**PROBLEM SOLVING AND PYTHON PROGRAMMING**

**RECORD**

**PYTHON PROGRAMMING USING SIMPLE STATEMENTS AND EXPRESSIONS**

**EXERCISE NO :** 2(a) **EXCHANGE OF TWO VALUES**

**DATE :** 07-12-2022

1. **Using Naive Approach (by introducing a third variable) :**

**PROGRAM :**

a=int(input("Enter the First Value :"))

b=int(input("Enter the Second Value :"))

print("The values BEFORE SWAPPING are",a,",",b)

temp=a

a=b

b=temp

print("The values AFTER SWAPPING are",a,",",b)

**OUTPUT :**

Enter the First Value : 53

Enter the Second Value : 13

The values BEFORE SWAPPING are 53 , 13

The values AFTER SWAPPING are 13 , 53

1. **Using Comma (,) Operator :**

**PROGRAM :**

a=int(input("Enter the First Value :"))

b=int(input("Enter the Second Value :"))

print("The values BEFORE SWAPPING are",a,",",b)

a,b=b,a

print("The values AFTER SWAPPING are",a,",",b)

**OUTPUT :**

Enter the First Value : 84

Enter the Second Value : 29

The values BEFORE SWAPPING are 84 , 29

The values AFTER SWAPPING are 29 , 84

1. **Using Arithmetic Operator :**

**PROGRAM :**

x=int(input("Enter the First Value :"))

y=int(input("Enter the Second Value :"))

print("The values BEFORE SWAPPING are",x,",",y)

x= x + y

y = x - y

x = x - y

print("The values AFTER SWAPPING are",x,",",y)

**OUTPUT :**

Enter the First Value : 46

Enter the Second Value : 20

The values BEFORE SWAPPING are 46 , 20

The values AFTER SWAPPING are 20 , 46

1. **Using XOR Operator :**

**PROGRAM :**

x=int(input("Enter the First Value :"))

y=int(input("Enter the Second Value :"))

print("The values BEFORE SWAPPING are",x,",",y)

x= x^y

y = x^y

x = x^y

print("The values AFTER SWAPPING are",x,",",y)

**OUTPUT :**

Enter the First Value : 15

Enter the Second Value : 35

The values BEFORE SWAPPING are 15 , 35

The values AFTER SWAPPING are 35 , 15

**EXERCISE NO :** 2(b) **CIRCULATING THE LIST OF VALUES**

**DATE :** 07-12-2022

1. **Using In-built Functions :**

**PROGRAM :**

n=int(input("Enter the number of values to be added in the list :"))

list=[]

for i in range(0,n):

element=int(input("Enter the value : "))

list.append(element)

print(list)

print("Circulating the list:")

for i in range(0,n):

element\_deleted=list.pop(0)

list.append(element\_deleted)

print("The Circulated list after",i+1, "rotation",list)

**OUTPUT :**

Enter the number of values to be added in the list : 7

Enter the Value : 83

Enter the Value : 68

Enter the Value : 29

Enter the Value : 39

Enter the Value : 44

Enter the Value : 21

Enter the Value : 50

[83, 68, 29, 39, 44, 21, 50]

Circulating the list:

The Circulated list after 1 rotation [68, 29, 39, 44, 21, 50, 83]

The Circulated list after 2 rotation [29, 39, 44, 21, 50, 83, 68]

The Circulated list after 3 rotation [39, 44, 21, 50, 83, 68, 29]

The Circulated list after 4 rotation [44, 21, 50, 83, 68, 29, 39]

The Circulated list after 5 rotation [21, 50, 83, 68, 29, 39, 44]

The Circulated list after 6 rotation [50, 83, 68, 29, 39, 44, 21]

The Circulated list after 7 rotation [83, 68, 29, 39, 44, 21, 50]

1. **Using Slicing Operator :**

**PROGRAM :**

def circulate(a,n):

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

b=a[i:]+a[:i]

print("Circulate","=",b)

return

a=[35,29,57,38,29,84,72,10]

n=int(input("Enter the number of times of circulation: "))

circulate(a,n)

**OUTPUT :**

Enter the number of times of circulation: 6

Circulate = [29, 57, 38, 29, 84, 72, 10, 35]

Circulate = [57, 38, 29, 84, 72, 10, 35, 29]

Circulate = [38, 29, 84, 72, 10, 35, 29, 57]

Circulate = [29, 84, 72, 10, 35, 29, 57, 38]

Circulate = [84, 72, 10, 35, 29, 57, 38, 29]

Circulate = [72, 10, 35, 29, 57, 38, 29, 84]

**EXERCISE NO :** 2(c) **FIND THE DISTANCE BETWEEN TWO POINTS**

**DATE :** 07-12-2022

**PROGRAM :**

x1=int(input("Enter the value of x1 :"))

y1=int(input("Enter the value of y1 :"))

x2=int(input("Enter the value of x2 :"))

y2=int(input("Enter the value of y2 :"))

d=(((x2-x1)\*\*2)+((y2-y1)\*\*2))\*\*0.5

print("The distance between two points is", d)

**OUTPUT :**

Enter the value of x1 :3

Enter the value of y1 :2

Enter the value of x2 :5

Enter the value of y2 :6

The distance between two points is 4.47213595499958

**PRACTICE PROBLEMS**

1. **ARITHMETIC CALCULATIONS**

**PROGRAM :**

n1=int(input("Enter number 1 : "))

n2= int(input("Enter number 2 : "))

print("Addition : ",n1+n2)

print("Subtraction : ",n1-n2)

print("Multiplication : ",n1\*n2)

print("Division : ",n1/n2)

print("Floor division : ",n1//n2)

print("Modulus : ",n1%n2)

print("Power : ",n1\*\*n2)

**OUTPUT :**

Enter number 1 : 100

Enter number 2 : 10

Addition : 110

Subtraction : 90

Multiplication : 1000

Division : 10.0

Floor division : 10

Modulus : 0

Power : 100000000000000000000

1. **CALCULATE THE TOTAL COST OF THE APPLES**

**PROGRAM :**

cost=int(input("Enter the cost of 1kg of apples (in Rs) : "))

weight=int(input("Enter the total weight of apples (in kg) : "))

total=cost\*weight

print("The total cost of the apples bought (in Rs) is ",total)

**OUTPUT :**

Enter the cost of 1kg of apples (in Rs) : 165

Enter the total weight of apples (in kg) : 3

The total cost of the apples bought (in Rs) is 495

1. **COVERT FAHRENHEIT TO CELSIUS**

**PROGRAM :**

F=int(input("Enter the temperature in Fahrenheit : "))

Celsius=5/9\*(F-32)

print("Fahrenheit to Celsius is ",Celsius)

**OUTPUT :**

Enter the temperature in Fahrenheit : 111

Fahrenheit to Celsius is 43.88888888888889

1. **APPLY 5% DISCOUNT ON TOTAL COST OF n BOOKS**

**PROGRAM :**

n1=int(input("Enter the price of book 1 :"))

n2=int(input("Enter the price of book 2 :"))

n3=int(input("Enter the price of book 3 :"))

n4=int(input("Enter the price of book 4 :"))

n5=int(input("Enter the price of book 5 :"))

total=n1+n2+n3+n4+n5

print("Total cost of the books (in Rs) is",total)

print("5% DISCOUNT ON BOOKS!")

discount=0.05\*total

amt=total-discount

print("The total amount to be paid (in Rs) is",amt)

**OUTPUT :**

Enter the price of book 1 :250

Enter the price of book 2 :399

Enter the price of book 3 :599

Enter the price of book 4 :650

Enter the price of book 5 :199

Total cost of the books (in Rs) is 2097

5% DISCOUNT ON BOOKS!

The total amount to be paid (in Rs) is 1992.15

1. **CHECK WHETHER A GIVEN NUMBER IS PRIME OR NOT**

**PROGRAM :**

flag=False

n=int(input("Enter a number : "))

if n>1:

for i in range(2, n):

if (n% i)==0:

flag = True

break

if flag:

print(n,"is not a prime number")

else:

print(n,"is a prime number")

**OUTPUT :**

1. Enter a number: 43

43 is a prime number

1. Enter a number: 369

369 is not a prime number

1. **CHECK WHETHER THE GIVEN YEAR IS LEAP YEAR OR NOT**

**PROGRAM:**

n=int(input("Enter a Year : "))

if(n%4==0 or n%100==0 or n%400==0):

print("The given year is a leap year")

else:

print("The given year is not a leap year")

**OUTPUT :**

1. Enter a Year : 2045

The given year is not a leap year

1. Enter a Year : 2024

The given year is a leap year

1. **CALCULATE SIMPLE INTEREST**

**PROGRAM :**

P=int(input("Enter the Principal amount in Rs (P) : "))

R=int(input("Enter the Interest Rate in % (R) : "))

T=int(input("Enter the Time in years (T) : "))

SI=P\*R\*T/100

print("The Simple Interest is",SI)

print("The total amount you\’ll get after",T,"years is",P+SI)

**OUTPUT :**

Enter the Principal amount in Rs (P) : 25000

Enter the Interest Rate in % (R) : 7

Enter the Time in years (T) : 4

The Simple Interest is 7000.0

The total amount you’ll get after 4 years is 32000.0