Lab Report No1
Discrete Fourier Transform

Digital Image Processing

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Lab Example No 1:

Solution:

Brief description (3-5 lines)
In this example we implement and run the code of Assigning single value to multiple variables in python.
The code
X = y = z = 50 print X print y print z
The results (Screenshot)
50 50 50

Lab Example No 2:

Solution:

Brief description (3-5 lines)
In this example we implement and run the code of Assigning multiple values to multiple variables in python**.**
The code
a,b,c=5,10,15 print a print b print c
The results (Screenshot)
5 10 15

Lab Example No 3:

Solution:

Brief description (3-5 lines)

In this example we implement and run the code of Python Data Types in python.

The code

```
a=10
b="Hi python"
c=10.5
print(type(a))
print(type(b))
print(type(c))
```

The results (Screenshot)

```
<class 'int'>
<class 'str'>
<class 'float'>
```

Lab Task No 2:

Solution:

Brief description (3-5 lines)

Write a Python code to solve the quadratic equation. (hint: import cmath library and use cmath.sqrt for this question)

The code

```
import cmath
def solve_quadratic(a, b, c):
    discriminant = (b ** 2) - (4 * a * c)
    sol1 = (-b + cmath.sqrt(discriminant)) / (2 * a)
    sol2 = (-b - cmath.sqrt(discriminant)) / (2 * a)
    return sol1, sol2
a = int(input("Enter coefficient a: "))
b = float(input("Enter coefficient b: "))
c = float(input("Enter coefficient c: "))
solution1, solution2 = solve_quadratic(a, b, c)
print(f"The solutions are {solution1} and {solution2}")
```

The results (Screenshot)

```
Enter coefficient a: 5
Enter coefficient b: 7
Enter coefficient c: 9
The solutions are (-0.7+1.1445523142259597j) and (-0.7-1.1445523142259597j)
```

Lab Task No 3:

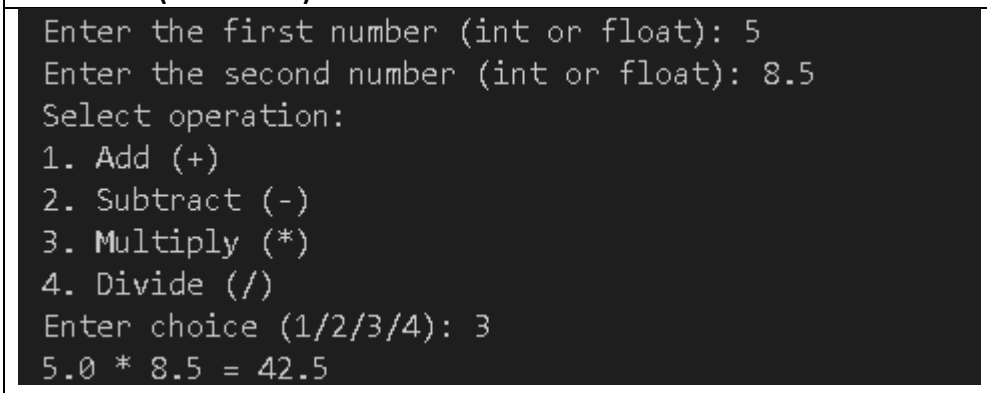
Solution:

Brief description (3-5 lines)
Write a Python code that implements basic calculator functioning (+, -, *, /) for user provided data of below mentioned data types. a. int b. float
The code

```
def add(x, y):
    return x + y
def subtract(x, y):
    return x - y
def multiply(x, y):
    return x * y
def divide(x, y):
    if y == 0:
        return "Error! Division by zero."
    return x / y
def calculator():
    try:
        num1 = float(input("Enter the first number (int or float): "))
        num2 = float(input("Enter the second number (int or float): "))
        print("Select operation:")
        print("1. Add (+)")
        print("2. Subtract (-)")
        print("3. Multiply (*)")
        print("4. Divide (/)")
        choice = input("Enter choice (1/2/3/4): ")
        if choice == '1':
            print(f"{num1} + {num2} = {add(num1, num2)}")
        elif choice == '2':
            print(f"{num1} - {num2} = {subtract(num1, num2)}")
        elif choice == '3':
```

```
            print(f"{num1} * {num2} = {multiply(num1, num2)}")
        elif choice == '4':
            print(f"{num1} / {num2} = {divide(num1, num2)}")
        else:
            print("Invalid input! Please choose a valid operation.")
    except ValueError:
        print("Invalid input! Please enter a number.")
calculator()
```

The results (Screenshot)



Conclusion

In the conclusion one of the most simple and readable language among high level programming languages Python is used in a great deal. These basic concepts are variables, data types, control structures (loops and branches), functions, and error handling. Python is multi-paradigm, it allows you to write code in many ways from procedural to object-oriented to functional programming. Python is great language for both newbie and experienced developers with its wide libraries and huge community. Learning this beginner material paves the way for higher-level subject matter and uses.