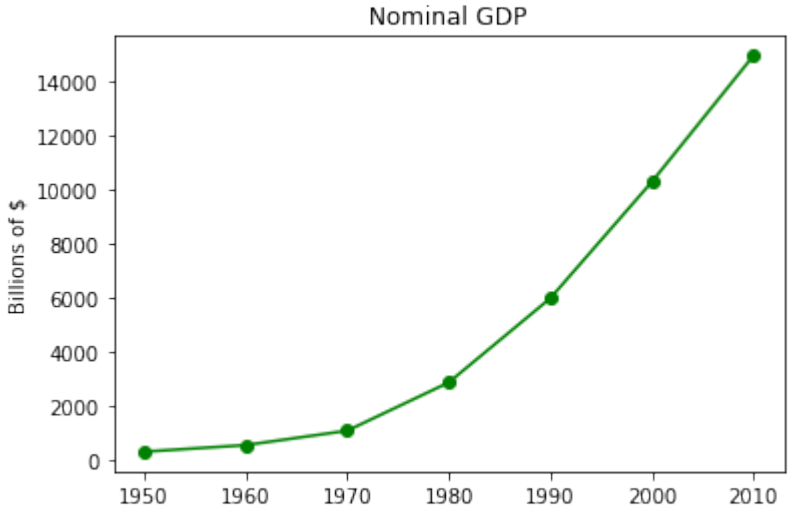
Charts

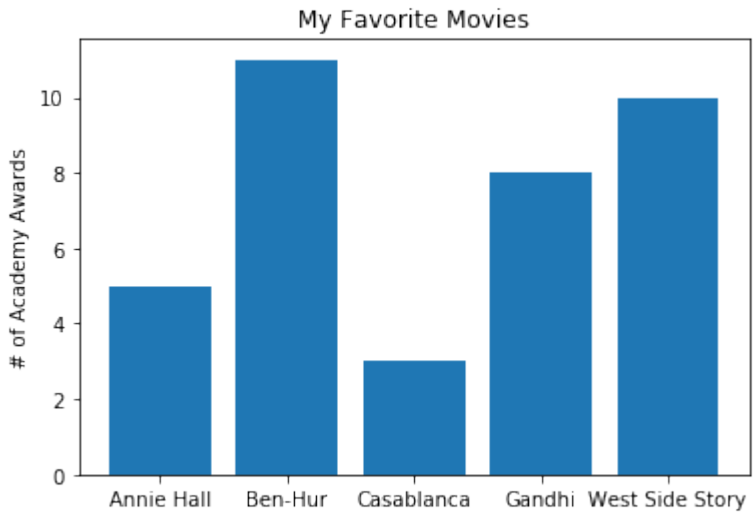
Line chart:

```
import matplotlib.pyplot as plt


def make_chart_simple_line_chart():

    years = [1950, 1960, 1970, 1980, 1990, 2000, 2010]
     gdp = [300.2, 543.3, 1075.9, 2862.5, 5979.6, 10289.7,
14958.3]

    # create a line chart, years on x-axis, gdp on y-axis
       plt.plot(years, gdp, color='green', marker='o',
linestyle='solid')

    # add a title
    plt.title("Nominal GDP")

    # add a label to the y-axis
    plt.ylabel("Billions of $")
    plt.show()

make_chart_simple_line_chart()
```



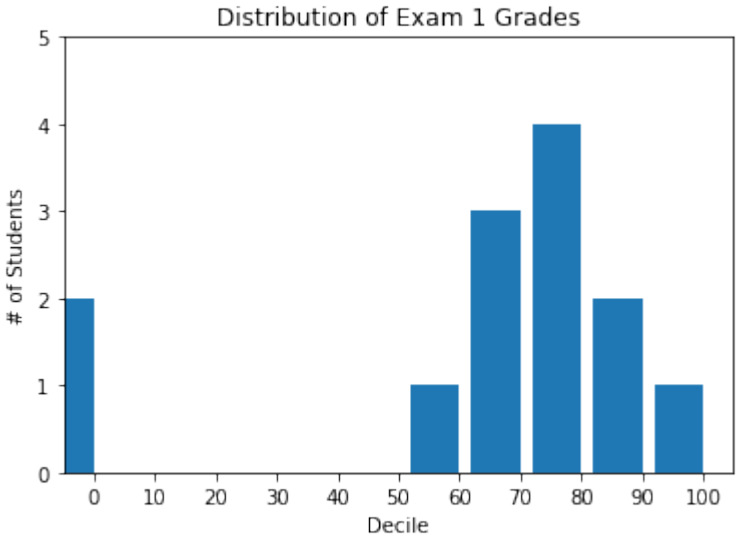
Bar chart:

```
import matplotlib.pyplot as plt


def make_chart_simple_bar_chart():

    movies = ["Annie Hall", "Ben-Hur", "Casablanca", "Gandhi",
"West Side Story"]
    num_oscars = [5, 11, 3, 8, 10]

    # bars are by default width 0.8, so we'll add 0.1 to the
left coordinates
    # so that each bar is centered
    xs = [i + 0.1 for i, _ in enumerate(movies)]

     # plot bars with left x-coordinates [xs], heights
[num_oscars]
    plt.bar(xs, num_oscars)
    plt.ylabel("# of Academy Awards")
    plt.title("My Favorite Movies")

    # label x-axis with movie names at bar centers
     plt.xticks([i + 0.1 for i, _ in enumerate(movies)],
movies)

    plt.show()
make_chart_simple_bar_chart()
```



Histogramm:

```
import matplotlib.pyplot as plt
from collections import Counter


def make_chart_histogramm():

    grades = [83,95,91,87,70,0,85,82,100,67,73,77,0]
    decile = lambda grade: grade // 10 * 10
    histogram = Counter(decile(grade) for grade in grades)

     plt.bar([x - 4 for x in histogram.keys()], # shift each
bar to the left by 4
            histogram.values(),               # give each bar
its correct height
            8)                                # give each bar
a width of 8
    plt.axis([-5, 105, 0, 5])                  # x-axis from
-5 to 105,
                                              # y-axis from 0
to 5
    plt.xticks([10 * i for i in range(11)])    # x-axis labels
at 0, 10, ..., 100
    plt.xlabel("Decile")
    plt.ylabel("# of Students")
    plt.title("Distribution of Exam 1 Grades")
    plt.show()
make_chart_histogramm()
```


Distribution of Exam 1 Grades
# of Students
Decile
0
1
2
3
4
5
0
10
20
30
40
50
60
70
80
90
100