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Experiment:7

Aim: Illustrate some sample programs using Python.

Program 1: Write a program to illustrate a calculator using a python.

Algorithm :

1. Start
2. Describe a function about every operation addition, subtraction, multiplication and division.
3. Check the choice of the user and perform the operation.
4. Display the result and ask for the next operation.
5. End.

Code:

```
#Returning Values
def my_function(x):
  return 5 * x

print(my_function(3))
print(my_function(5))
print(my_function(9))


# 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
```

```python
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")
```

OUTPUT:

```
Microsoft Windows [Version 10.0.18363.1198]

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C:\Users\Hardik>cd..

C:\Users>cd..

C:\>cd python

C:\python>python py2.py

Select operation.

1.Add

2.Subtract

3.Multiply

4.Divide

Enter choice(1/2/3/4): 1
```

```
Enter first number: 1
Enter second number: 2
1.0 + 2.0 = 3.0

Select operation.
1.Add
2.Subtract
3.Multiply
4.Divide
Enter choice(1/2/3/4): 2
Enter first number: 5
Enter second number: 3
5.0 - 3.0 = 2.0

> Select operation.
1.Add
2.Subtract
3.Multiply
4.Divide
Enter choice(1/2/3/4): 3
Enter first number: 5
Enter second number: 4
5.0 * 4.0 = 20.0
```

Program 2: Write a program to update the elements of an array.

Algorithm :

1. Start.
2. Import the array module for array operations.
3. Initialize the array module and add the elements.
4. Display the array elements.

5. For array updation, Insert the element by providing the index at which you want to update the array.
6. Display the updated array.
7. End.

Code:

```
# importing array module
import array

arr = array.array('i', [1, 2, 3, 1, 2, 5])

# printing original array
print ("Array before updation : ", end ="")
for i in range (0, 6):
    print (arr[i], end =" ")

print ("\r")

# updating a element in a array
arr[2] = 6
print("Array after updation : ", end ="")
for i in range (0, 6):
      print (arr[i], end =" ")
print()

# updating a element in a array
arr[4] = 8
print("Array after updation : ", end ="")
for i in range (0, 6):
    print (arr[i], end =" ")
```

Output:

```
Array before updation : 6 5 1 7 2 10
Array after updation : 6 5 6 7 2 10
```

Program 3: Write a program to Calculates the sum of all even or odd numbers between one and the number you chose.

Algorithm :

1. Start.
2. Take Input from the user and check if the input lies within your range.

3. Continue with checking it if it's odd or even.
4. Sum all the numbers by using the sum function predefined in python and add all the subsequent numbers with a distance of 2.
5. Display the result and ask the user for another operation.
6. End.

Code:

```
def main():
    print("Sum of odd and even numbers")
    print("===========================")
    answer = int(input("Enter a whole number between 1 and 50: "))
    while True:
        if answer <= 50 and answer > 0:
            break
        else:
            answer = int(input("Try again, Your number must be between 1 and
50: "))
            continue
    if (answer % 2) == 0:
        print(answer, "is even")
        num = range(0,answer + 2,2)
    else:
        print(answer, "is odd")
        num = range(1,answer + 2,2)

    for n in num:
        x = sum(num)
    if (answer % 2) == 0:
        print("Sum of  all numbers between 2 and ", n , " is ", x)
    else:
        print("Sum of  all numbers between 1 and ", n , " is ", x)
    tryAgain = input("Try again? Y/N")
    if(tryAgain == "y" or tryAgain == "Y"):
        print("You pressed yes")
        main()
    elif(tryAgain == "n" or tryAgain == "N"):
        exit()
main()
```

Output:

```
 Sum of odd and even numbers
============================
Enter a whole number between 1 and 50: 4
4 is even
Sum of  all numbers between 2 and  4  is  6
Try again? Y/N: N
```

Conclusion: Thus, we have illustrated examples using python and implemented them.