IMPLEMENT DATA VISULIZATION USING MATPLOTLIB

In [5]:
```python
import matplotlib.pyplot as plt
```
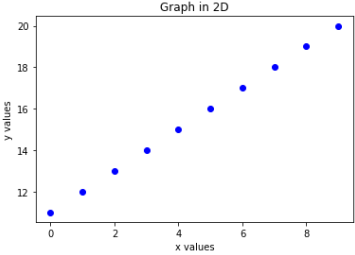
In [6]:
```python
import  numpy as np
```

In [7]:
```python
x=np.arange(0,10)
y=np.arange(11,21)
```

scatter plot

In [8]:
```python
plt.scatter(x,y,c='b')
plt.xlabel('x values')
plt.ylabel('y values')
plt.title('Graph in 2D')
```

Out[8]:

```
Text(0.5, 1.0, 'Graph in 2D')
```


LINE CHART

In [9]:
```python
plt.plot(x,y,'r')
```

Out[9]:

```
[<matplotlib.lines.Line2D at 0x6089fb0>]
```


In [10]:
```python
plt.plot(x,y,'r--')
```

Out[10]:

```
[<matplotlib.lines.Line2D at 0x60ceaf0>]
```


In [11]:
```python
plt.plot(x,y,'ro--')
```

Out[11]:

```
[<matplotlib.lines.Line2D at 0x610c3f0>]
```


In [12]:
```python
plt.plot(x,y,'ro--', linewidth=2, markersize=12)
plt.savefig('test.png')
```
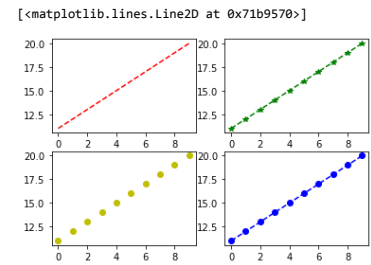
SUBPLOTS

In [13]:

```python
plt.subplot(2,2,1)
plt.plot(x,y,'r--')
plt.subplot(2,2,2)
plt.plot(x,y,'g*--')
plt.subplot(2,2,3)
plt.plot(x,y,'yo')
plt.subplot(2,2,4)
plt.plot(x,y,'bo--')
```
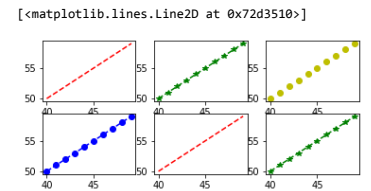
Out[13]:

```
[<matplotlib.lines.Line2D at 0x71b9570>]
```


In [14]:

```python
a=np.arange(40,50)
b=np.arange(50,60)
```

In [15]:

```python
plt.subplot(3,3,1)
plt.plot(a,b,'r--')
plt.subplot(3,3,2)
plt.plot(a,b,'g*--')
plt.subplot(3,3,3)
plt.plot(a,b,'yo')
plt.subplot(3,3,4)
plt.plot(a,b,'bo--')
plt.subplot(3,3,5)
plt.plot(a,b,'r--')
plt.subplot(3,3,6)
plt.plot(a,b,'g*--')
```
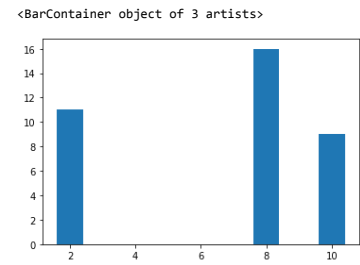
Out[15]:

```
[<matplotlib.lines.Line2D at 0x72d3510>]
```


BAR PLOT

In [16]:

```python
x=[2,8,10]
y=[11,16,9]
x1=[2,6,3]
y1=[4,9,36]
plt.bar(x,y)
```

Out[16]:

```
<BarContainer object of 3 artists>
```


In [17]:
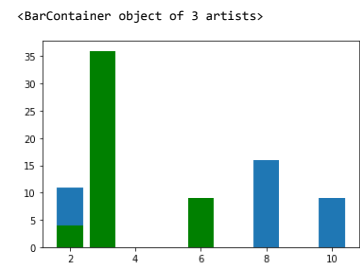
```python
x=[2,8,10]
y=[11,16,9]
x1=[2,6,3]
y1=[4,9,36]
plt.bar(x,y)
plt.bar(x1,y1,color='g')
```

Out[17]:

```
<BarContainer object of 3 artists>
```
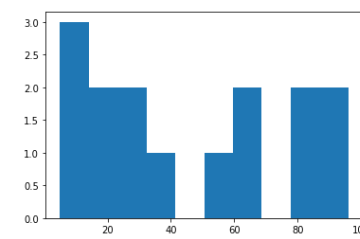

HISTOGRAM PLOT

In [18]:

```python
a= np.array([22,65,94,53,5,36,32,78,22,63,96,14,25,85,12])
plt.hist(a)
```

Out[18]:

```
(array([3., 2., 2., 1., 0., 1., 2., 0., 2., 2.]),
 array([ 5. , 14.1, 23.2, 32.3, 41.4, 50.5, 59.6, 68.7, 77.8, 86.9, 96. ]),
 <a list of 10 Patch objects>)
```

pie chart plot

In [19]:

```
labels='python','c++','ML','Java'
sizes=[263,241,456,120]
colors=['gold','yellowgreen','red','lightcoral']
explode=(0.2,0,0,0)
plt.pie(sizes,labels=labels,colors=colors,autopct='%1.2f%%',explode=explode)
```

Out[19]:

```
([<matplotlib.patches.Wedge at 0x73bf910>,
  <matplotlib.patches.Wedge at 0x73bfc30>,
  <matplotlib.patches.Wedge at 0x73cd030>,
  <matplotlib.patches.Wedge at 0x73cd430>],
 [Text(0.9377646693522077, 0.9003318415532935, 'python'),
  Text(-0.6747033075001826, 0.8687781344211618, 'c++'),
  Text(-0.48220823472661256, -0.9886734639717222, 'ML'),
  Text(1.0336618994982714, -0.3762221119573192, 'Java')],
 [Text(0.5770859503705894, 0.554050364032796, '24.35%'),
  Text(-0.36801998590919044, 0.4738789824115427, '22.31%'),
  Text(-0.2630226734872432, -0.5392764348936666, '42.22%'),
  Text(0.5638155815445116, -0.20521206106762865, '11.11%')])
```


In [20]:

```
labels='M3','DBMS','SEAM','DATA SCIENCE','OS'
sizes=[5,19,22,12,13]
colors=['gold','yellowgreen','red','lightcoral','blue']
explode=(0.2,0,0,0,0)
plt.pie(sizes,labels=labels,colors=colors,autopct='%1.2f%%',explode=explode)
```

Out[20]:

```
([<matplotlib.patches.Wedge at 0x73fb0f0>,
  <matplotlib.patches.Wedge at 0x73fb410>,
  <matplotlib.patches.Wedge at 0x73fb7f0>,
  <matplotlib.patches.Wedge at 0x73fbbf0>,
  <matplotlib.patches.Wedge at 0x7406110>],
 [Text(1.2683142288552134, 0.28527007709082625, 'M3'),
  Text(0.3120279443444563, 1.0548168381042147, 'DBMS'),
  Text(-1.0989233497815187, 0.048656667631128206, 'SEAM'),
  Text(-0.1214333863066035, -1.093276695393013, 'DATA SCIENCE'),
  Text(0.9229791755279563, -0.5984224607597329, 'OS')],
 [Text(0.7805010639109005, 0.1755508167127767, '7.04%'),
  Text(0.17019706055152162, 0.5753546389659352, '26.76%'),
  Text(-0.5994127362444647, 0.0265400005260693, '30.99%'),
  Text(-0.06623639253090564, -0.5963327429418007, '16.90%'),
  Text(0.5034431866516125, -0.32641225132349067, '18.31%')])
```