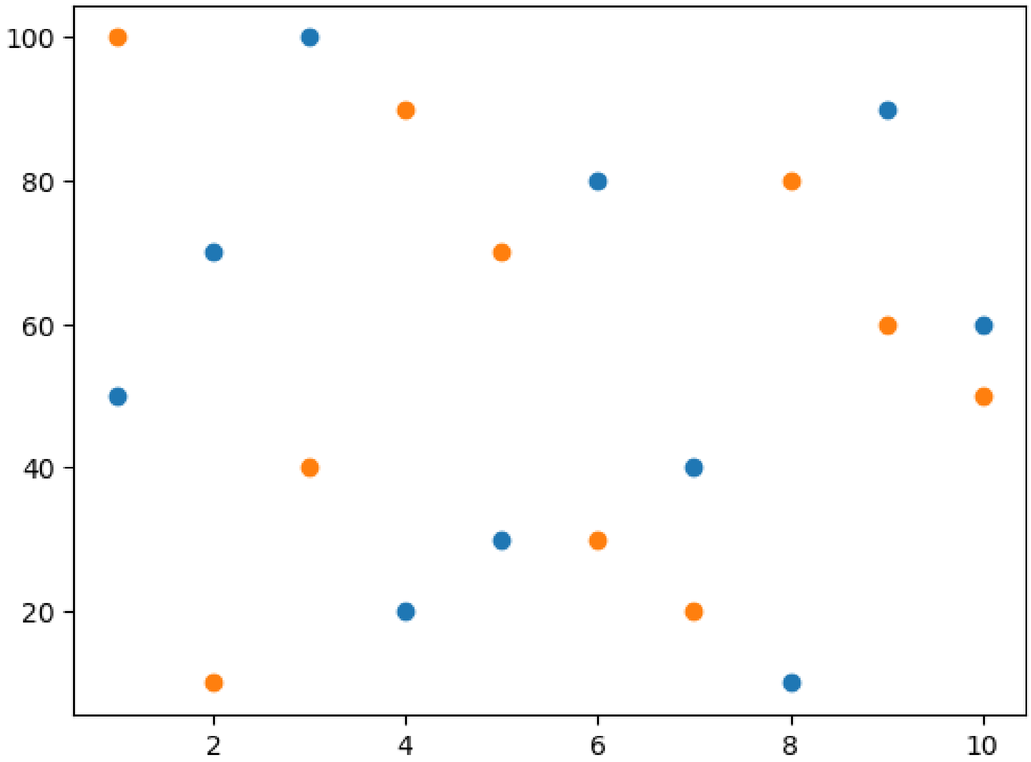
```
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10] [100, 60, 70, 20, 10, 50, 90, 80, 40, 30]
```



[80]:

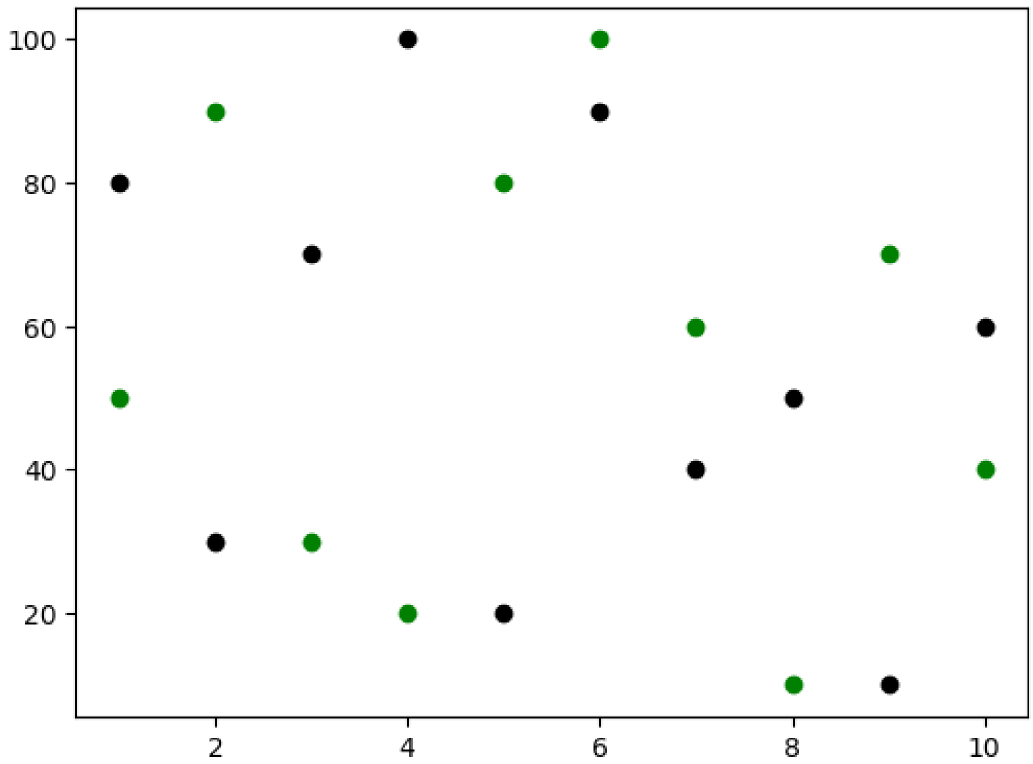
```
x=[1,2,3,4,5,6,7,8,9,10]
y=[10,20,30,40,50,60,70,80,90,100]

random.shuffle(y)
print(x,y)
plt.scatter(x,y)

x1=[1,2,3,4,5,6,7,8,9,10]
y1=[10,20,30,40,50,60,70,80,90,100]

random.shuffle(y1)
print(x1,y1)
plt.scatter(x1,y1)
plt.show()
```

```
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10] [50, 70, 100, 20, 30, 80, 40, 10, 90, 60]
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10] [100, 10, 40, 90, 70, 30, 20, 80, 60, 50]
```



[81]:
```
x=[1,2,3,4,5,6,7,8,9,10]
y=[10,20,30,40,50,60,70,80,90,100]

random.shuffle(y)
print(x,y)
plt.scatter(x,y,color='black')

x1=[1,2,3,4,5,6,7,8,9,10]
y1=[10,20,30,40,50,60,70,80,90,100]

random.shuffle(y1)
print(x1,y1)
plt.scatter(x1,y1,color='green')
plt.show()
```

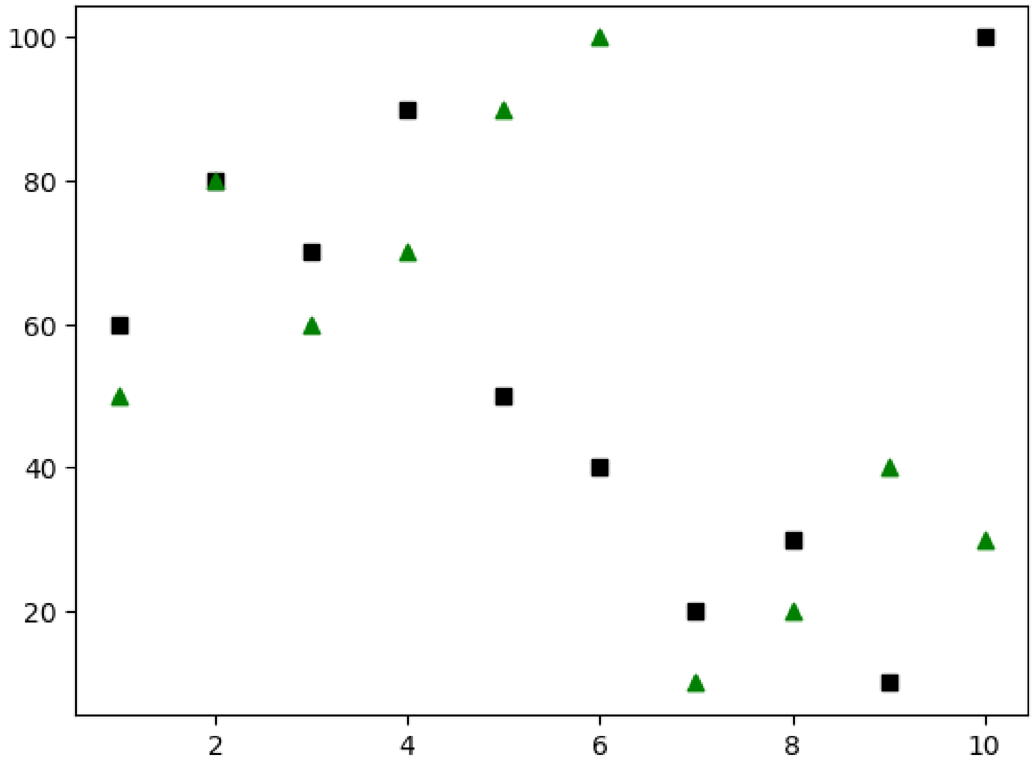
```
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10] [80, 30, 70, 100, 20, 90, 40, 50, 10, 60]
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10] [50, 90, 30, 20, 80, 100, 60, 10, 70, 40]
```



[82]:

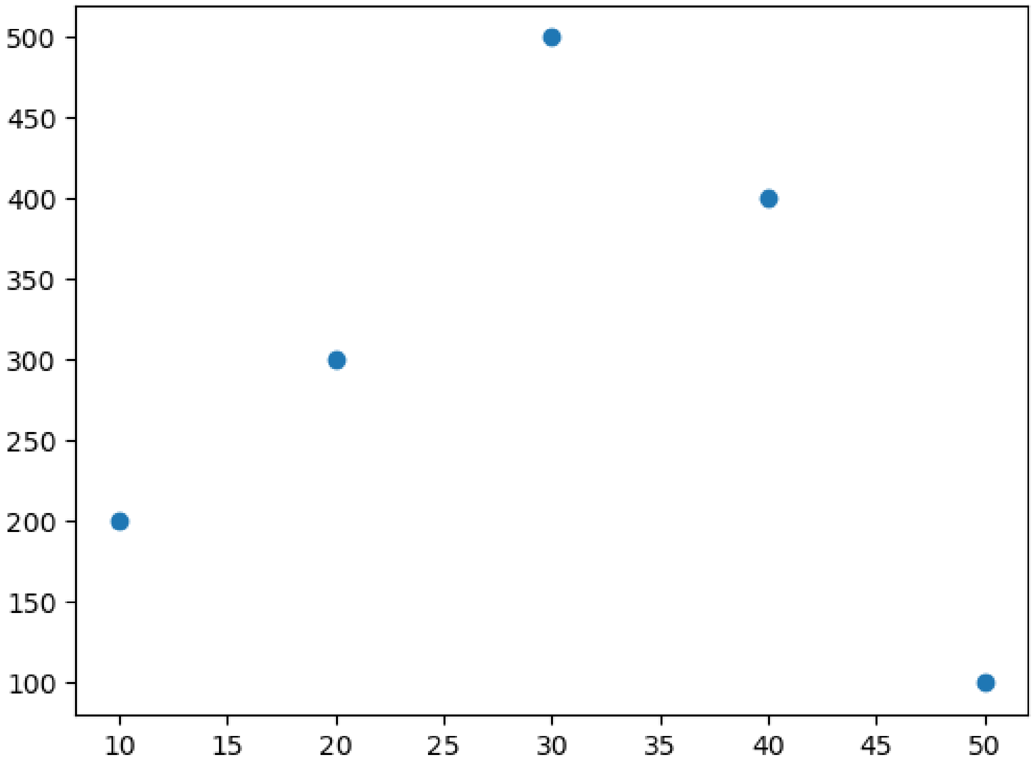
```
x=[1,2,3,4,5,6,7,8,9,10]
y=[10,20,30,40,50,60,70,80,90,100]

random.shuffle(y)
print(x,y)
plt.scatter(x,y,color='black',marker='s')

x1=[1,2,3,4,5,6,7,8,9,10]
y1=[10,20,30,40,50,60,70,80,90,100]

random.shuffle(y1)
print(x1,y1)
plt.scatter(x1,y1,color='green',marker='^')
plt.show()
```

```
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10] [60, 80, 70, 90, 50, 40, 20, 30, 10, 100]
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10] [50, 80, 60, 70, 90, 100, 10, 20, 40, 30]
```

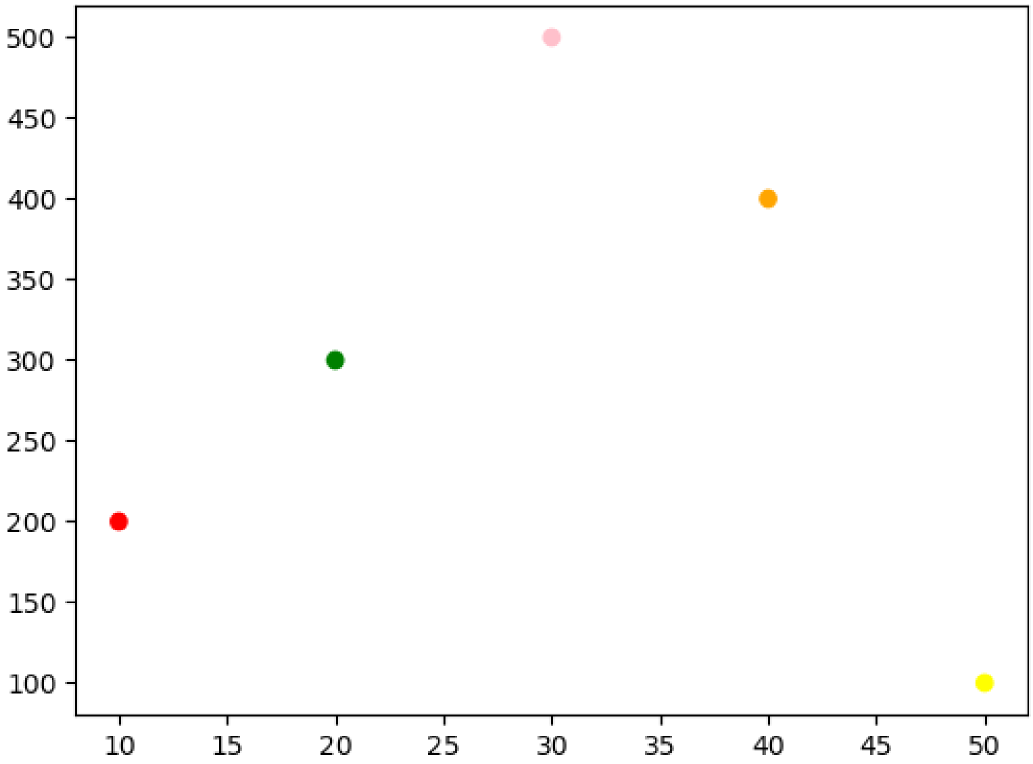


Camp & colorbar

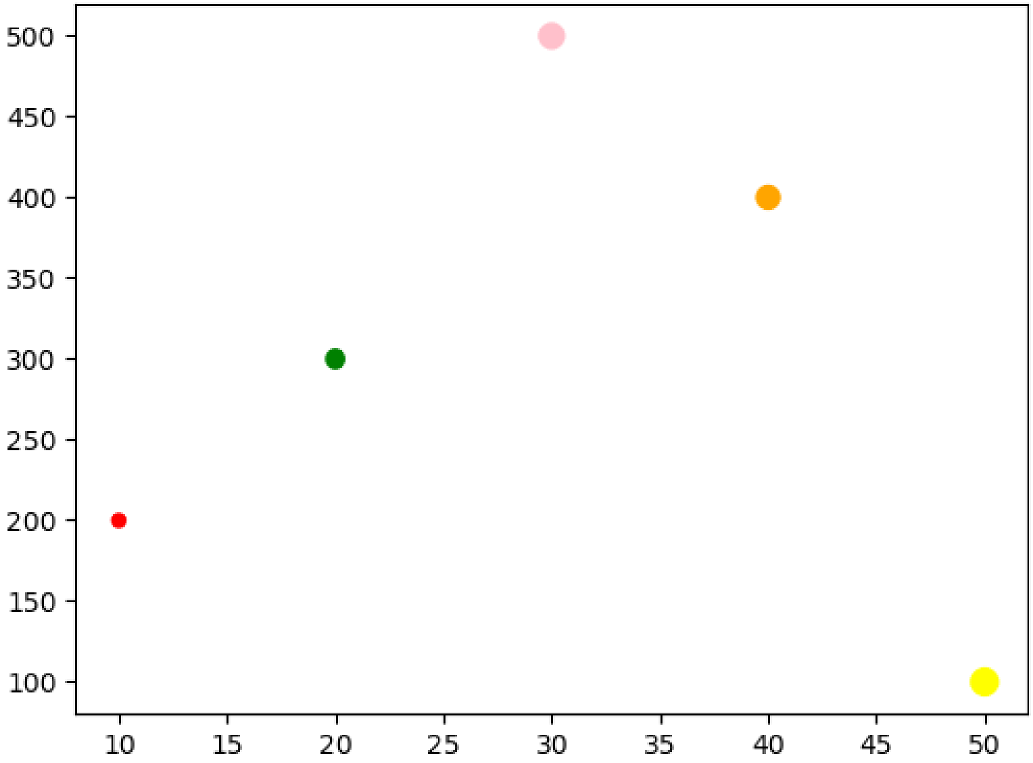
```
[83]: x=[10,20,30,40,50]
      y=[200,300,500,400,100]
      plt.scatter(x,y)
      plt.show()
```



[85]:
```
x=[10,20,30,40,50]
y=[200,300,500,400,100]
colors=['red','green','pink','orange','yellow']
plt.scatter(x,y,c=colors)
plt.show()
```

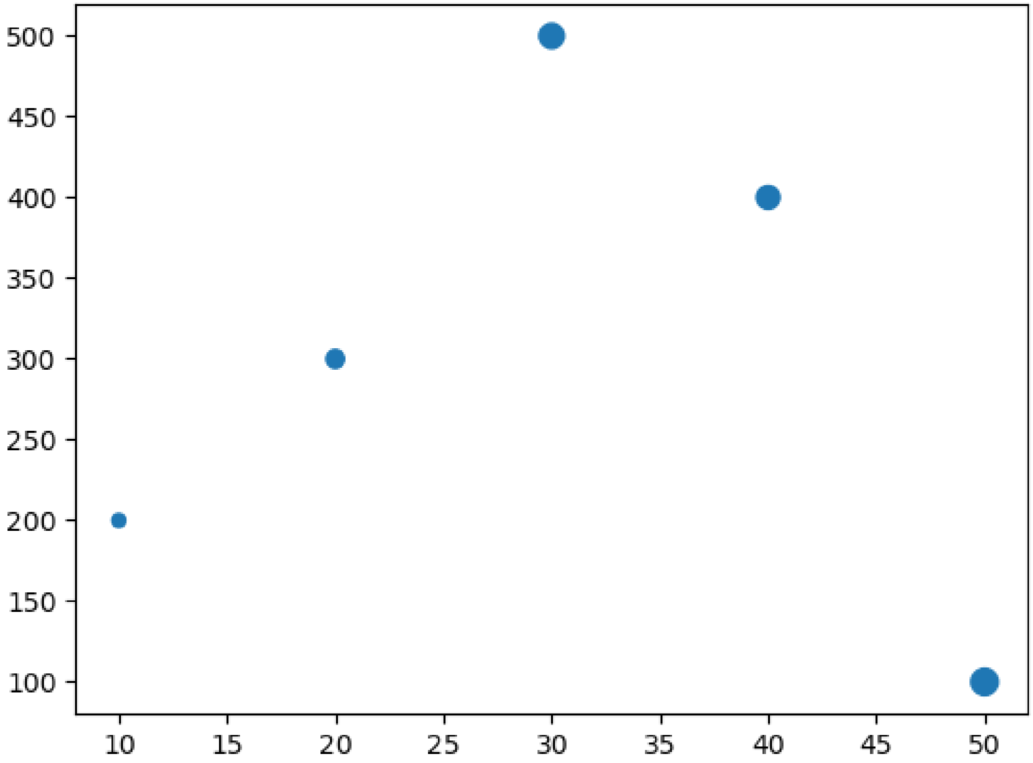


[87]:
```
x=[10,20,30,40,50]
y=[200,300,500,400,100]
colors=['red','green','pink','orange']
sizes=[25,45,85,74,99]
plt.scatter(x,y,c=colors,s=sizes)
plt.show()
```



[88]:
```
x=[10,20,30,40,50]
y=[200,300,500,400,100]
colors=[50,90,55,68,70]
sizes=[25,45,85,74,99]
plt.scatter(x,y,cmap='viridis',s=sizes)
plt.show()
```

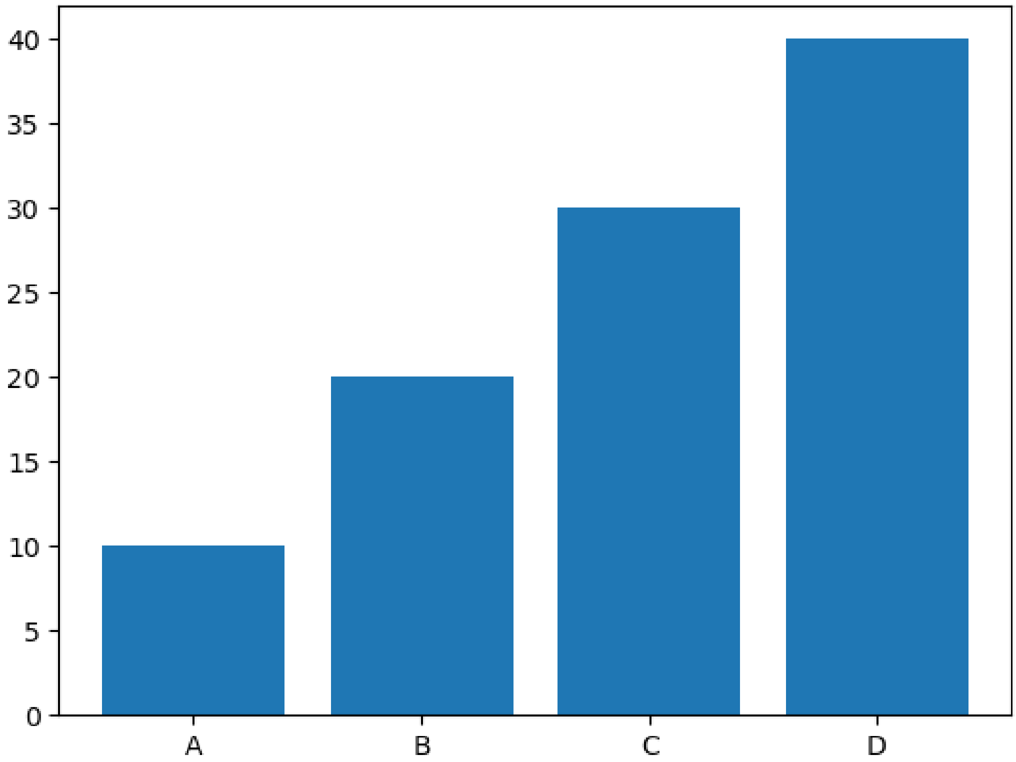
```
C:\Users\SPSOFT\AppData\Local\Temp\ipykernel_7404\3951880329.py:5: UserWarning:
No data for colormapping provided via 'c'. Parameters 'cmap' will be ignored
  plt.scatter(x,y,cmap='viridis',s=sizes)
```



Bar plot

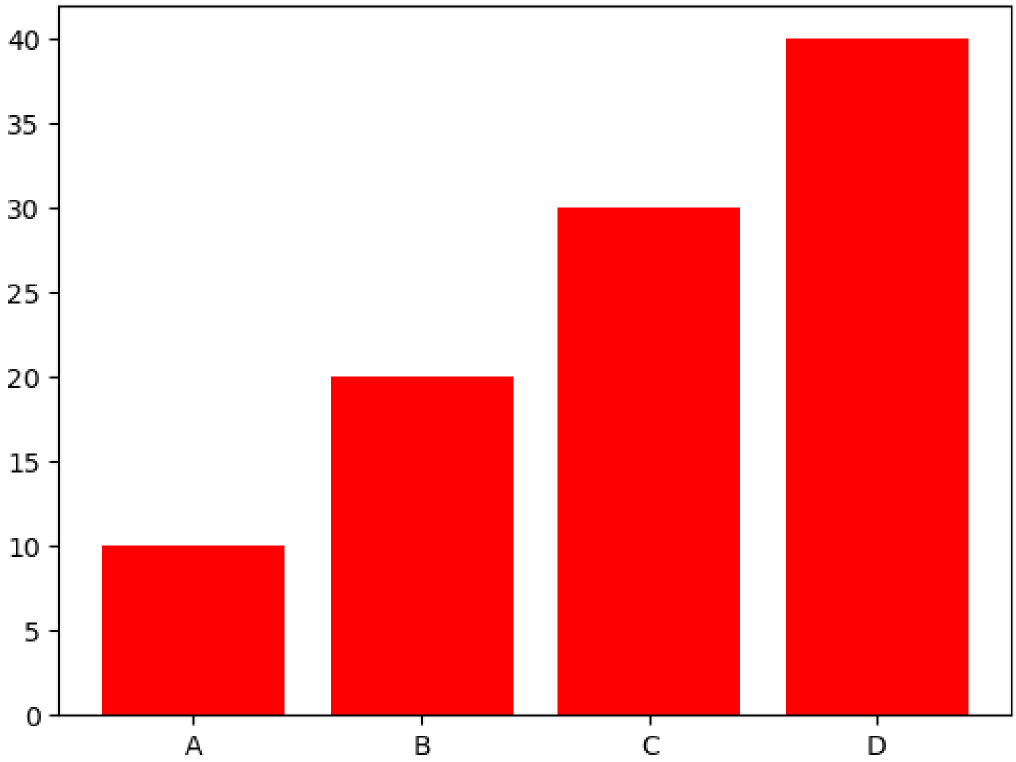
```
[89]: x=['A','B','C','D']
      y=[10,20,30,40]
      plt.bar(x,y)
```

```
[89]: <BarContainer object of 4 artists>
```



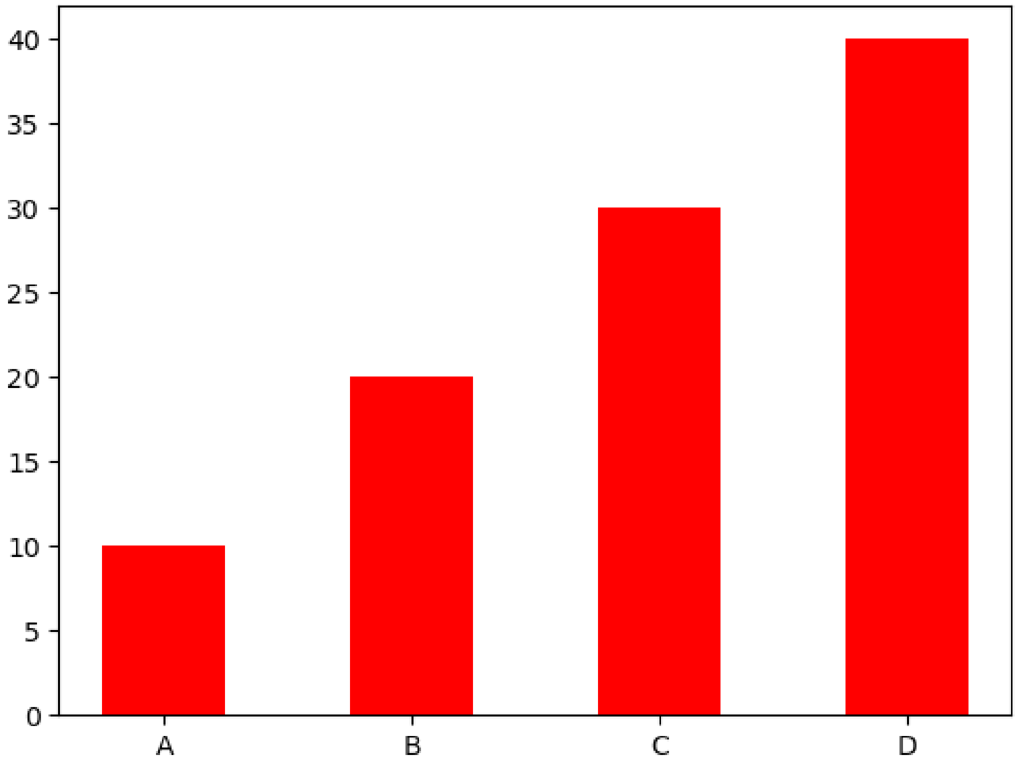
[90]:
```
x=['A','B','C','D']
y=[10,20,30,40]
plt.bar(x,y,color='red')
```

[90]:
```
<BarContainer object of 4 artists>
```



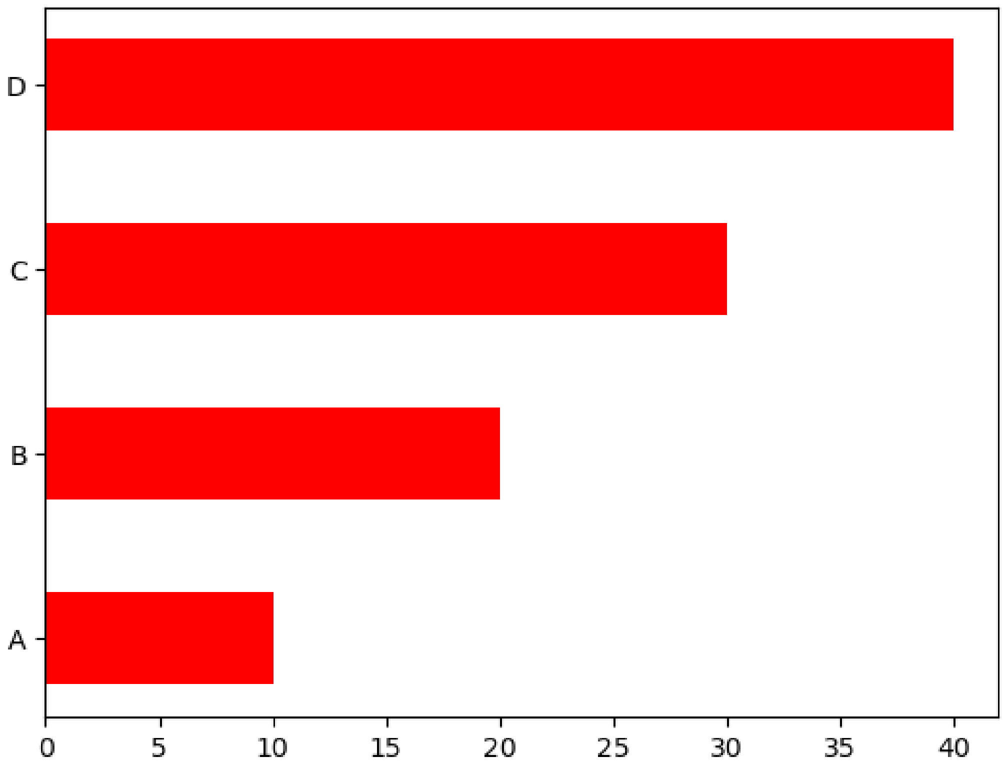
```
[91]: x=['A','B','C','D']
      y=[10,20,30,40]
      plt.bar(x,y,color='red',width=0.5)
```

```
[91]: <BarContainer object of 4 artists>
```

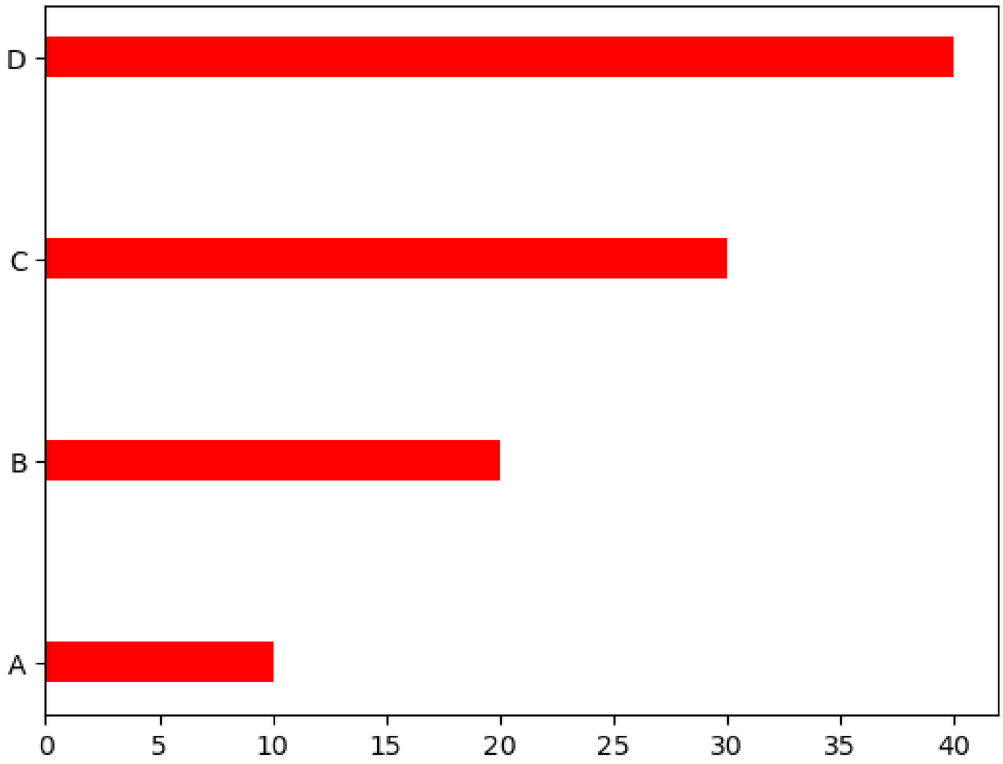


[93]:

```
x=['A','B','C','D']
y=[10,20,30,40]
plt.barh(x,y,color='red',height=0.5)
plt.show()
```

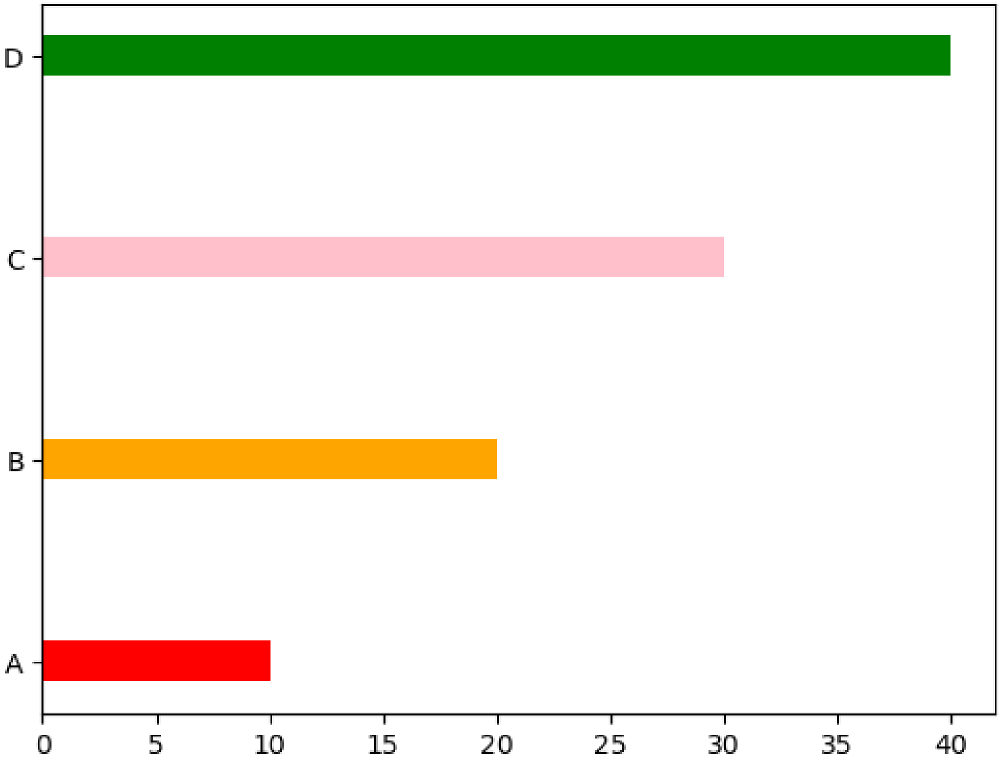


[94]:
```
x=['A','B','C','D']
y=[10,20,30,40]
plt.barh(x,y,color='red',height=0.2)
plt.show()
```

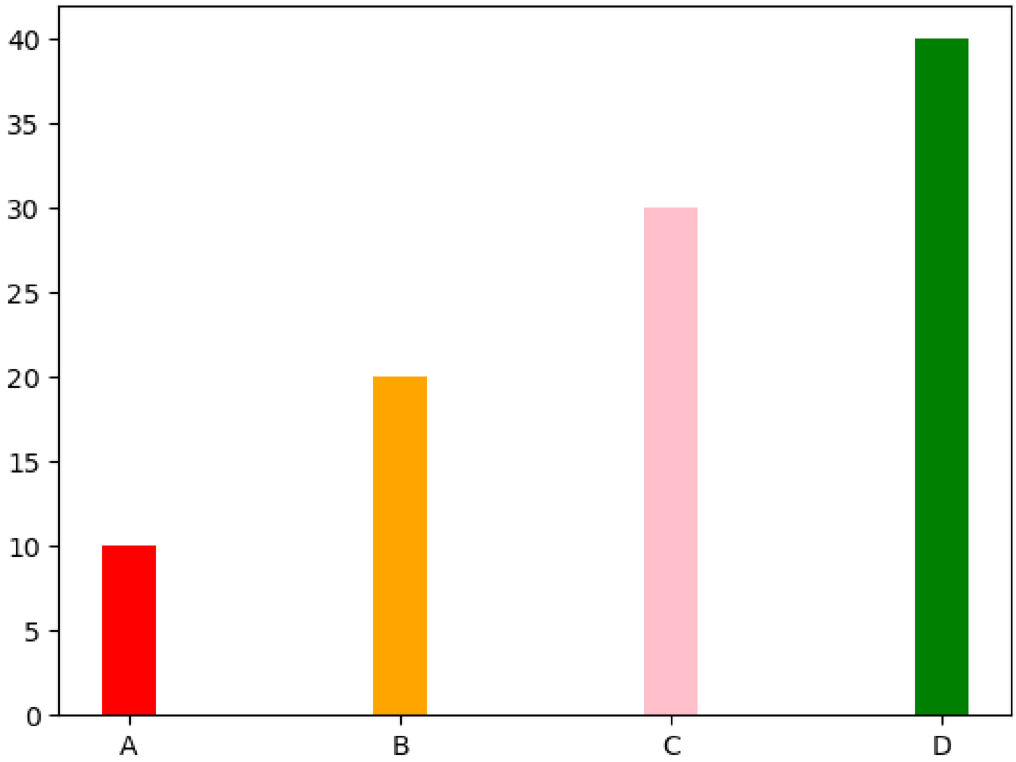


[95]:

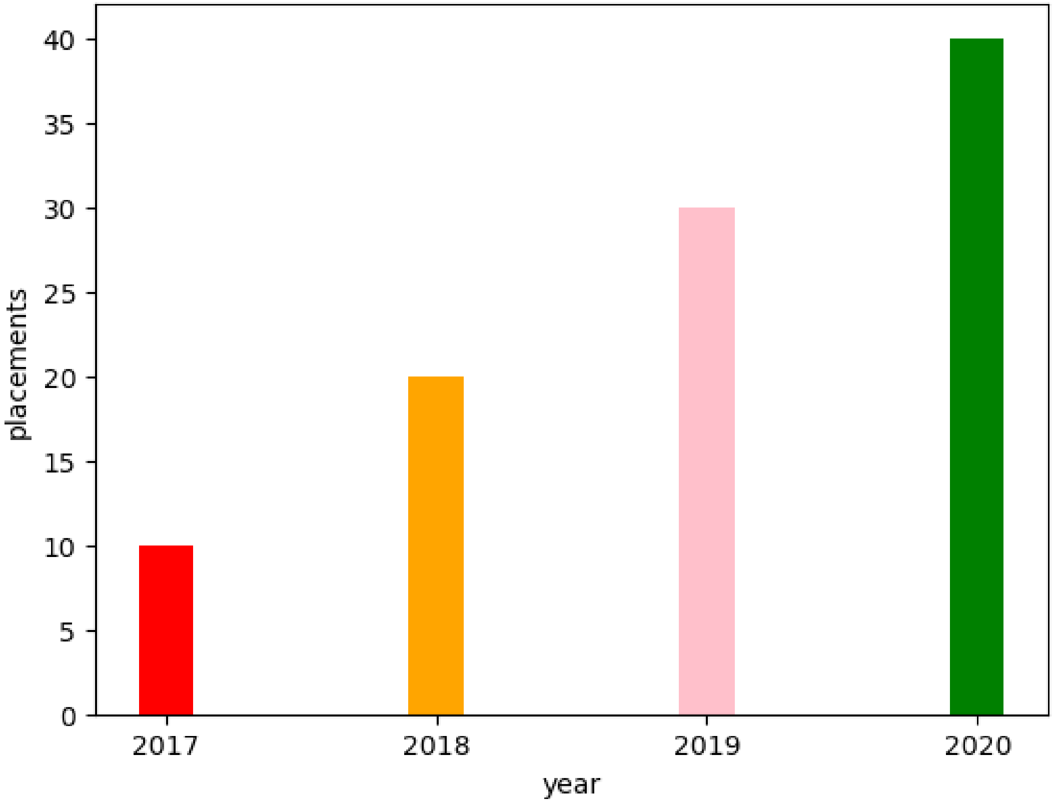
```
x=['A','B','C','D']
y=[10,20,30,40]
c=['red','orange','pink','green']
plt.barh(x,y,color=c,height=0.2)
plt.show()
```



[97]:
```
x=['A','B','C','D']
y=[10,20,30,40]
c=['red','orange','pink','green']
plt.bar(x,y,color=c,width=0.2)
plt.show()
```

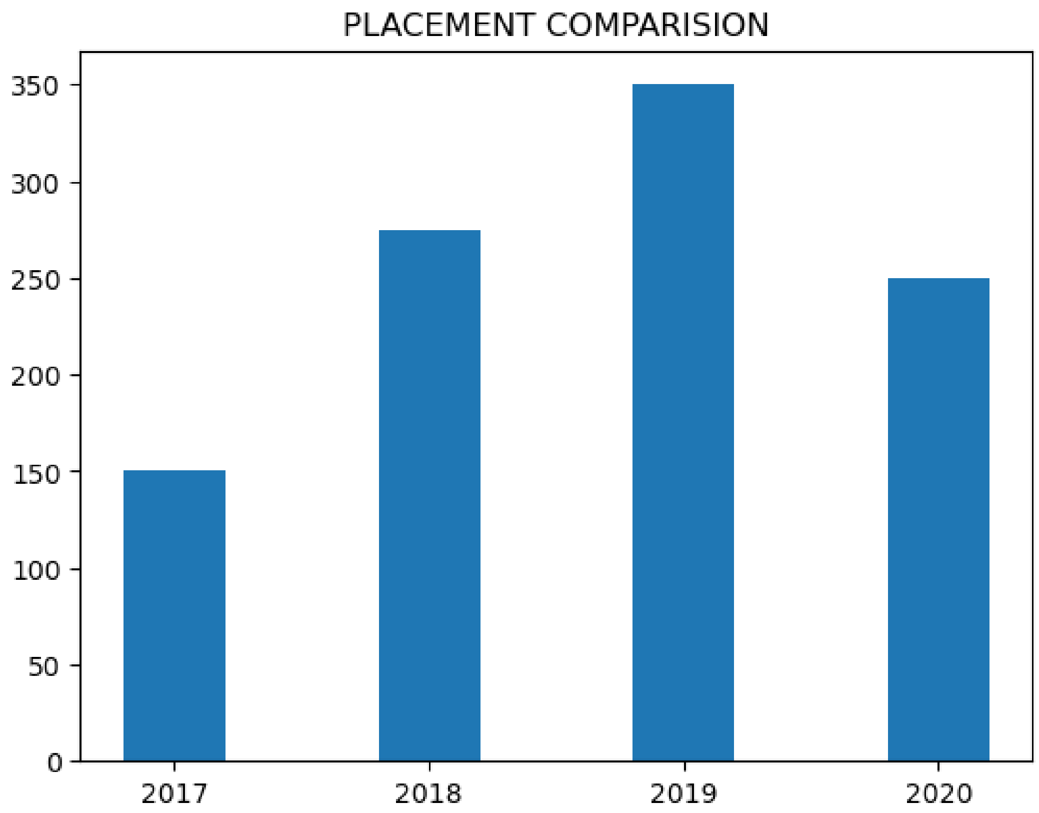


[98]:
```
x=['2017','2018','2019','2020']
y=[10,20,30,40]
c=['red','orange','pink','green']
plt.bar(x,y,color=c,width=0.2)
plt.xlabel('year')
plt.ylabel('placements')
plt.show()
```



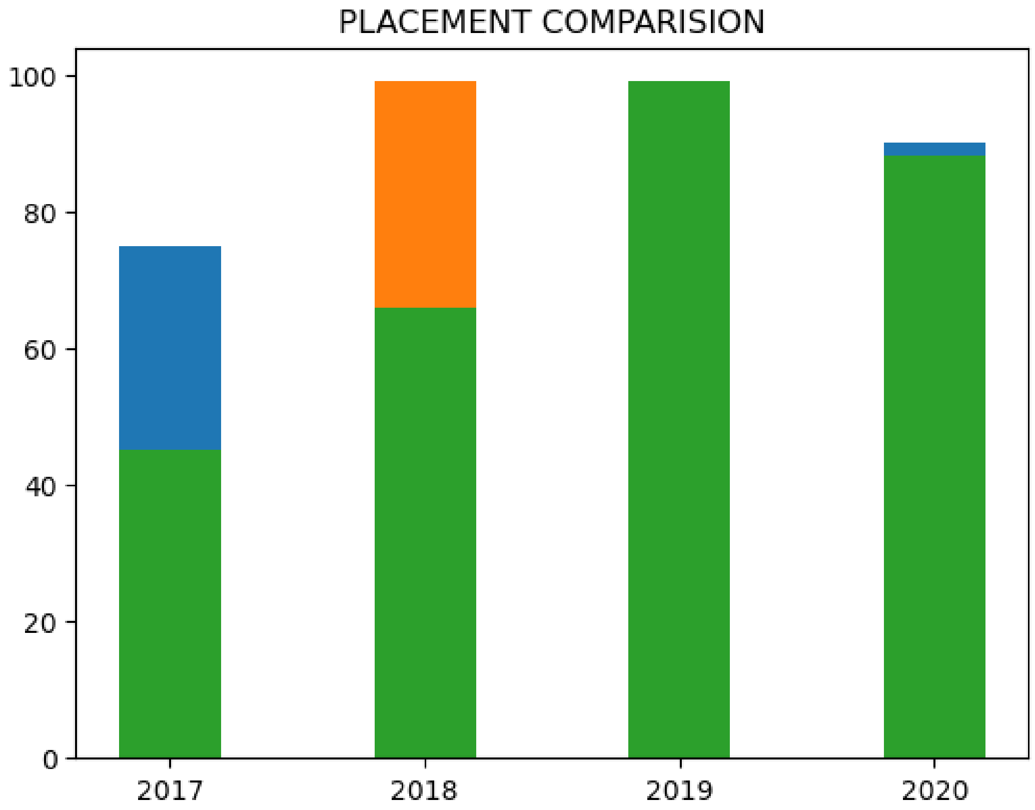
Stacked Bar Chat

```
[99]: years=['2017','2018','2019','2020']
      placements=[150,275,350,250]
      plt.title('PLACEMENT COMPARISION')
      plt.bar(years,placements,width=0.4)
      plt.show()
```



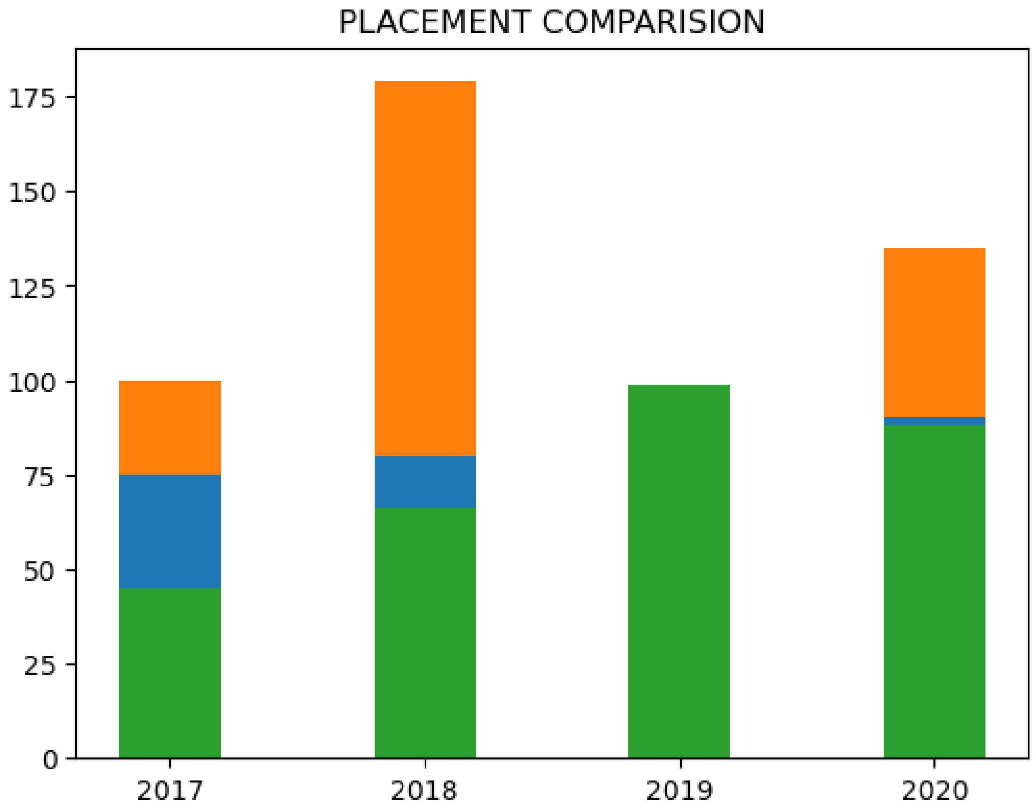
[100]:

```
years=['2017','2018','2019','2020']
placements=[150,275,350,250]
cse=[75,80,25,90]
it=[25,99,55,45]
cec=[45,66,99,88]
plt.title('PLACEMENT COMPARISION')
plt.bar(years,cse,width=0.4)
plt.bar(years,it,width=0.4)
plt.bar(years,cec,width=0.4)

plt.show()
```



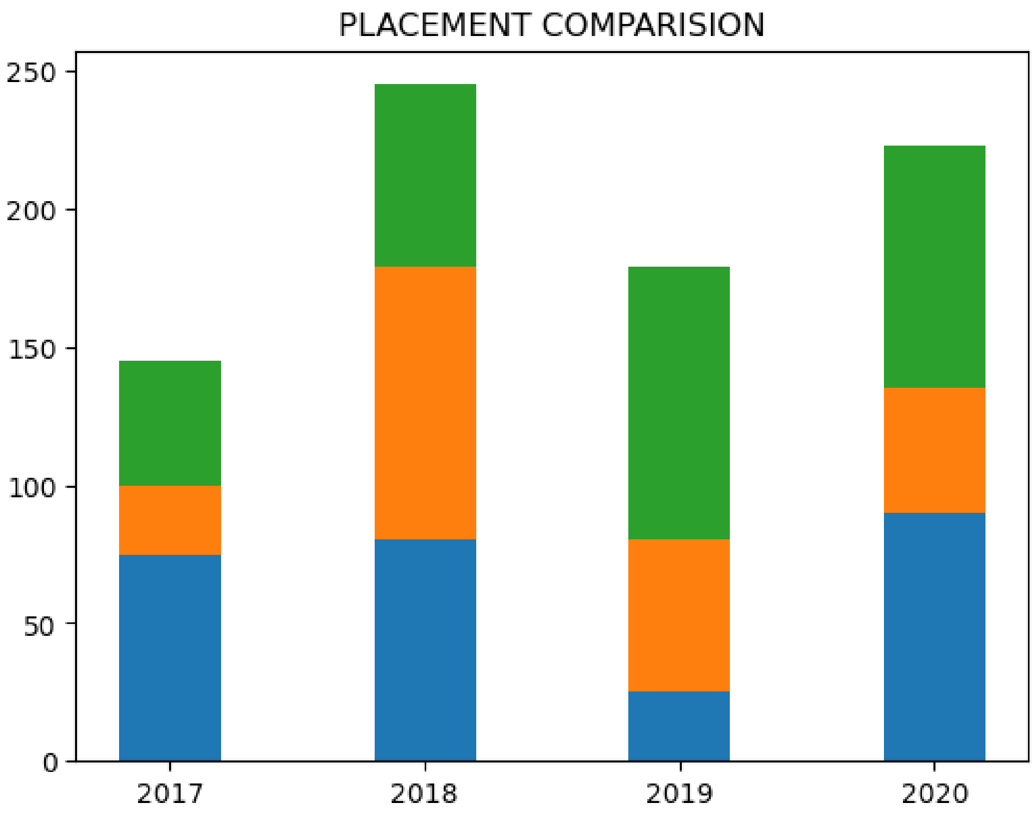
[103]:

```
years=['2017','2018','2019','2020']
placements=[150,275,350,250]
cse=[75,80,25,90]
it=[25,99,55,45]
cec=[45,66,99,88]
plt.title('PLACEMENT COMPARISION')
plt.bar(years,cse,width=0.4)
plt.bar(years,it,bottom=cse,width=0.4)
plt.bar(years,cec,width=0.4)

plt.show()
```

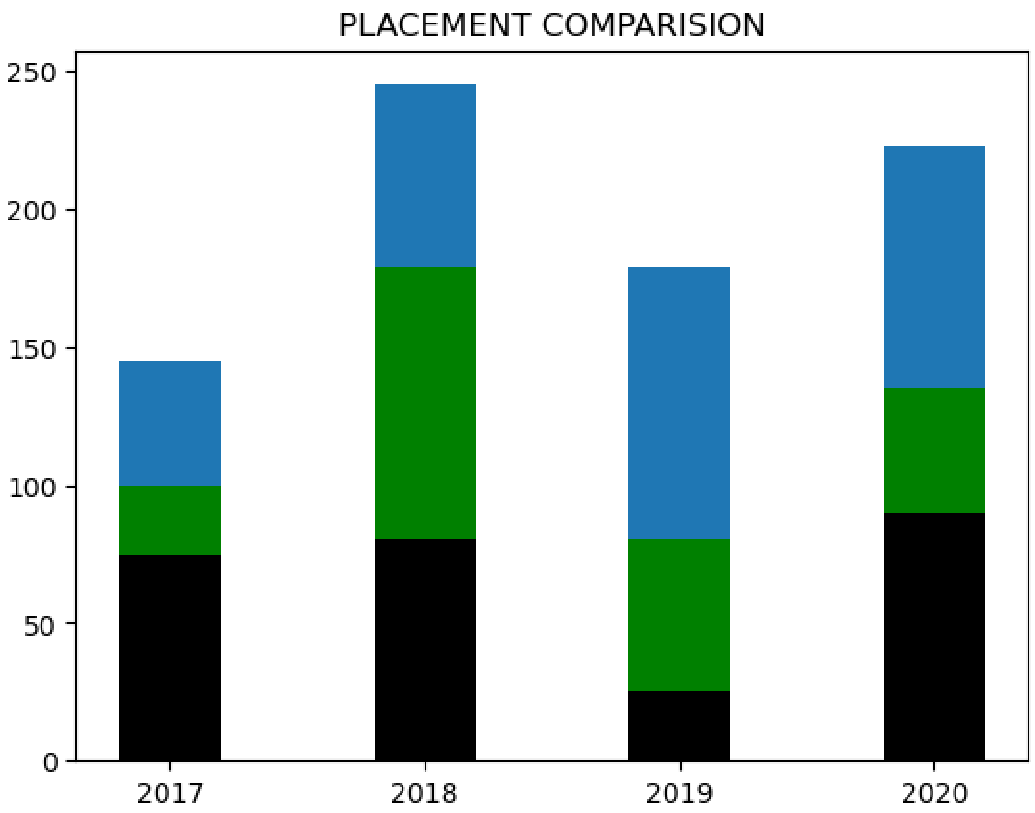


[104]:

```
years=['2017','2018','2019','2020']
placements=[150,275,350,250]
cse=[75,80,25,90]
it=[25,99,55,45]
cec=[45,66,99,88]
cec_start=[cse[i]+it[i] for i in range(len(cse))]
plt.title('PLACEMENT COMPARISION')
plt.bar(years,cse,width=0.4)
plt.bar(years,it,bottom=cse,width=0.4)
plt.bar(years,cec,bottom=cec_start,width=0.4)

plt.show()
```



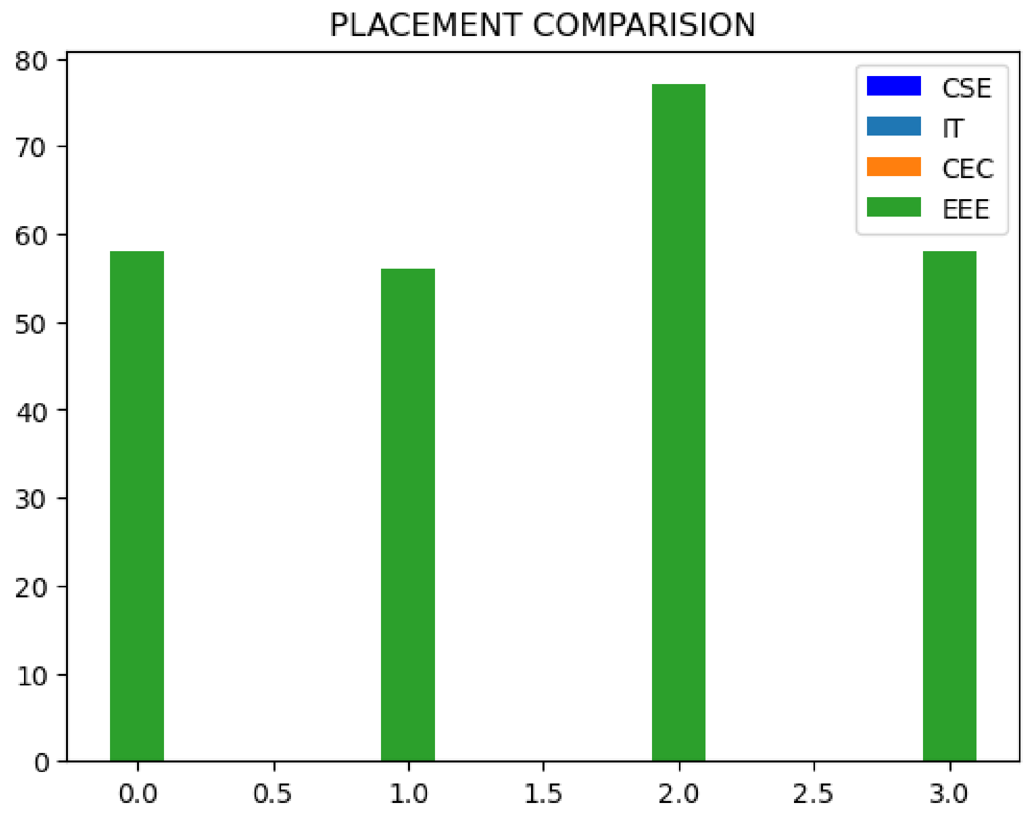
```
[106]: years=['2017','2018','2019','2020']
       placements=[150,275,350,250]
       cse=[75,80,25,90]
       it=[25,99,55,45]
       cec=[45,66,99,88]
       cec_start=[cse[i]+it[i] for i in range(len(cse))]
       plt.title('PLACEMENT COMPARISION')
       plt.bar(years,cse,width=0.4,color='black')
       plt.bar(years,it,bottom=cse,width=0.4,color='green')
       plt.bar(years,cec,bottom=cec_start,width=0.4)

       plt.show()
```



Grouped Bar chat

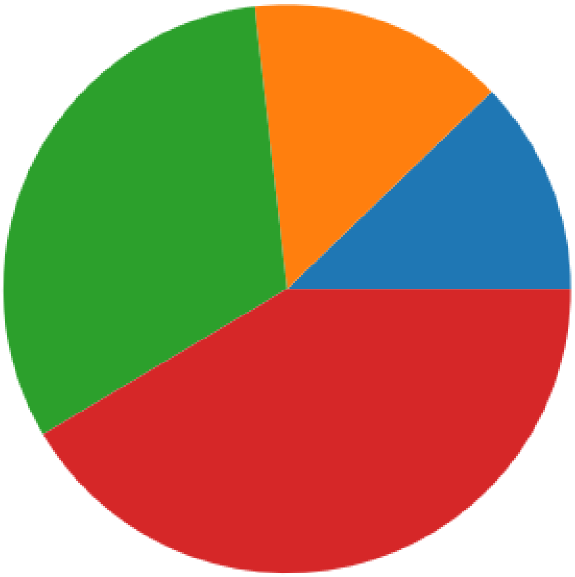
```
[109]: years=['2017','2018','2019','2020']

       cse=[58,56,77,58]
       it=[55,89,47,49]
       cec=[69,85,25,63]
       eee=[75,80,58,96]
       w=0.2
       cse_bar=np.arange(len(years))
       print(cse_bar)
       plt.bar(cse_bar,cse,width=w,label='CSE',color='blue')
       plt.bar(cse_bar,cse,width=w,label='IT')
       plt.bar(cse_bar,cse,width=w,label='CEC')
       plt.bar(cse_bar,cse,width=w,label='EEE')

       plt.title("PLACEMENT COMPARISION")
       plt.legend()
       plt.show()
```

```
[0 1 2 3]
```

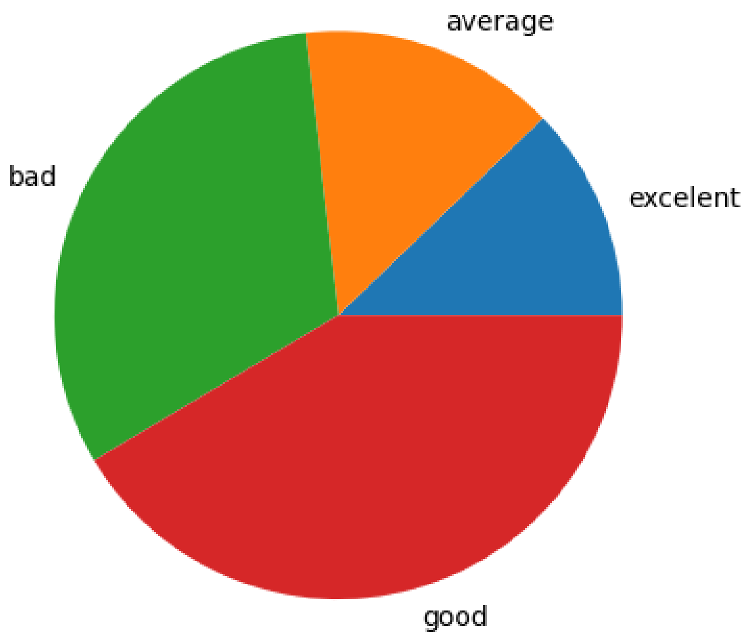


Pie chart

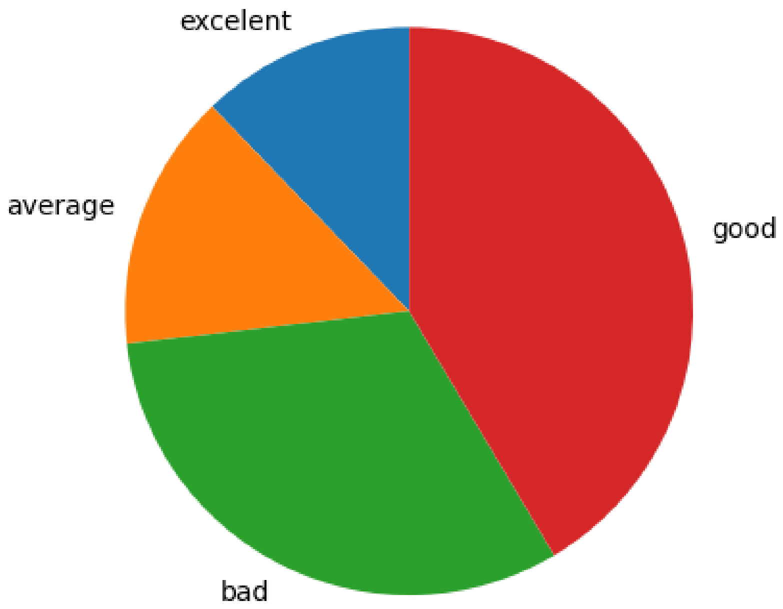
```
[113]: stu_performance=['excelent','average','bad','good']
       stu_values=[25,30,65,85]
       plt.pie(stu_values)
       plt.show()
```



[114]:
```
stu_performance=['excelent','average','bad','good']
stu_values=[25,30,65,85]
plt.pie(stu_values,labels=stu_performance)
plt.show()
```

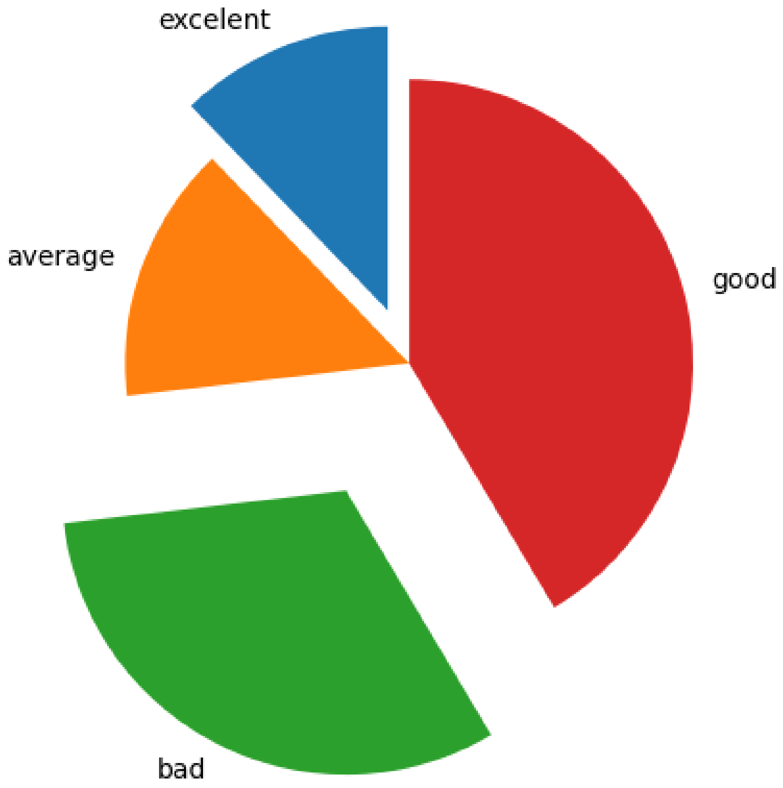


```
[115]: stu_performance=['excelent','average','bad','good']
       stu_values=[25,30,65,85]
       plt.pie(stu_values,labels=stu_performance,startangle=90)
       plt.show()
```

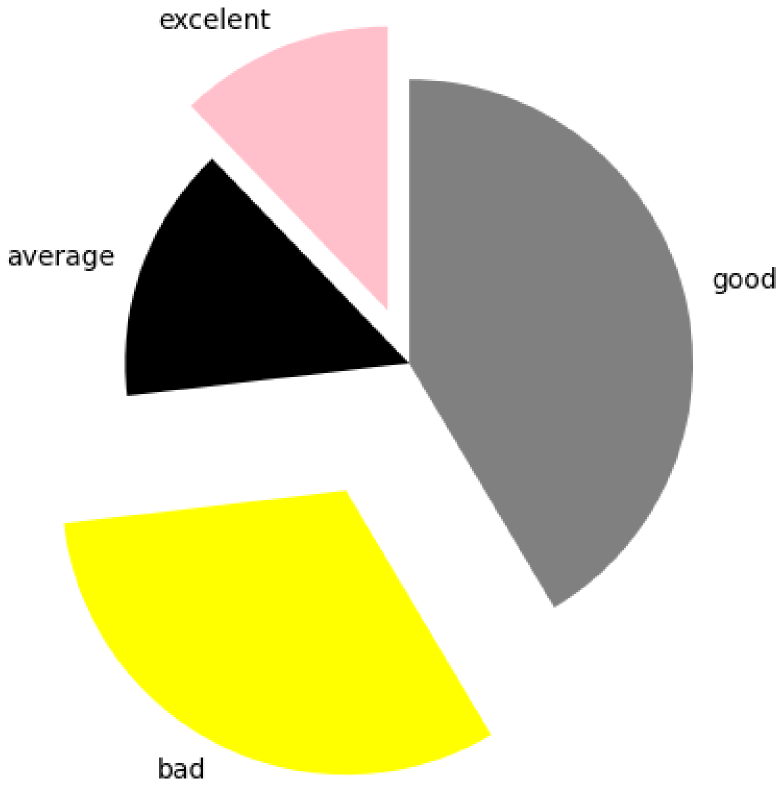


[119]:

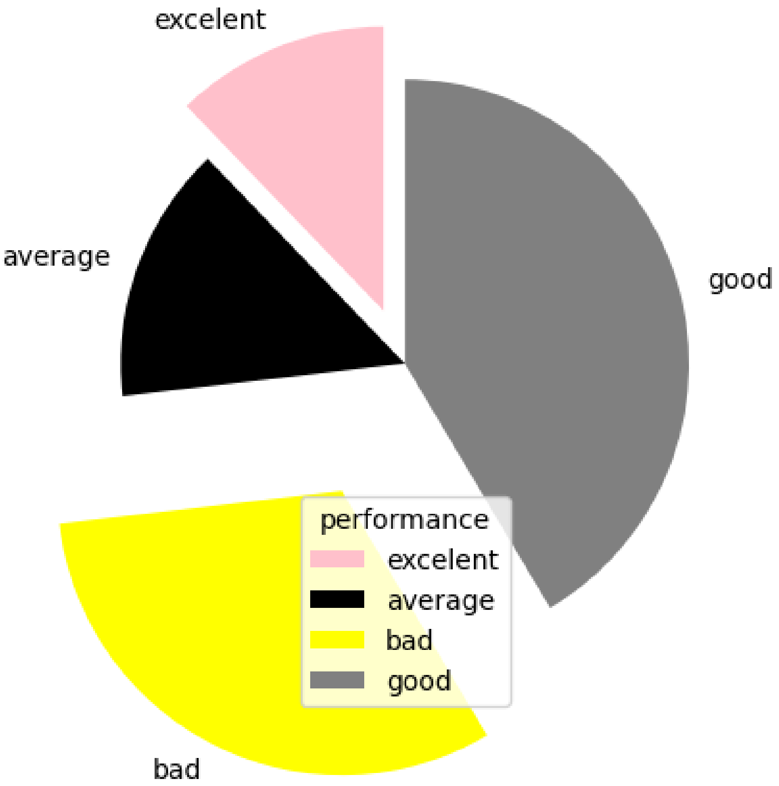
```
stu_performance=['excelent','average','bad','good']
stu_values=[25,30,65,85]
plt.pie(stu_values,labels=stu_performance,startangle=90,explode=[0.2,0,0.5,0])
plt.show()
```



[120]:
```
stu_performance=['excelent','average','bad','good']
stu_values=[25,30,65,85]
plt.pie(stu_values,labels=stu_performance,startangle=90,explode=[0.2,0,0.
↪5,0],colors=['pink','black','yellow','gray'])
plt.show()
```

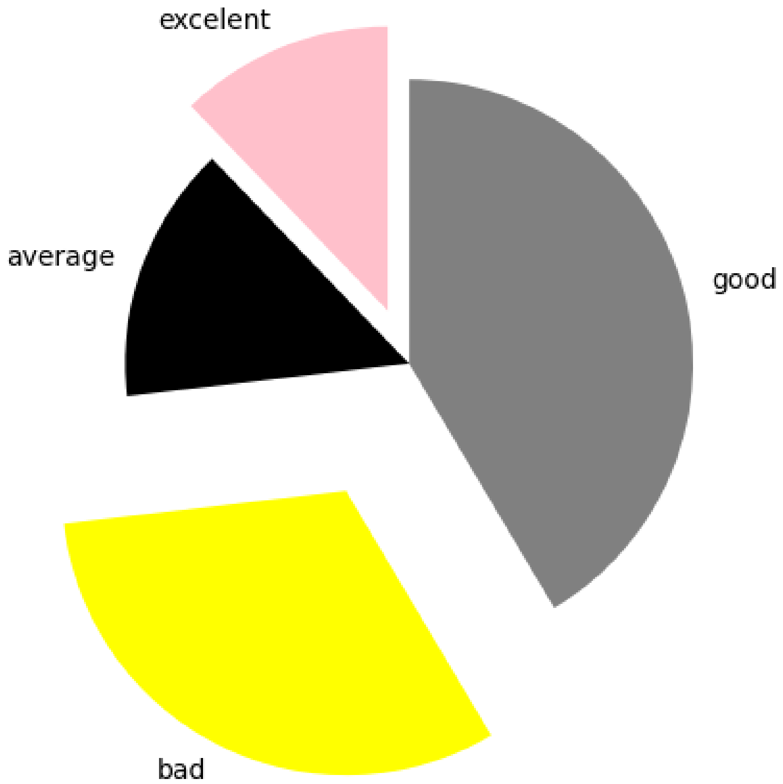


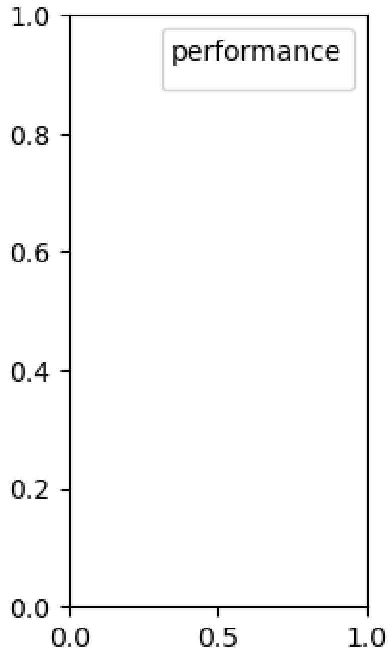
```
[126]: stu_performance=['excelent','average','bad','good']
       stu_values=[25,30,65,85]
       plt.pie(stu_values,labels=stu_performance,startangle=90,explode=[0.2,0,0.
        ↪5,0],colors=['pink','black','yellow','gray'])
       plt.legend(title='performance')
       plt.show()
```



[133]:
```
stu_performance=['excelent','average','bad','good']
stu_values=[25,30,65,85]
plt.pie(stu_values,labels=stu_performance,startangle=90,explode=[0.2,0,0.
 ↪5,0],colors=['pink','black','yellow','gray'])
plt.figure(figsize=(2,4))
plt.legend(title='performance')
plt.show()
```

```
No artists with labels found to put in legend.  Note that artists whose label
start with an underscore are ignored when legend() is called with no argument.
```

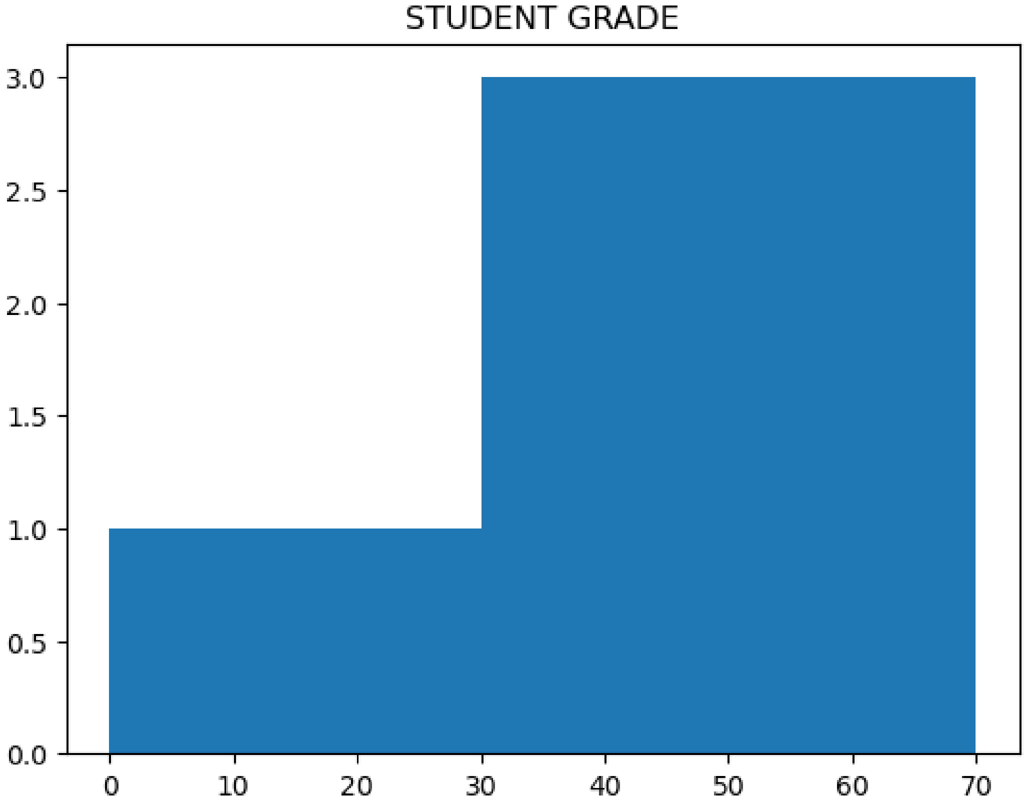

excelent
average
good
bad


1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.5
1.0
performance

Histrogram

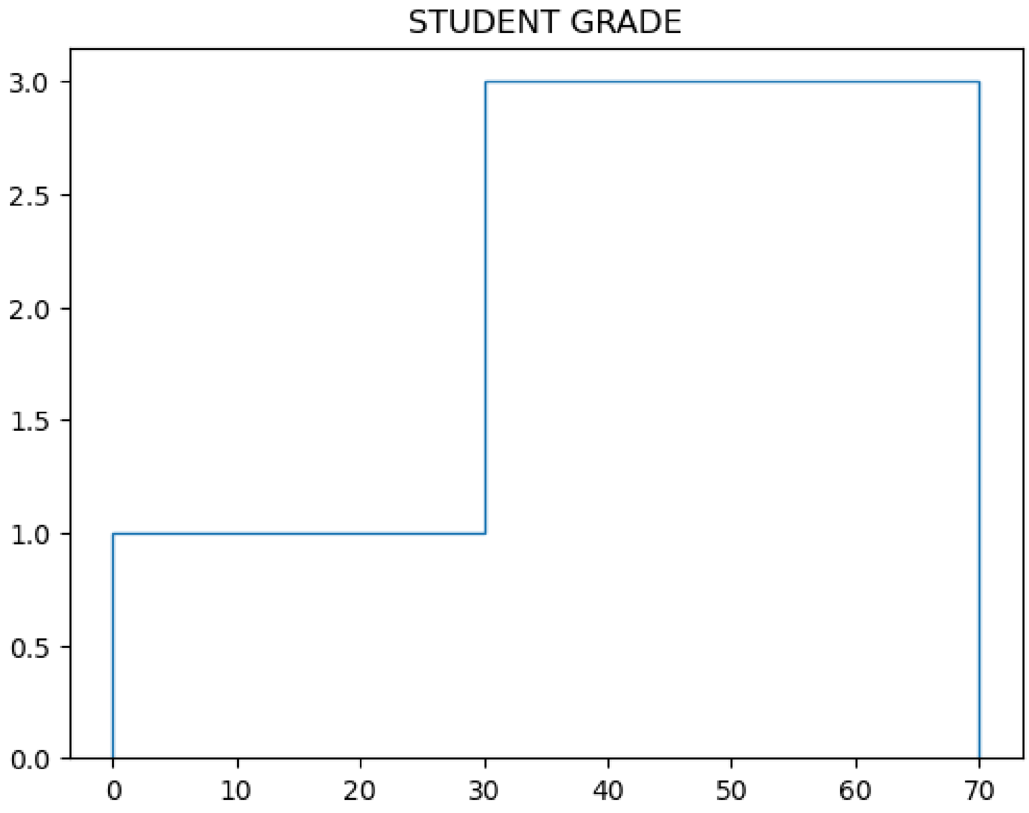
[134]:

```
markers=[90,50,40,30,20]
graders=[0,30,70]
plt.title('STUDENT GRADE')
plt.hist(markers,graders)
plt.show()
```



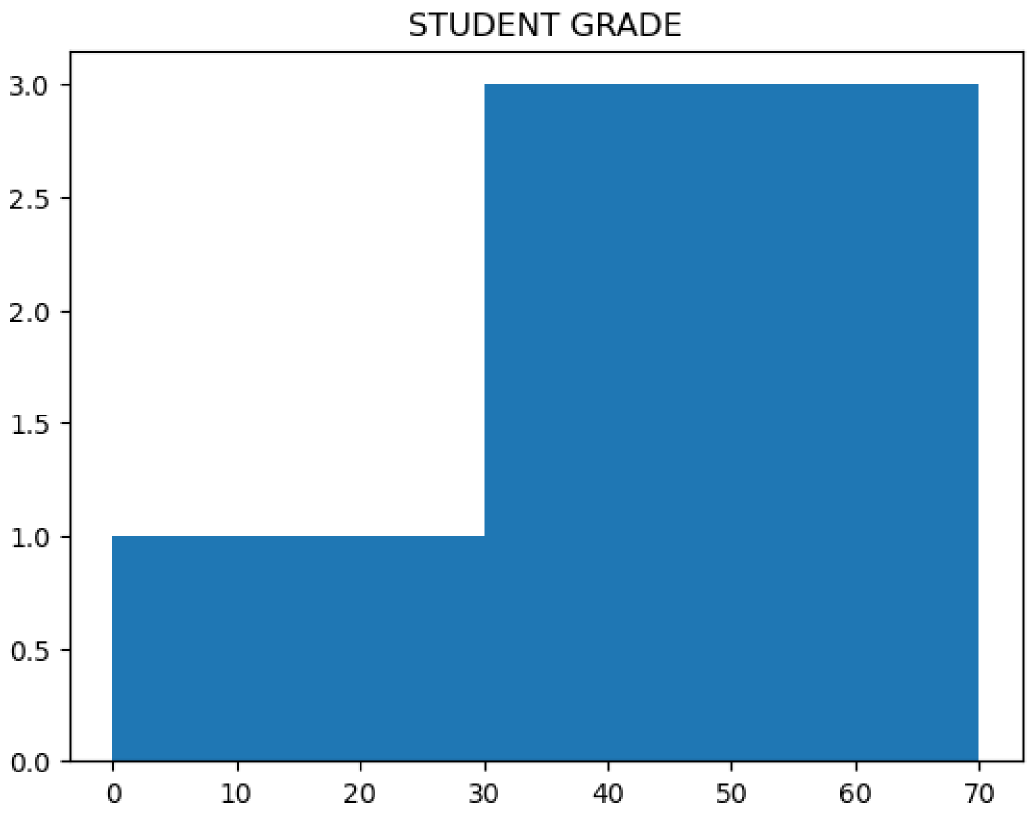
[137]:

```
markers=[90,50,40,30,20]
graders=[0,30,70]
plt.title('STUDENT GRADE')
plt.hist(markers,graders,histtype='step',rwidth=0.7)
plt.show()
```



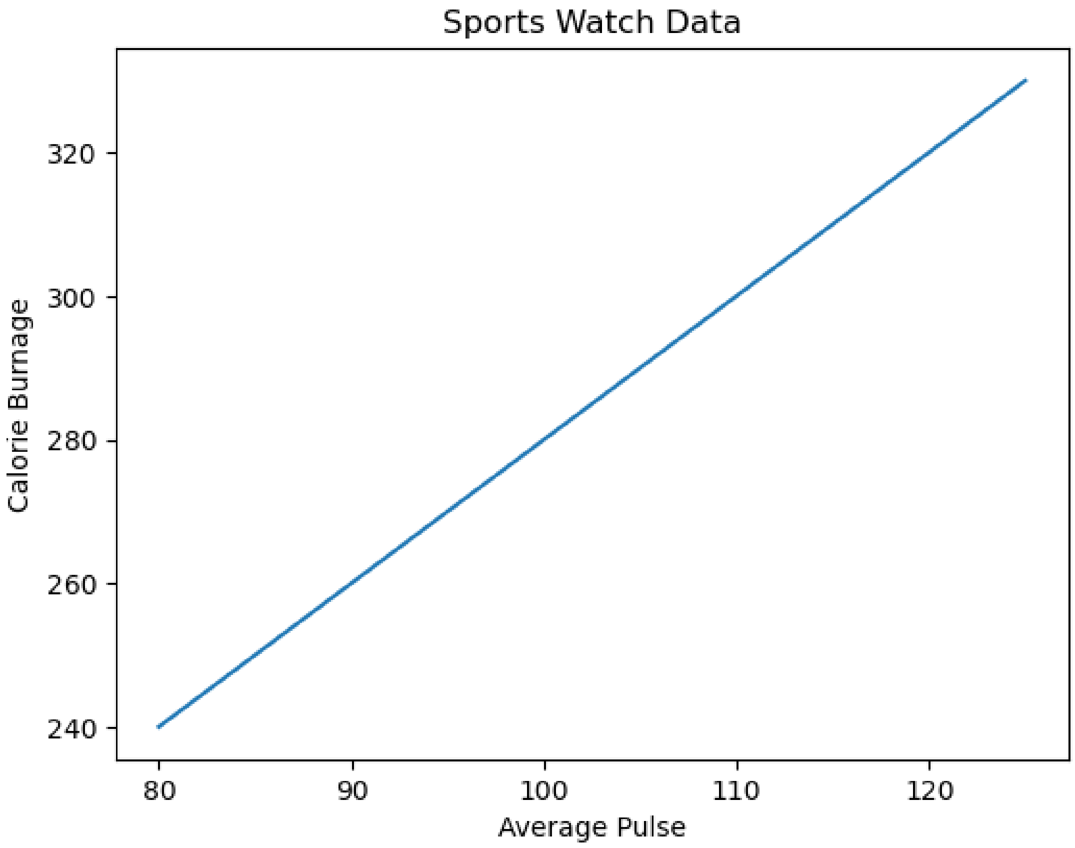
[138]:

```
markers=[90,50,40,30,20]
graders=[0,30,70]
plt.title('STUDENT GRADE')
plt.hist(markers,graders,histtype='stepfilled',rwidth=0.7)
plt.show()
```



[7]:

```
import numpy as np
import matplotlib.pyplot as plt

x = np.array([80, 85, 90, 95, 100, 105, 110, 115, 120, 125])
y = np.array([240, 250, 260, 270, 280, 290, 300, 310, 320, 330])

plt.plot(x, y)

plt.title("Sports Watch Data")
plt.xlabel("Average Pulse")
plt.ylabel("Calorie Burnage")

plt.show()
```


Sports Watch Data
Calorie Burnage
320
300
280
260
240
80
90
100
110
120
Average Pulse

[ ]: