

Experiment No.1

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Aim: To write following program in python using Numeric data types:

- Write a python program to swap two numbers and check if the first number is positive, negative or zero.
- Write a python program to print all the numbers divisible by 4 in the range 1 to n (use for loop).
- Write a python program to find the factorial of an input number (use while loop).
- Write a menu driven program to build a simple calculator function.
- Write a python program to display Fibonacci series of n number.

Theory:

There are four different types in Python:

1. int(plain integers): this one is pretty standard -plain integers are just positive or negative whole numbers.
2. long (long integers): long integers are integers of infinite size. They look like plain integers except they're followed by letter "L".
3. float (floating point real values): floats represent real numbers, but are written with decimal points(for scientific notation) to divide the whole number into fractional parts.
4. complex(complex numbers): Represented by the formula $a+bj$ where a and b are floats, and j is the square root of -1 (the result of which is an imaginary number). Complex numbers are used sparingly in Python.

Algorithms:

1. Write an algorithm to swap two numbers and check if the first number is positive, negative or zero.
 - a. Start
 - b. Take the values of both the element from the user.
 - c. Store the values in separate variables.
 - d. Swap the two variables.
 - e. If (num1>0) then Print "Positive". Goto step(h).
 - f. If (num1<0) then Print "Negative". Goto step(h).
 - g. Print "Zero"
 - h. Stop
2. To print the numbers divisible by 4 in the range 1 to 50(use for loop).

- a. Start
 - b. Initialize $N=1$.
 - c. if($n \% 4 = 0$) then goto step(e)
 - d. Else goto step(h)
 - e. Print(n)
 - f. Increment the value of n by 1.
 - g. If ($n > 50$) then goto step(i).
 - h. Goto step(c).
 - i. Stop
3. To find the factorial of an input number (use while loop).
- a. Start
 - b. Read (n) from the user.
 - c. Initialize fact=1 & i=1.
 - d. if($i \leq n$) then goto step(f)
 - e. Else goto step(i)
 - f. fact=fact*i
 - g. Increment the value of i by 1
 - h. Goto step(d).
 - i. Print (fact)
 - j. Stop
4. A menu-driven python program to build simple calculator function
- a. Start
 - b. Read two numbers a & b from user
 - c. Read choice for operations such as addition, subtraction, multiplication & division.
 - d. if(choice='addition') then goto step (9)
 - e. if(choice='subtraction') then goto step (10)
 - f. If (choice='multiplication') then goto step (11)
 - g. If (choice='division') then goto step (12)
 - h. Else goto step(14)
 - i. Ans=a+b. Goto step(13)
 - j. Ans=a*b. Goto step(13)
 - k. Ans=a/b. Goto step(13)
 - l. Print(Ans). Goto step(c)
 - m. Stop

Codes:

```
# Python program to swap two variables

num1 = input('Enter First Number: ')
num2 = input('Enter Second Number: ')

print("Value of num1 before swapping: ", num1)
print("Value of num2 before swapping: ", num2)

# swapping two numbers using temporary variable
temp = num1
num1 = num2
num2 = temp

print("Value of num1 after swapping: ", num1)
print("Value of num2 after swapping: ", num2)
```

```
# Python Program to find Factorial of a Number

number = int(input(" Please enter any Number to find factorial : "))
fact = 1
i = 1

while(i <= number):
    fact = fact * i
    i = i + 1

print("The factorial of %d = %d" %(number, fact))
```

```
# Program make a simple calculator

# This function adds two numbers
def add(x, y):
    return x + y

# This function subtracts two numbers
def subtract(x, y):
    return x - y

# This function multiplies two numbers
def multiply(x, y):
    return x * y

# This function divides two numbers
def divide(x, y):
    return x / y

print("Select operation.")
print("1.Add")
print("2.Subtract")
print("3.Multiply")
print("4.Divide")

while True:
    # Take input from the user
    choice = input("Enter choice(1/2/3/4): ")

    # Check if choice is one of the four options
    if choice in ('1', '2', '3', '4'):
        num1 = float(input("Enter first number: "))
        num2 = float(input("Enter second number: "))

        if choice == '1':
            print(num1, "+", num2, "=", add(num1, num2))

        elif choice == '2':
            print(num1, "-", num2, "=", subtract(num1, num2))

        elif choice == '3':
            print(num1, "*", num2, "=", multiply(num1, num2))

        elif choice == '4':
            print(num1, "/", num2, "=", divide(num1, num2))
        break
    else:
        print("Invalid Input")
```

```
# Python program to display Fibonacci series of n no.  
# Enter number of terms needed  
a=int(input("Enter the terms"))  
f=0  
s=1  
if a<=0:  
    print("The requested series is",f)  
else:  
    print(f,s,end=" ")  
    for x in range(2,a):  
        next=f+s  
        print(next,end=" ")  
        f=s  
        s=next
```