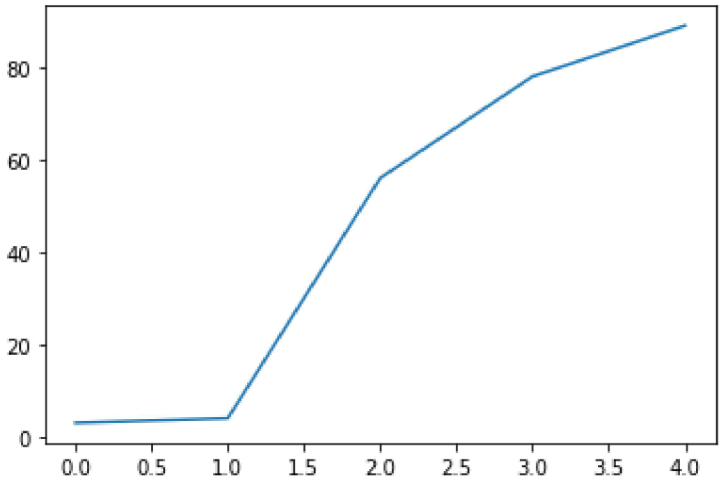
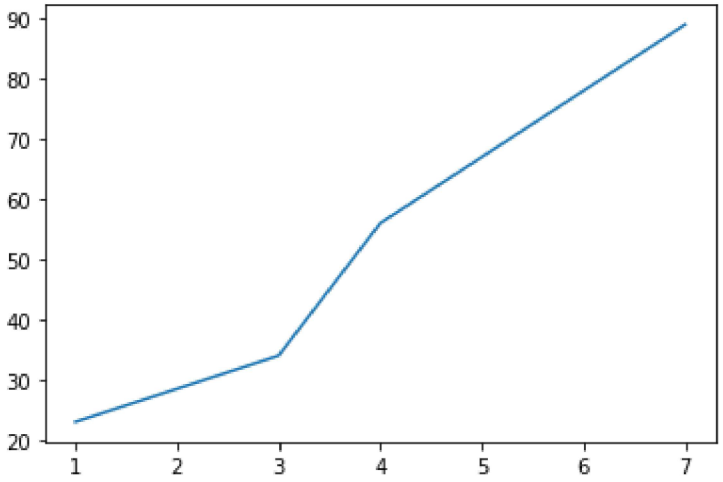
In [4]:
```
import matplotlib.pyplot as plt
l=[3,4,56,78,89]
plt.plot(l)
#plt.show()
#matplotlib it self selected x axis values
```



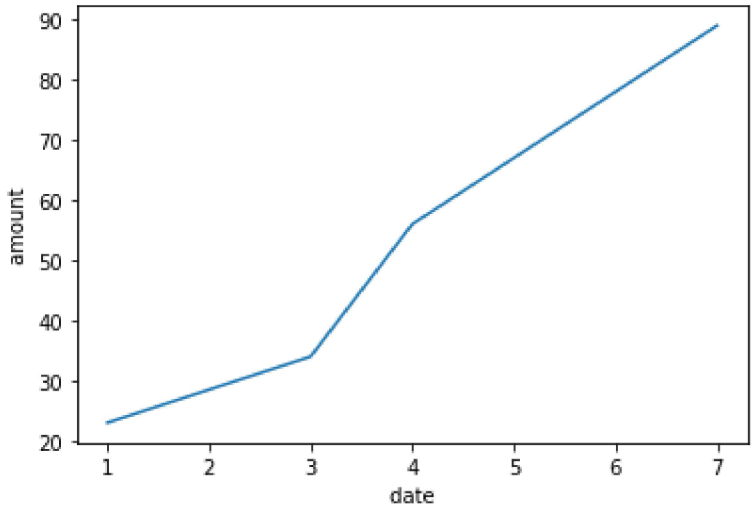
In [6]:
```
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list)
#plt.plot(x,y)
```

Out[6]:
```
[<matplotlib.lines.Line2D at 0x1b4861be2e0>]
```



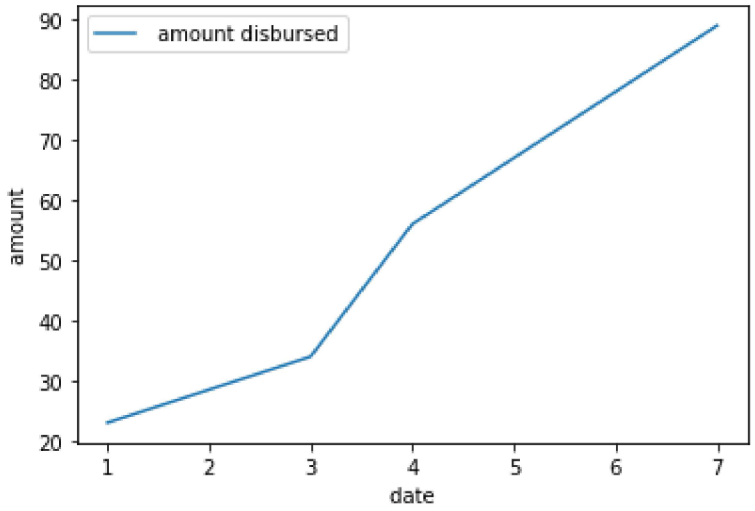
In [7]:
```
list=[23,34,56,78,89]
date=[1,3,4,6,7]

plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount
plt.plot(date,list)
```

Out[7]:
```
[<matplotlib.lines.Line2D at 0x1b486211a90>]
```



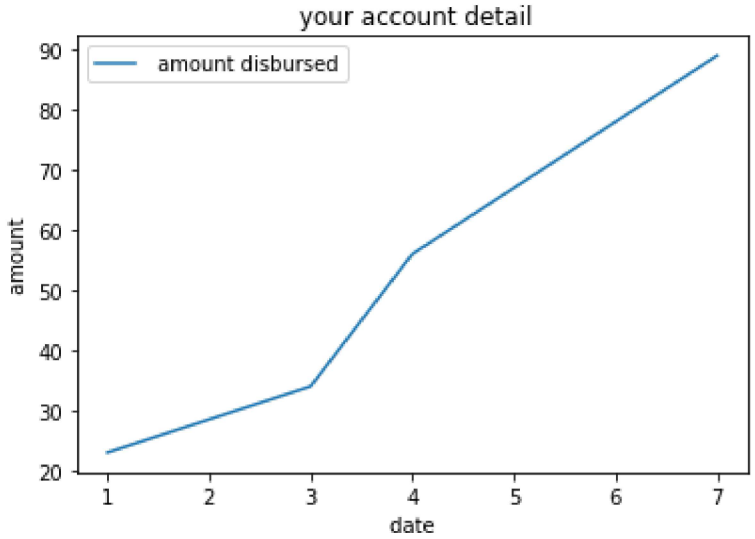
In [10]:
```
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list,label =' amount disbursed')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount
plt.legend()
```

Out[10]:
```
<matplotlib.legend.Legend at 0x1b4879f2fd0>
```



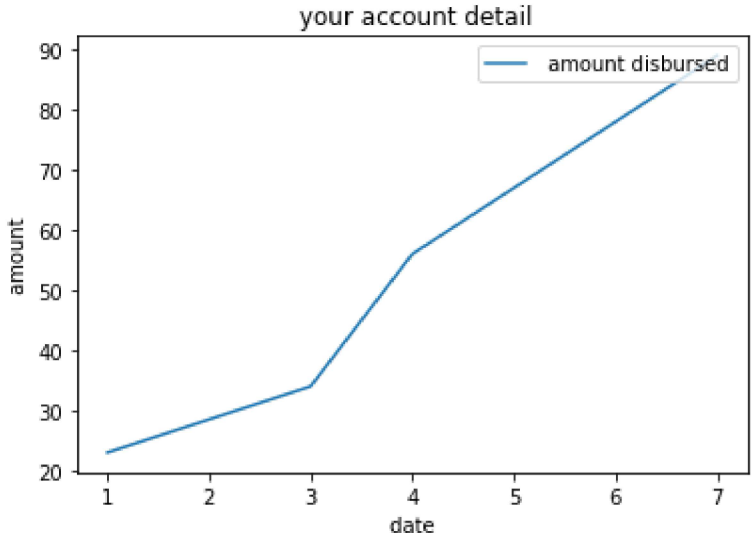
In [13]:
```
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list,label =' amount disbursed')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount
plt.legend()# you can mention legend anywhere
plt.title(" your account detail")
```

Out[13]:
```
Text(0.5, 1.0, ' your account detail')
```



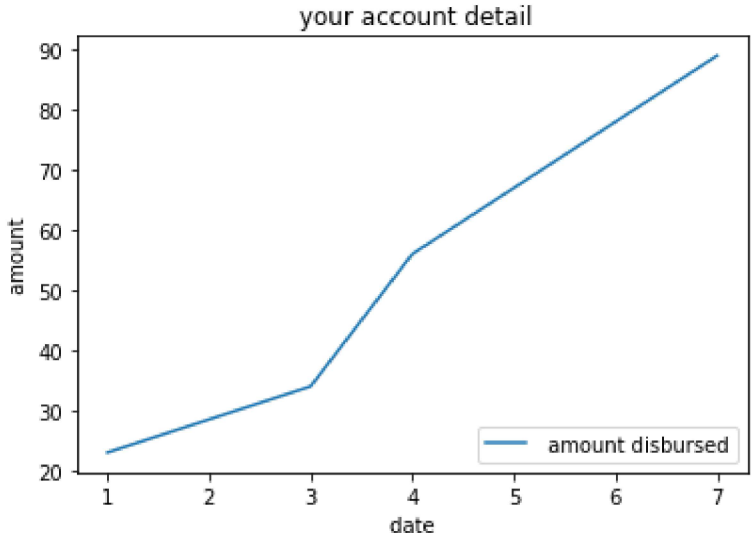
In [15]:
```
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list,label =' amount disbursed')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='upper right')# you can mention legend anywhere
```

Out[15]: <matplotlib.legend.Legend at 0x1b487889820>



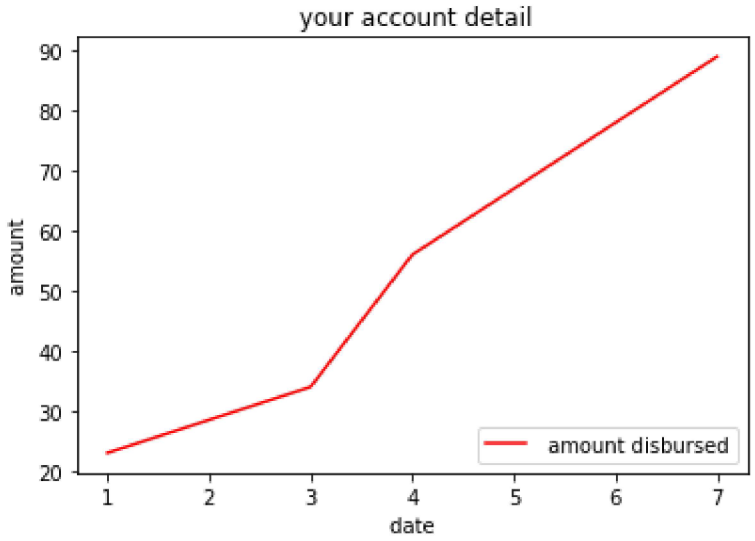
In [16]:
```
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list,label =' amount disbursed')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[16]: <matplotlib.legend.Legend at 0x1b4871523d0>



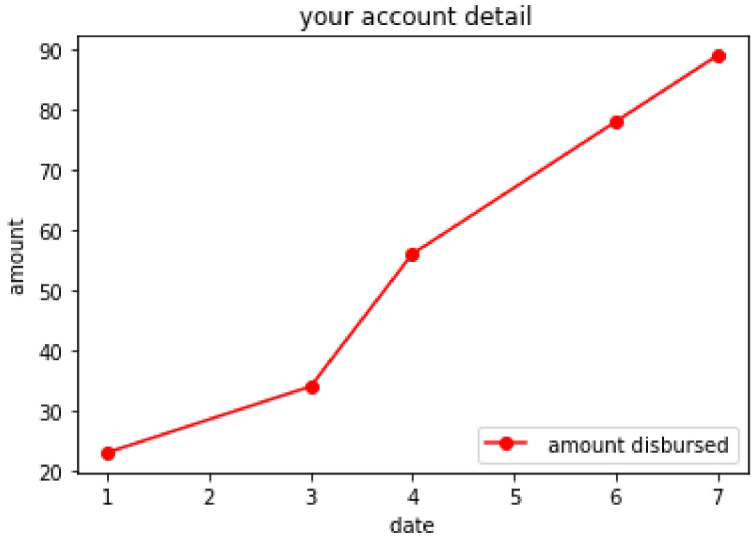
In [17]:
```
#add color
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list,label =' amount disbursed',color='r')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[17]: <matplotlib.legend.Legend at 0x1b4877af250>



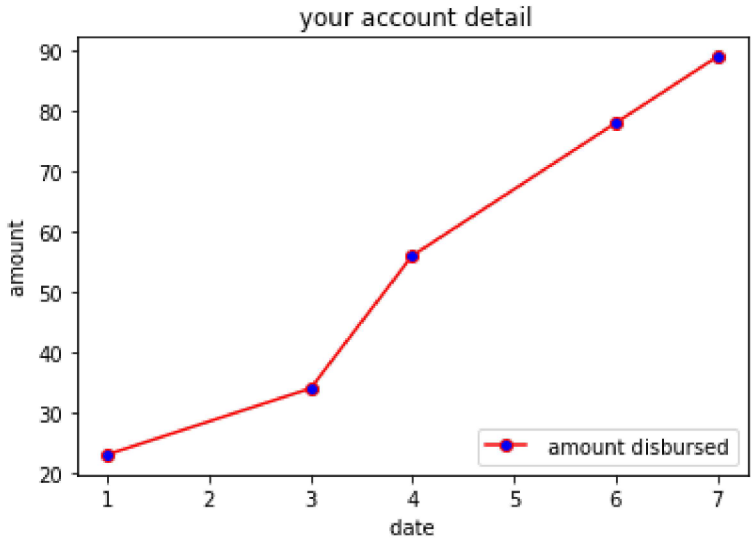
In [21]:
```
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list,label =' amount disbursed',color='r',marker='o')# mentione circle marker
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[21]:
```
<matplotlib.legend.Legend at 0x1b4875c0220>
```



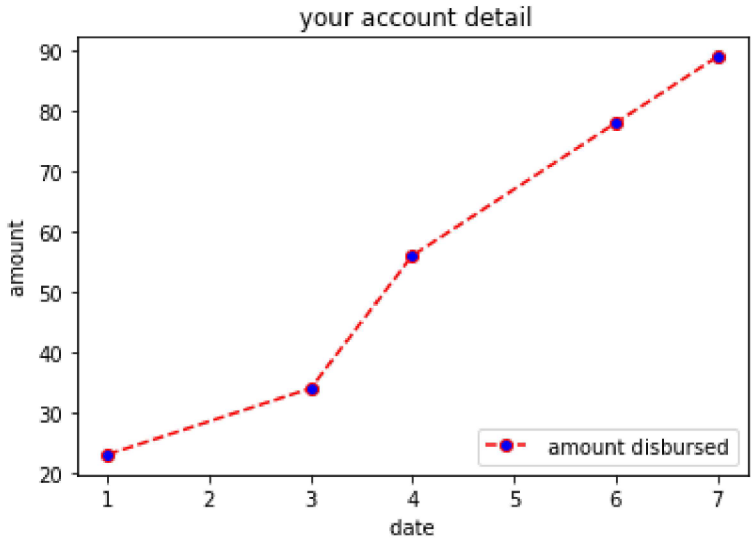
In [22]:
```
#change markerface color
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list,label =' amount disbursed',color='r',marker='o',markerfacecolor='b')# mentione circle mark
er
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[22]: <matplotlib.legend.Legend at 0x1b487620700>



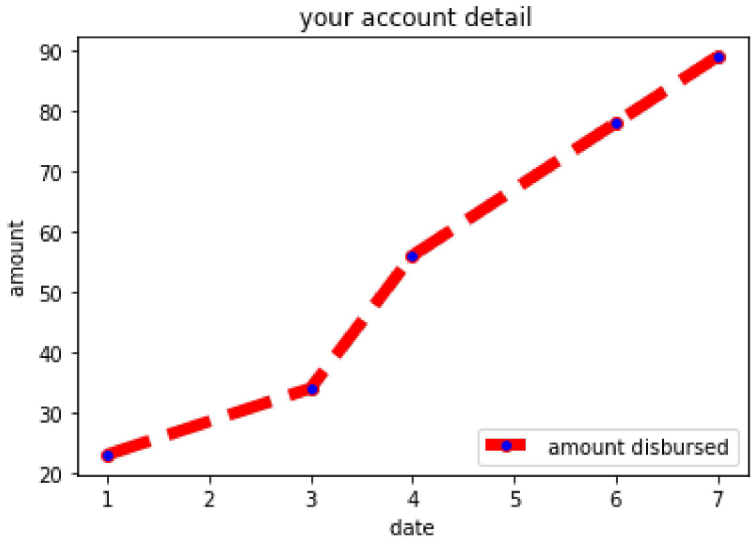
In [24]:
```
# change line style as dashed
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list,label =' amount disbursed',color='r',marker='o',markerfacecolor='b',linestyle='--')# menti
one circle marker
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[24]: <matplotlib.legend.Legend at 0x1b4876e3100>



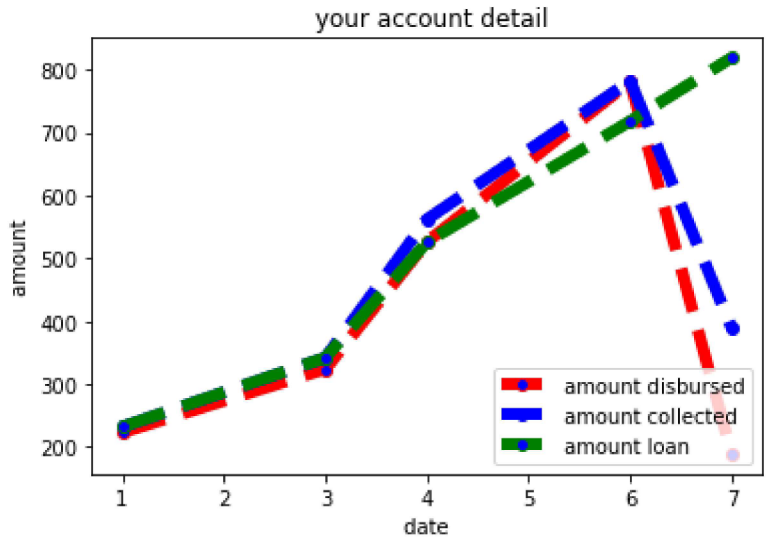
In [25]:
```
# change line width
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.plot(date,list,label =' amount disbursed',color='r',marker='o',markerfacecolor='b',
         linestyle='--',linewidth=6)# mentione circle marker
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[25]: <matplotlib.legend.Legend at 0x1b4877268b0>



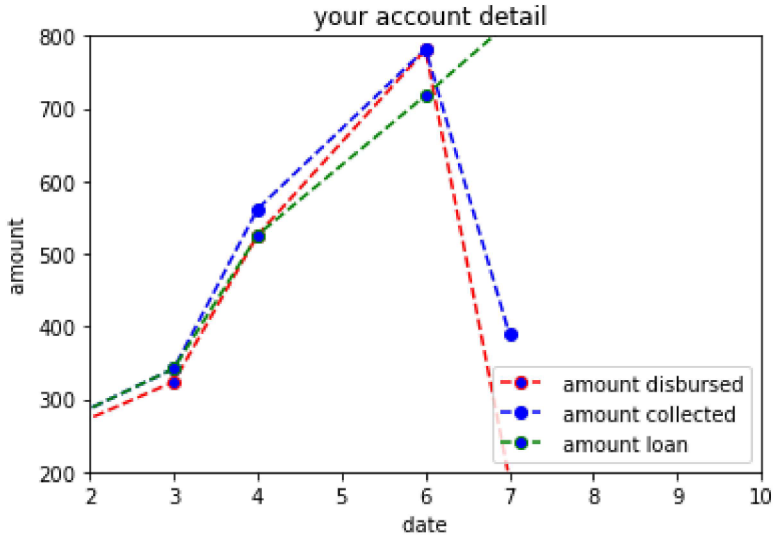
In [28]:
```
# change line width
list1=[223,324,526,781,189]
list2=[232,342,562,782,389]
list3=[232,342,526,718,819]
date=[1,3,4,6,7]
plt.plot(date,list1,label =' amount disbursed',color='r',marker='o',markerfacecolor='b',
         linestyle='--',linewidth=6)# mentione circle marker
plt.plot(date,list2,label =' amount collected',color='b',marker='o',markerfacecolor='b',
         linestyle='--',linewidth=6)
plt.plot(date,list3,label =' amount loan',color='g',marker='o',markerfacecolor='b',
         linestyle='--',linewidth=6)
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[28]: <matplotlib.legend.Legend at 0x1b488bc8ca0>



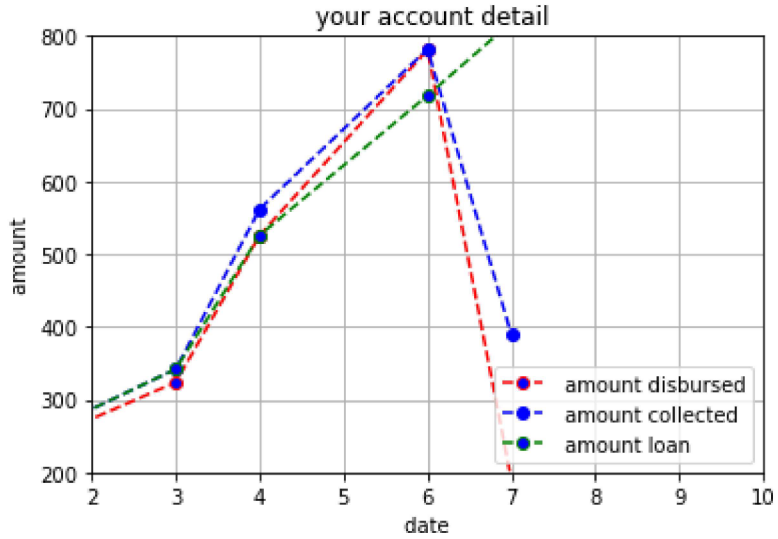
In [31]:
```
# set x limit and y limit
list1=[223,324,526,781,189]
list2=[232,342,562,782,389]
list3=[232,342,526,718,819]
date=[1,3,4,6,7]
plt.plot(date,list1,label =' amount disbursed',color='r',marker='o',markerfacecolor='b',
         linestyle='--')# mentione circle marker
plt.plot(date,list2,label =' amount collected',color='b',marker='o',markerfacecolor='b',
         linestyle='--')
plt.plot(date,list3,label =' amount loan',color='g',marker='o',markerfacecolor='b',
         linestyle='--')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount
plt.xlim(2,10)# lower limit  and upper limit
plt.ylim(200,800)

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[31]: <matplotlib.legend.Legend at 0x1b488c0d820>



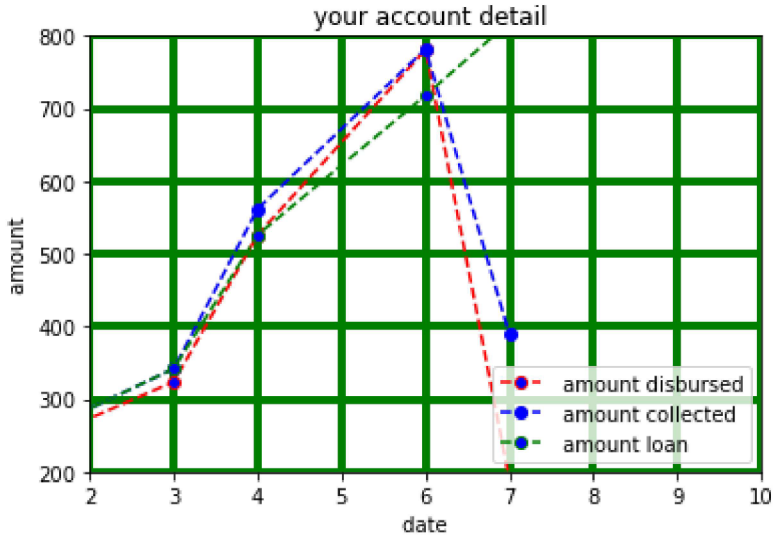
In [32]:
```
# setup grid in plot
# set x limit and y limit
list1=[223,324,526,781,189]
list2=[232,342,562,782,389]
list3=[232,342,526,718,819]
date=[1,3,4,6,7]
plt.plot(date,list1,label =' amount disbursed',color='r',marker='o',markerfacecolor='b',
         linestyle='--')# mentione circle marker
plt.plot(date,list2,label =' amount collected',color='b',marker='o',markerfacecolor='b',
         linestyle='--')
plt.plot(date,list3,label =' amount loan',color='g',marker='o',markerfacecolor='b',
         linestyle='--')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount
plt.xlim(2,10)# lower limit  and upper limit
plt.ylim(200,800)
plt.grid(True)
plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[32]: <matplotlib.legend.Legend at 0x1b4874723d0>

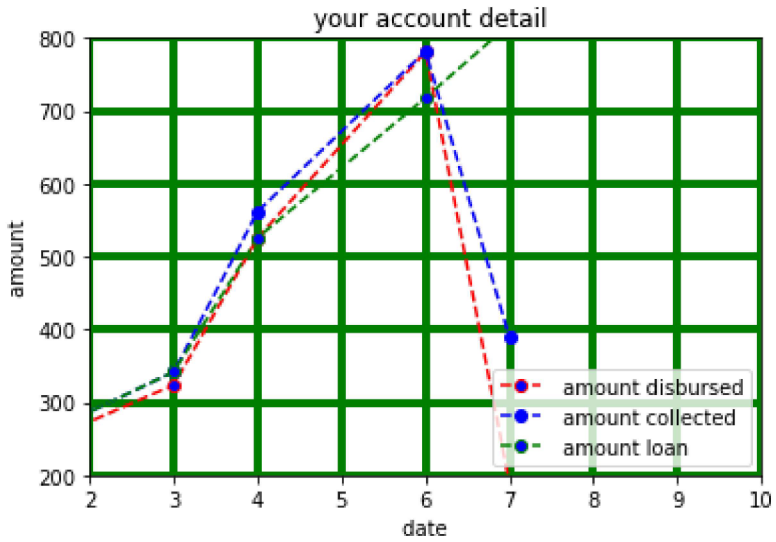


In [34]:
```
#save image
list1=[223,324,526,781,189]
list2=[232,342,562,782,389]
list3=[232,342,526,718,819]
date=[1,3,4,6,7]
plt.plot(date,list1,label =' amount disbursed',color='r',marker='o',markerfacecolor='b',
         linestyle='--')# mentione circle marker
plt.plot(date,list2,label =' amount collected',color='b',marker='o',markerfacecolor='b',
         linestyle='--')
plt.plot(date,list3,label =' amount loan',color='g',marker='o',markerfacecolor='b',
         linestyle='--')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount
plt.xlim(2,10)# lower limit  and upper limit
plt.ylim(200,800)
plt.grid(True,linewidth=4,color='g')
plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[34]: <matplotlib.legend.Legend at 0x1b487948b50>

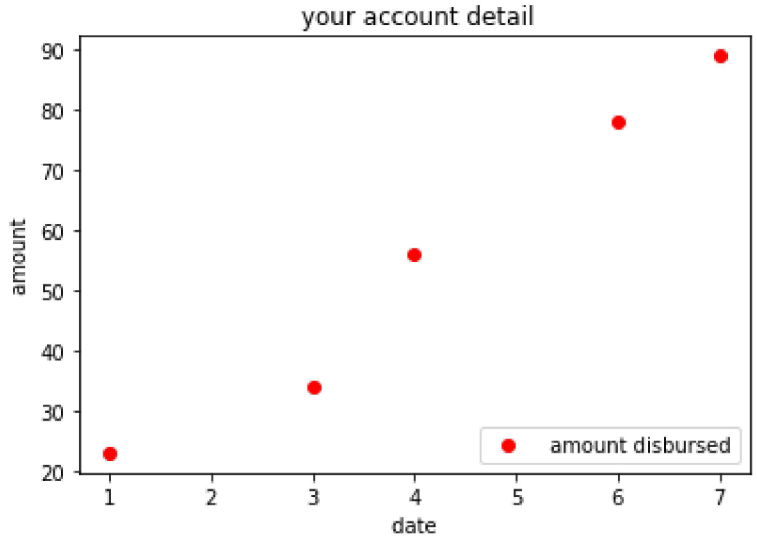


In [36]:
```
# setup grid line width and color
# set x limit and y limit
list1=[223,324,526,781,189]
list2=[232,342,562,782,389]
list3=[232,342,526,718,819]
date=[1,3,4,6,7]
plt.plot(date,list1,label =' amount disbursed',color='r',marker='o',markerfacecolor='b',
         linestyle='--')# mentione circle marker
plt.plot(date,list2,label =' amount collected',color='b',marker='o',markerfacecolor='b',
         linestyle='--')
plt.plot(date,list3,label =' amount loan',color='g',marker='o',markerfacecolor='b',
         linestyle='--')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount
plt.xlim(2,10)# lower limit  and upper limit
plt.ylim(200,800)
plt.grid(True,linewidth=4,color='g')
plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
plt.savefig('img2.png',dpi=300,facecolor='r')
```



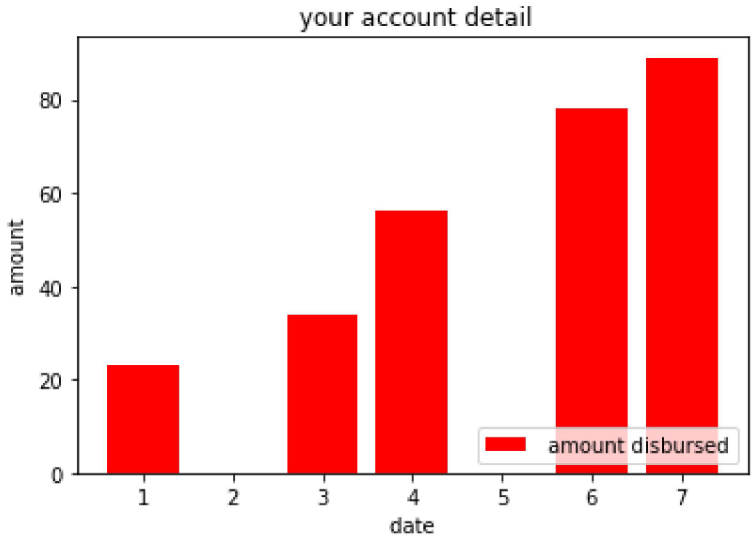
In [38]:
```
#scatter plot
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.scatter(date,list,label =' amount disbursed',color='r')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[38]: <matplotlib.legend.Legend at 0x1b488f82cd0>



In [39]:
```
#bar plot
list=[23,34,56,78,89]
date=[1,3,4,6,7]
plt.bar(date,list,label =' amount disbursed',color='r')
plt.xlabel(' date ')# x axis name as date
plt.ylabel(' amount ')# y axis named as amount

plt.title(" your account detail")
plt.legend(loc ='lower right')# you can mention legend anywhere
```

Out[39]: <matplotlib.legend.Legend at 0x1b488d95880>

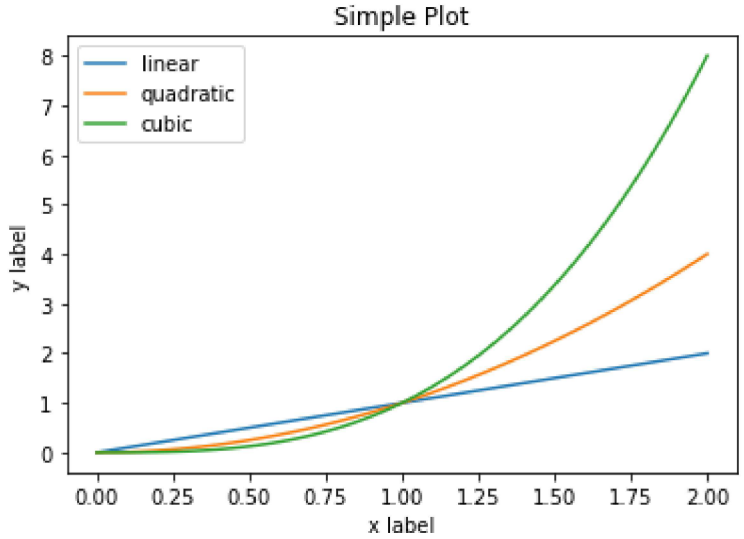


In [19]:
```
import numpy as np
x = np.linspace(0, 2, 100)

x
```

Out[19]:
```
array([0.        , 0.02020202, 0.04040404, 0.06060606, 0.08080808,
       0.1010101 , 0.12121212, 0.14141414, 0.16161616, 0.18181818,
       0.2020202 , 0.22222222, 0.24242424, 0.26262626, 0.28282828,
       0.3030303 , 0.32323232, 0.34343434, 0.36363636, 0.38383838,
       0.4040404 , 0.42424242, 0.44444444, 0.46464646, 0.48484848,
       0.50505051, 0.52525253, 0.54545455, 0.56565657, 0.58585859,
       0.60606061, 0.62626263, 0.64646465, 0.66666667, 0.68686869,
       0.70707071, 0.72727273, 0.74747475, 0.76767677, 0.78787879,
       0.80808081, 0.82828283, 0.84848485, 0.86868687, 0.88888889,
       0.90909091, 0.92929293, 0.94949495, 0.96969697, 0.98989899,
       1.01010101, 1.03030303, 1.05050505, 1.07070707, 1.09090909,
       1.11111111, 1.13131313, 1.15151515, 1.17171717, 1.19191919,
       1.21212121, 1.23232323, 1.25252525, 1.27272727, 1.29292929,
       1.31313131, 1.33333333, 1.35353535, 1.37373737, 1.39393939,
       1.41414141, 1.43434343, 1.45454545, 1.47474747, 1.49494949,
       1.51515152, 1.53535354, 1.55555556, 1.57575758, 1.5959596 ,
       1.61616162, 1.63636364, 1.65656566, 1.67676768, 1.6969697 ,
       1.71717172, 1.73737374, 1.75757576, 1.77777778, 1.7979798 ,
       1.81818182, 1.83838384, 1.85858586, 1.87878788, 1.8989899 ,
       1.91919192, 1.93939394, 1.95959596, 1.97979798, 2.        ])
```

In [20]:
```
plt.plot(x, x, label='linear')  # Plot some data on the (implicit) axes.
plt.plot(x, x**2, label='quadratic')  # etc.
plt.plot(x, x**3, label='cubic')
plt.xlabel('x label')
plt.ylabel('y label')
plt.title("Simple Plot")
plt.legend()
```

Out[20]: <matplotlib.legend.Legend at 0x1b48792a6d0>



In [41]:
```
x = [10, 20, 30]
y = [10, 40, 90]
z = [10, 50, 40]
plt.plot(x, y)
plt.plot(x, z)
plt.title("test plot")
plt.xlabel("x")
plt.ylabel("y and z")
plt.legend(["this is y", "this is z"])
plt.show()
```

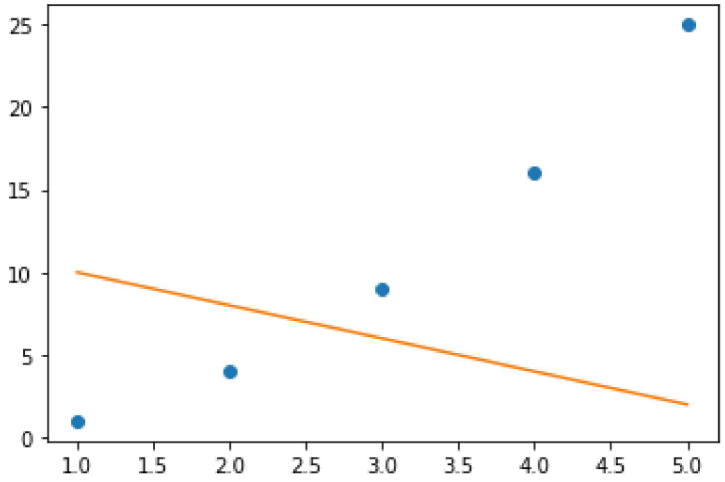
In [43]:
```
import pandas as pd
sample_data = pd.read_csv('data.csv')
```

In [44]:
```
sample_data
```

Out[44]:

	column_a	column_b	column_c
0	1	1	10
1	2	4	8
2	3	9	6
3	4	16	4
4	5	25	2

In [45]:
```
plt.plot(sample_data.column_a, sample_data.column_b, 'o')
plt.plot(sample_data.column_a, sample_data.column_c)
plt.show()
```



In [46]:
```
data = pd.read_csv('population.csv')
```

In [47]:
```
data
```

Out[47]:

	country	year	population
0	Afghanistan	1952	8425333
1	Afghanistan	1957	9240934
2	Afghanistan	1962	10267083
3	Afghanistan	1967	11537966
4	Afghanistan	1972	13079460
...	...	...	...
1699	Zimbabwe	1987	9216418
1700	Zimbabwe	1992	10704340
1701	Zimbabwe	1997	11404948
1702	Zimbabwe	2002	11926563
1703	Zimbabwe	2007	12311143

1704 rows × 3 columns

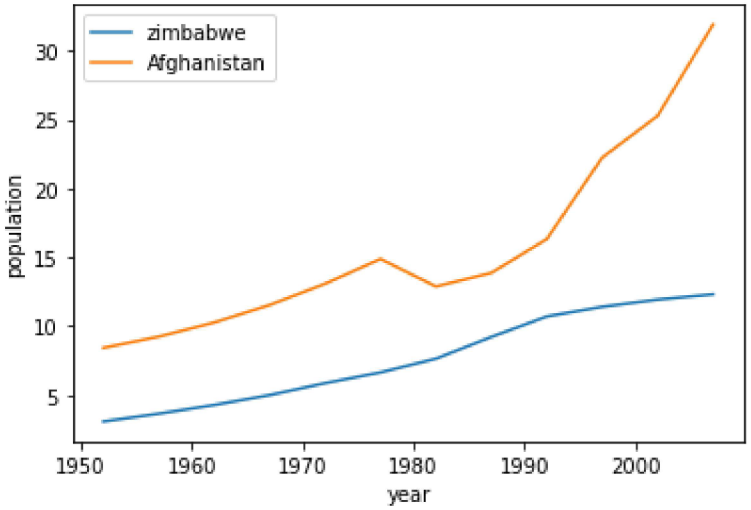
In [48]:
```
data[data.country == 'Zimbabwe']
```

Out[48]:

	country	year	population
1692	Zimbabwe	1952	3080907
1693	Zimbabwe	1957	3646340
1694	Zimbabwe	1962	4277736
1695	Zimbabwe	1967	4995432
1696	Zimbabwe	1972	5861135
1697	Zimbabwe	1977	6642107
1698	Zimbabwe	1982	7636524
1699	Zimbabwe	1987	9216418
1700	Zimbabwe	1992	10704340
1701	Zimbabwe	1997	11404948
1702	Zimbabwe	2002	11926563
1703	Zimbabwe	2007	12311143

In [49]:
```
zi=data[data.country == 'Zimbabwe']
af=data[data.country == 'Afghanistan']
```

In [50]:
```
plt.plot(zi.year, zi.population / 10**6)
plt.plot(af.year, af.population / 10**6)
plt.legend(['zimbabwe', 'Afghanistan'])
plt.xlabel('year')
plt.ylabel('population')
plt.show()
```



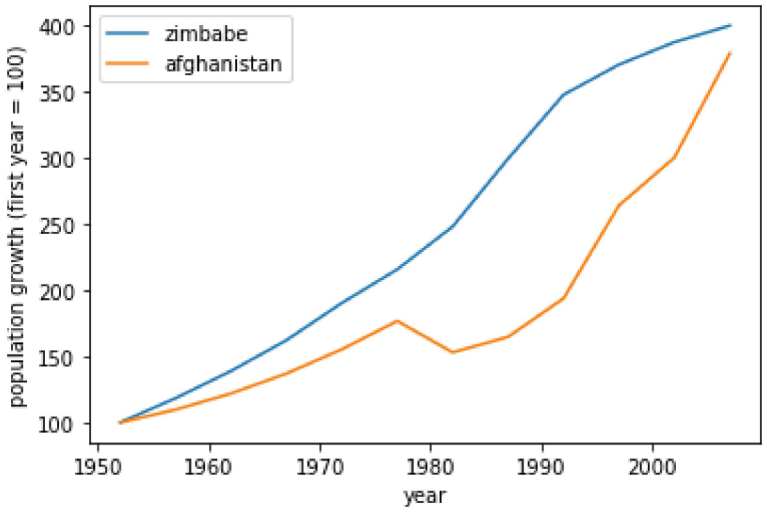
In [51]:
```
zi.population
```

Out[51]:
```
1692     3080907
1693     3646340
1694     4277736
1695     4995432
1696     5861135
1697     6642107
1698     7636524
1699     9216418
1700    10704340
1701    11404948
1702    11926563
1703    12311143
Name: population, dtype: int64
```

In [52]:
```
zi.population / zi.population.iloc[0] * 100
```

Out[52]:
```
1692    100.000000
1693    118.352810
1694    138.846645
1695    162.141603
1696    190.240569
1697    215.589338
1698    247.866099
1699    299.146258
1700    347.441192
1701    370.181508
1702    387.112074
1703    399.594762
Name: population, dtype: float64
```

In [53]:
```
plt.plot(zi.year, zi.population / zi.population.iloc[0] * 100)
plt.plot(af.year, af.population / af.population.iloc[0] * 100)
plt.legend(['zimbabe', 'afghanistan'])
plt.xlabel('year')
plt.ylabel('population growth (first year = 100)')
plt.show()
```



In [ ]:
```

```