Q12)

from matplotlib import pyplot as plt

def make\_histogram(nums):

    plt.hist(nums)

    plt.xlabel("Value")

    plt.ylabel("Frequency")

    plt.xlim(min(nums)-1, max(nums)+1)

    plt.title("Histogram")

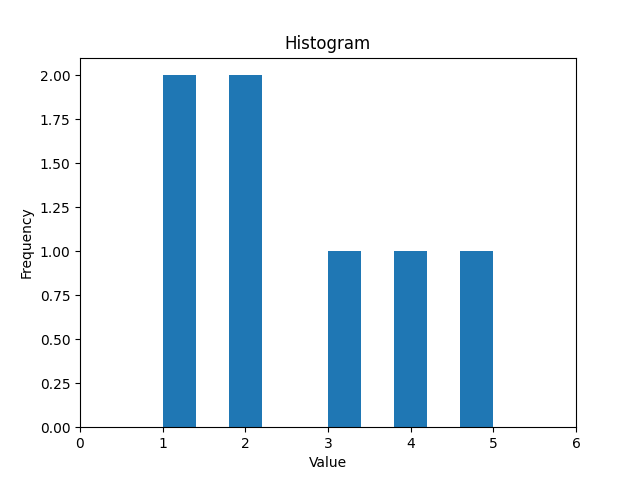
    plt.show()

num\_str = input("Enter space separated numbers to plot histogram\n")

data = num\_str.split()

data = [int(i) for i in data]

make\_histogram(data)



Q13)

from matplotlib import pyplot as plt

from math import sin, cos, exp

def plotFunctions():

    x = range(0, 100)

    y\_sin = [sin(i) for i in x]

    y\_cos = [cos(i) for i in x]

    y\_poly = [i\*\*5 for i in x]

    y\_exp = [exp(i) for i in x]

    plt.subplot(2, 2, 1)

    plt.plot(x, y\_sin)

    plt.xlabel("x")

    plt.ylabel("sin(x)")

    plt.title("x vs sin(x)")

    plt.subplot(2, 2, 2)

    plt.plot(x, y\_cos)

    plt.xlabel("x")

    plt.ylabel("cos(x)")

    plt.title("x vs cos(x)")

    plt.subplot(2, 2, 3)

    plt.plot(x, y\_exp)

    plt.xlabel("x")

    plt.ylabel("exp(x)")

    plt.title("x vs exp(x)")

    plt.subplot(2, 2, 4)

    plt.plot(x, y\_poly)

    plt.xlabel("x")

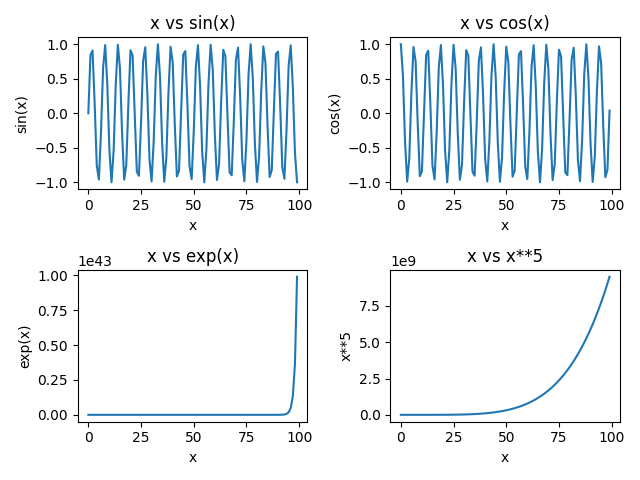
    plt.ylabel("x\*\*5")

    plt.title("x vs x\*\*5")

    plt.tight\_layout()

    plt.show()

plotFunctions()



Q14)

try:

    src = input("Enter name of source file : ")

    dest = input("Enter name of destination file : ")

    with open(src, "r") as f1:

        with open(dest, "w") as f2:

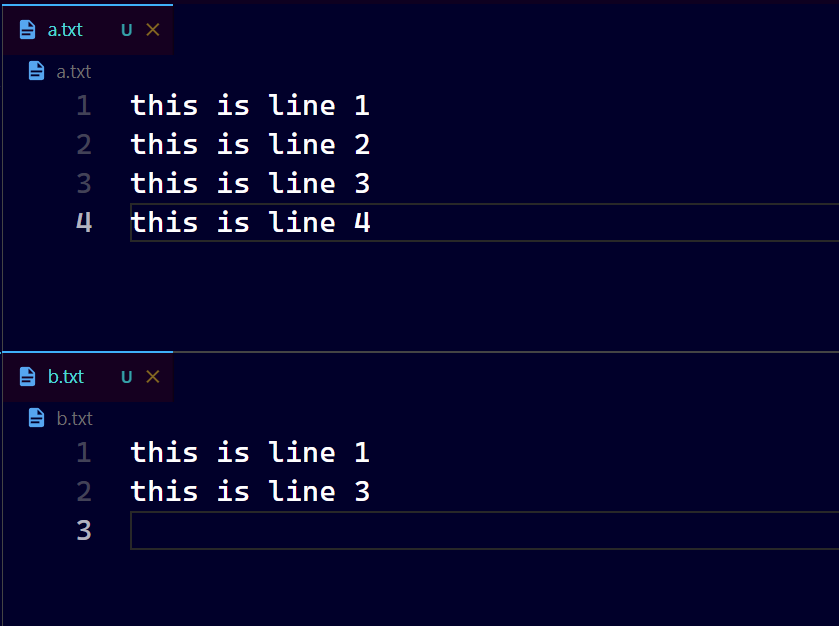
            lines = f1.readlines()

            alternate\_lines = lines[::2]

            f2.writelines(alternate\_lines)

except IOError:

    print("Error opening your files")



Q15)

class Student:

    max\_average = 0

    def \_\_init\_\_(self, name, marks):

*self*.name = name

*self*.marks = marks

*self*.average = sum(marks) / len(marks)

*# Updating CLASS variable max\_average using Student. notation not self.*

        Student.max\_average = max(Student.max\_average, *self*.average)

    def display(self):

        print(f"Name : {*self*.name}")

        print(f"Marks : {*self*.marks}")

        print(f"Average: {*self*.average}")

        print(f"Class Max average : {*self*.max\_average}\n")

george = Student("george", [4, 5, 2])

mili = Student("mili", [14, 5, 2])

corpse = Student("corpse", [4, 15, 2])

george.display()

mili.display()

corpse.display()

