

PYTHON DATA SCIENCE PROJECTS

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Print and commend using Python

Configuration Details:

1.	Problem	Print a statement and commend practice
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

```
#Print a Sting statement  
print("College of Engineering, Anna University")
```

Source Code Output Details:

College of Engineering, Anna University

Add variable to another variable using Python

Configuration Details:

1.	Problem	Add many variables using Python
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

```
variable1=("Division of High Voltage Engineering | ")
```

```
variable2=("College of Engineering | ")
```

```
variable3=("Anna University | ")
```

```
variable4=("Chennai")
```

```
print(variable1+variable2+variable3+variable4)
```

Source Code Output Details:

Division of High Voltage Engineering | College of Engineering | Anna University | Chennai



Arithmetic Operation in Python

Configuration Details:

1.	Problem	Arithmetic Operation (addition, subtraction, multiplication and division)
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler
4.	Analytical Operation	Addition (" + "), Subtraction (" - "), Division (" / "), Multiplication(" * "), Modulus (" % "),

Source Code Details:

#Enter Integer Inputs

```
first_number=int(input("Enter the value of a:"))  
second_number=int(input("Enter the value of b:"))
```

#Addition of two numbers

```
Addition=first_number+second_number  
print("Addition of two inputs is:", Addition)
```

#Multiplication two numbers

```
Multiplication=first_number*second_number  
print("Multiplication of two inputs is:", Multiplication)
```

#Division two numbers

```
Division=first_number/second_number  
print("Division of two inputs is:", Division)
```

#Subtraction two numbers

```
Subtraction=first_number-second_number  
print("Subtraction of two inputs is:", Subtraction)
```

#Modulus two numbers

```
Modulus=first_number%second_number  
print("Modulus of two inputs is:", Modulus)
```



Source Code Output Details:

Enter the value of a:20

Enter the value of b:15

Addition of two inputs is: 35

Multiplication of two inputs is: 300

Division of two inputs is: 1.3333333333333333

Subtraction of two inputs is: 5

Modulus of two inputs is: 5

Type Casting in Python

Configuration Details:

1.	Problem	Type casting
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler
4.	Analytical Operation	Conversion from “Integer to Float” and “Float to Integer”.

Source Code Details:

```
#Enter First Inputs
First_number=int(input("Enter the value of a:"))
print(First_number)
print(type(First_number))

#Enter Second Inputs
Second_number=float(input("Enter the value of b:"))
print(Second_number)
print(type(Second_number))

#Casting First Inputs into Float
print("Python casting First Number is:")
Third_number=float(First_number)
print(Third_number)

#Casting Second Inputs into Integer
print("Python casting Second Number is:")
Fourth_number=int(Second_number)
print(Fourth_number)
```

Source Code Output Details:

Enter the value of a:20

20

<class 'int'>

Enter the value of b:23.5

23.5

<class 'float'>

Python casting First Number is:

20.0

Python casting Second Number is:

23

Convert input into upper case in Python

Configuration Details:

1.	Problem	Convert my given input into upper case letters
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

```
a=input("Enter the input content:")  
print(a)  
print(a.upper())
```

Source Code Output Details:

Enter the input content:

Transport is a fundamental requirement of modern life, but the traditional combustion engine is quickly becoming outdated. Petrol or diesel vehicles are highly polluting and are being quickly replaced by fully electric vehicles. The running cost of an electric vehicle is much lower than an equivalent petrol or diesel vehicle. Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel. Electric vehicles are more efficient, and that combined with the electricity cost means that charging an electric vehicle is cheaper than filling petrol or diesel for your travel requirements. Using renewable energy sources can make the use of electric vehicles more eco-friendly. The electricity cost can be reduced further if charging is done with the help of renewable energy sources installed at home, such as solar panels. Electric vehicles have very low maintenance costs because they don't have as many moving parts as an internal combustion vehicle.

TRANSPORT IS A FUNDAMENTAL REQUIREMENT OF MODERN LIFE, BUT THE TRADITIONAL COMBUSTION ENGINE IS QUICKLY BECOMING OUTDATED. PETROL OR DIESEL VEHICLES ARE HIGHLY POLLUTING AND ARE BEING QUICKLY REPLACED BY FULLY ELECTRIC VEHICLES. THE RUNNING COST OF AN ELECTRIC VEHICLE IS MUCH LOWER THAN AN EQUIVALENT PETROL OR DIESEL VEHICLE. ELECTRIC VEHICLES USE ELECTRICITY TO CHARGE THEIR BATTERIES INSTEAD OF

USING FOSSIL FUELS LIKE PETROL OR DIESEL. ELECTRIC VEHICLES ARE MORE EFFICIENT, AND THAT COMBINED WITH THE ELECTRICITY COST MEANS THAT CHARGING AN ELECTRIC VEHICLE IS CHEAPER THAN FILLING PETROL OR DIESEL FOR YOUR TRAVEL REQUIREMENTS. USING RENEWABLE ENERGY SOURCES CAN MAKE THE USE OF ELECTRIC VEHICLES MORE ECO-FRIENDLY. THE ELECTRICITY COST CAN BE REDUCED FURTHER IF CHARGING IS DONE WITH THE HELP OF RENEWABLE ENERGY SOURCES INSTALLED AT HOME, SUCH AS SOLAR PANELS. ELECTRIC VEHICLES HAVE VERY LOW MAINTENANCE COSTS BECAUSE THEY DON'T HAVE AS MANY MOVING PARTS AS AN INTERNAL COMBUSTION VEHICLE.

Print pyramid pattern using Python

Configuration Details:

1.	Problem	Print Pyramid Pattern by using star symbol
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

```
n = int(input("Enter the number of rows:"))
```

```
for i in range(0, n):
```

```
    for j in range(0, i + 1):
```

```
        print("* ", end="")  
    print()
```

Source Code Output Details:

Enter the number of rows:5

*

* *

* * *

* * * *

* * * * *



Number pattern using Python

Configuration Details:

1.	Problem	Number Pattern by using numbers
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

```
n = int(input("Enter the number of rows:"))
```

```
for i in range(1, n + 1):
```

```
    for j in range(1, i + 1):
```

```
        print(j, end="")
```

```
    print()
```

Source Code Output Details:

Enter the number of rows:8

1

12

123

1234

12345

123456

1234567

12345678



IfIf else condition in Python

Configuration Details:

1.	Problem	IfIf else condition
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler
4.	Analytical Operation	Determine the greater numbers between two integers.

Source Code Details:

#Enter Inputs

First_number=int(input("Enter the value of a:"))

Second_number=int(input("Enter the value of b:"))

if First_number>Second_number:

print("Greater Number is:", First_number)

print("First_number is greater than Second_number")

print("Condition is True")

else:

print("Greater Number is:", Second_number)

print("Condition is False")

Source Code Output Details:

Condition I:

Enter the value of a:25

Enter the value of b:20

Greater Number is: 25

First_number is greater than Second_number

Condition is True

Condition II:

Enter the value of a:10

Enter the value of b:25

Greater Number is: 25

Condition is False

Count of character in string using Python

Configuration Details:

1.	Problem	Count Function
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler
4.	Analytical Operation	Count “g” and “e” character in a string using Python

Source Code Details:

```
#Input Inititalization
Name=str(input("Enter the character:"))
#Count Operation
counter=Name.count('g')
print("Count of 'g' in given input is:"+str(counter))
counter=Name.count('e')
print("Count of 'e' in given input is:"+str(counter))
```

Source Code Output Details:

Enter the character:

Transport is a fundamental requirement of modern life, but the traditional combustion engine is quickly becoming outdated. Petrol or diesel vehicles are highly polluting and are being quickly replaced by fully electric vehicles. The running cost of an electric vehicle is much lower than an equivalent petrol or diesel vehicle. Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel. Electric vehicles are more efficient, and that combined with the electricity cost means that charging an electric vehicle is cheaper than filling petrol or diesel for your travel requirements. Using renewable energy sources can make the use of electric vehicles more eco-friendly. The electricity cost can be reduced further if charging is done with the help of renewable energy sources installed at home, such as solar panels. Electric vehicles have very low maintenance costs because they don't have as many moving parts as an internal combustion vehicle.

Count of 'g' in given input is:17

Count of 'e' in given input is:128

Largest and Smallest Number Search using Python

Configuration Details:

1.	Problem	Find maximum and minimum numbers in a given input
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

Largest Number Search:

#Getting Input

First_Number=int(input("Enter the value of First Number:"))

Second_Number=int(input("Enter the value of Second Number:"))

Third_Number=float(input("Enter the value of Third Number:"))

#maximum Search

maximum=max(First_Number,Second_Number,Third_Number)

print("The largest number in a given input is:", maximum)

Smallest Number Search:

#Getting Input

First_Number=int(input("Enter the value of First Number:"))

Second_Number=int(input("Enter the value of Second Number:"))

Third_Number=float(input("Enter the value of Third Number:"))

#maximum Search

minimum=min(First_Number,Second_Number,Third_Number)

print("The smallest number in a given input is:", minimum)

Source Code Output Details:

Largest Number Search:

Enter the value of First Number:50

Enter the value of Second Number:100

Enter the value of Third Number:20.3

The largest number in a given input is: 100

Smallest Number Search:

Enter the value of First Number:10

Enter the value of Second Number:50

Enter the value of Third Number:22.1

The smallest number in a given input is: 10

Reverse a number using Python

Configuration Details:

1.	Problem	Reverse a number using Python. Example: 123456789 → 987654321
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler
4.	Analytic Solution	Initial reverse number = 0 <i>While</i> (<i>Number</i> > 0) Multiply reverse number by 10 and Add remainder of number divided by 10 to reverse number Divided number by 10 Return reverse number.

Source Code Details:

```
number=int(input("Enter the numbers:"))
reverse_number=0
while(number > 0):
    remainder = number % 10
    reverse_number = (reverse_number * 10) + remainder
    number = number // 10
print("The reverse number is :", reverse_number)
```

Source Code Output Details:

Enter the numbers:123456789

The reverse number is: 987654321

Students Marks and Grade calculation using Python

Configuration Details:

1.	Problem	Students Marks and Grade calculation
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

#Enter Student Details

```
student_name=input("Enter Student Name:")
student_Rollno=int(input("Enter Student Roll No:"))
student_Class=input("Enter Student Class:")
```

#Enter Student Marks Details

```
Mark_Python=int(input("Enter Python Mark:"))
Mark_Java=int(input("Enter Java Mark:"))
Mark_Data_Science=int(input("Enter Data Science Mark:"))
Mark_HTML=int(input("Enter HTML Mark:"))
Mark_CSS=int(input("Enter CSS Mark:"))
```

#Add Student Marks

```
total=(Mark_Python+Mark_Java+Mark_Data_Science+Mark_HTML+Mark_CSS)
print(total)
```

#Find Average

```
average=(total/500)*100
print(average)
```

#Find Grades

```
marks=100
if marks >=90:
    print("A+ Grade")
    print("Very Good")
elif marks >=80:
    print("A Grade")
```



```
    print("Good")
elif marks >=70:
    print("B+ Grade")
    print("Average")
elif marks >=60:
    print("B Grade")
    print("Below Average")
else:
    print("U Grade")
    print("RA")
```

Source Code Output Details:

Enter Student Name: John

Enter Student Roll No:2020218036

Enter Student Class: BE

Enter Python Mark:98

Enter Java Mark:99

Enter Data Science Mark:99

Enter HTML Mark:97

Enter CSS Mark:98

491

98.2

A+ Grade

Very Good

File Handling using Python

Configuration Details:

1.	Problem	Open, write and read a text file using Python
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details without listing method:

```
a=open("mydata.txt", "w")  
a.write("College of Engineering\n")  
a.write("Anna University\n")  
a.write("Tamil Nadu\n")  
a.write("Chennai")  
a.close()
```

Source Code Output Details without listing method:

```
College of Engineering  
Anna University  
Tamil Nadu  
Chennai
```

Source Code Details with listing method:

```
a=open("mydata.txt", "w")  
my_content=["College of Engineering\n", "Anna University\n", "Tamil Nadu\n", "Chennai"]  
a.writelines(my_content)
```

```
a.close()
```

Source Code Output Details with listing method:

College of Engineering

Anna University

Tamil Nadu

Chennai

Source Code Details with for loop method:

```
a=open("mydata.txt", "w")
```

```
my_content=["Division of High Voltage Engineering", "College of Engineering", "Anna  
University", "Tamil Nadu", "Chennai"]
```

```
for details in my_content:
```

```
    a.write(details+ "\n")
```

```
a.close()
```

Source Code Output Details with for loop method:

Division of High Voltage Engineering

College of Engineering

Anna University

Tamil Nadu

Chennai

Source Code Details for read operation:

```
a=open("mydata.txt", "r")
```

```
print(a.read())
```

Source Code Output Details for read operation:

Division of High Voltage Engineering

College of Engineering

Anna University

Tamil Nadu

Chennai

Source Code Details: (Read code from text file)

```
a=open("mydata.txt", "r")
```

```
mydata=a.readlines()
```

```
a.close()
```

```
for details in range(5):
```

```
    print(mydata[details])
```

Source Code Output Details: (Read code from text file)

Division of High Voltage Engineering

College of Engineering

Anna University

Tamil Nadu

Chennai



Source Code Details: (Read and repeat last line)

```
a=open("mydata.txt","r")
```

```
mydata=a.readlines()
```

```
a.close()
```

```
for details in range(5):
```

```
    print(mydata[details])
```

```
print(mydata[-1])
```

Source Code Output Details: (Read and repeat last line)

Division of High Voltage Engineering

College of Engineering

Anna University

Tamil Nadu

Chennai

Chennai



Create Update and Delete process in MySQL using Python

Configuration Details:

1.	Problem	Create, Update and delete database
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler Xampp Control Panel

Source Code Details:

```
import mysql.connector
```

```
con=mysql.connector.connect(host="localhost",user="root",password="",database="project1"
)
```

```
def insert(name, age, city):
```

```
    res=con.cursor()
```

```
    sql="insert into users (name,age, city) values(%s,%s,%s)"
```

```
    user=(name, age, city)
```

```
    res.execute(sql, user)
```

```
    con.commit()
```

```
    print("Data Insert Success")
```

```
def update(name, age, city, id):
```

```
    res=con.cursor()
```

```
    sql="update users set name=%s, age=%s, city=%s where id=%s"
```

```
    user=(name, age, city, id)
```

```
    res.execute(sql, user)
```

```
    con.commit()
```

```
    print("Data update Success")
```

```
def select():
```

```
    res=con.cursor()
```

```
    sql="SELECT ID, NAME, AGE, CITY from users"
```

```
    res.execute(sql)
```

```
    result=res.fetchall()
```

```
    print(result)
```




```

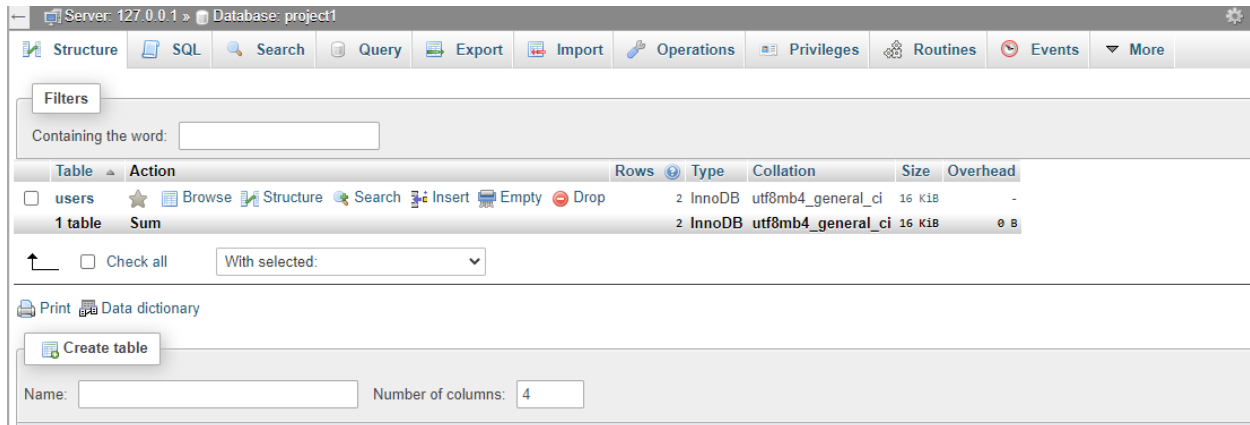
def delete(id):
    res=con.cursor()
    sql="delete from users where id=%s"
    user=(id,)
    res.execute(sql, user)
    con.commit()
    print("Data Delete success")

while True:
    print("1. Insert Data")
    print("2. Update Data")
    print("3. Select Data")
    print("4. Delete Data")
    print("5. Exit")
    choice=int(input("Enter Your Choice:"))

    if choice==1:
        name=input("Enter name:")
        age=input("Enter age:")
        city=input("Enter city:")
        insert(name, age, city)
    elif choice==2:
        id=input("Enter the id:")
        name=input("Enter name:")
        age=input("Enter age:")
        city=input("Enter city:")
        update(name, age, city, id)
    elif choice==3:
        select()
    elif choice==4:
        id=input("Enter the id to delecte:")
        delete(id)
    elif choice==5:
        quit()
    else:
        print("Invalid Selection...Please Try Again!")

```

Source Code Output Details:



1. Insert Data

2. Update Data

3. Select Data

4. Delete Data

5. Exit

Enter Your Choice:1

Enter name: Asuty

Enter age:24

Enter city: Nagercoil

Data Insert Success

Server: 127.0.0.1 » Database: project1 » Table: users

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Showing rows 0 - 2 (3 total, Query took 0.0019 seconds.)

SELECT * FROM `users`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	ID	NAME	AGE	CITY
<input type="checkbox"/> Edit Copy Delete	1	Suruthi	21	Chennai
<input type="checkbox"/> Edit Copy Delete	3	Dinesh Kumar	25	Salem
<input type="checkbox"/> Edit Copy Delete	4	Asuty	24	Nagercoil

Check all | With selected: Edit Copy Delete Export

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

1. Insert Data

2. Update Data

3. Select Data

4. Delete Data

5. Exit

Enter Your Choice:2

Enter the id:3

Enter name: Dinesh Kumar

Enter age:24

Enter city: KNR Chennai

Data update Success

Server: 127.0.0.1 > Database: project1 > Table: users

[Browse](#)
[Structure](#)
[SQL](#)
[Search](#)
[Insert](#)
[Export](#)
[Import](#)
[Privileges](#)
[Operations](#)
[Tracking](#)
[Triggers](#)

✓ Showing rows 0 - 2 (3 total, Query took 0.0020 seconds.)

SELECT * FROM `users`

☐ Profiling
 [\[Edit inline\]](#)
[\[Edit\]](#)
[\[Explain SQL\]](#)
[\[Create PHP code\]](#)
[\[Refresh\]](#)

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	ID	NAME	AGE	CITY
<input type="checkbox"/> Edit Copy Delete	1	Suruthi	21	Chennai
<input type="checkbox"/> Edit Copy Delete	3	Dinesh Kumar	24	KNR Chennai
<input type="checkbox"/> Edit Copy Delete	4	Asuty	24	Nagercoil

☐ Check all | With selected: [Edit](#) [Copy](#) [Delete](#) [Export](#)

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

[Print](#)
[Copy to clipboard](#)
[Export](#)
[Display chart](#)
[Create view](#)

Create Data Set using Pandas in Python

Configuration Details:

1.	Problem	Create student name list and student mark list using Pandas
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

```
import pandas as pd
```

```
dataset = {  
    'Students_names': ["Suruthi", "Monish Kumar", "Dinesh Kumar", "Hari Ram", "Tharini",  
    "Antli Sumin"],  
    'Students_marks': [92, 85, 93, 88, 96, 98]  
}
```

```
class_result = pd.DataFrame(dataset)  
print(class_result)
```

Source Code Output Details:

	<i>Students_names</i>	<i>Students_marks</i>
0	<i>Suruthi</i>	<i>92</i>
1	<i>Monish Kumar</i>	<i>85</i>
2	<i>Dinesh Kumar</i>	<i>93</i>
3	<i>Hari Ram</i>	<i>88</i>
4	<i>Tharini</i>	<i>96</i>
5	<i>Antli Sumin</i>	<i>98</i>

Create plot using Matplotlib in Python

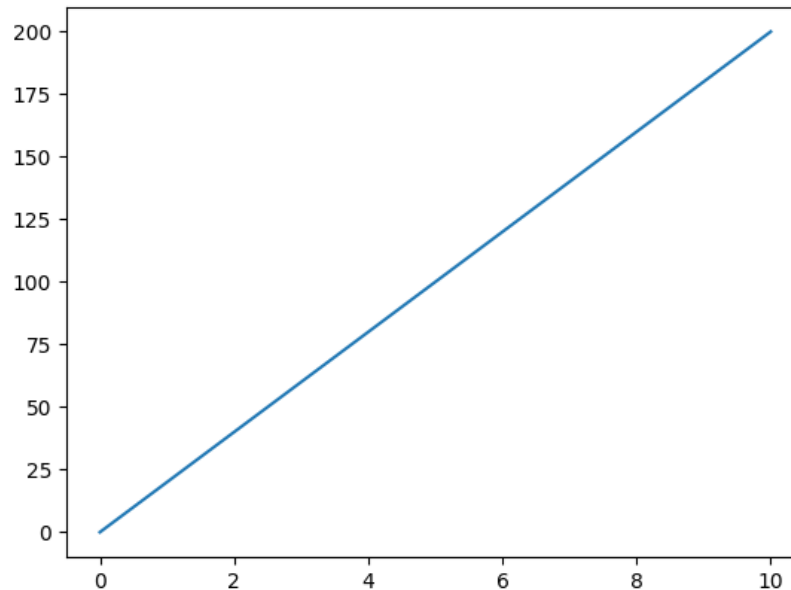
Configuration Details:

1.	Problem	Create normal plot using Matplotlib
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

```
import matplotlib.pyplot as plt
import numpy as np
xvariable = np.array([0,10])
yvariable = np.array([0,200])
plt.plot(xvariable,yvariable)
plt.show()
```

Source Code Output Details:



Create Bar Plot using Matplotlib in Python

Configuration Details:

1.	Problem	Create Bar plot using Matplotlib
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

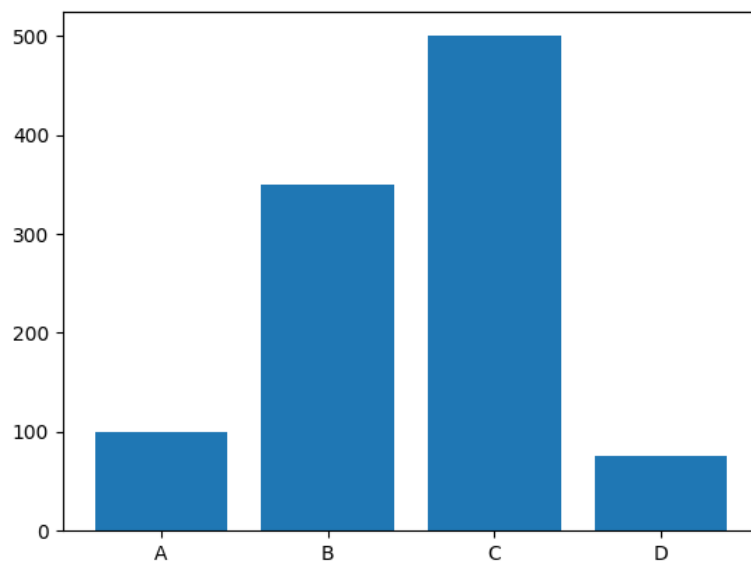
Source Code Details:

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

xvariable = np.array(["A", "B", "C", "D"])
yvariable = np.array([100, 350, 500, 75])

plt.bar(xvariable, yvariable)
plt.show()
```

Source Code Output Details:



Create Pie Plot using Matplotlib in Python

Configuration Details:

1.	Problem	Create Pie plot using Matplotlib
2.	Solver	Python
3.	Compiler	Visual Studio Code Compiler

Source Code Details:

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

x = np.array([100,350,500,450])
mylabels = ["EEE","ECE","CSE","IT"]

plt.pie(x,labels = mylabels,startangle = 90)
plt.show()
```

Source Code Output Details:

