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

(i) 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
```

(ii) 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
```

(iii) 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
```

(iv) 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

(i) 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]

(ii) 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

2. 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
```

3. 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
```

4. 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

5. 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 :

(i) Enter a number: 43
43 is a prime number

(ii) Enter a number: 369
369 is not a prime number

6. 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 :

(i) Enter a Year : 2045
The given year is not a leap year

(ii) Enter a Year : 2024
The given year is a leap year

7. 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