Lesson-5: Control Structures

3 Types Of Control Structures:

- Sequential Control Structures,
- Selection Based Control Structures
- Iteration Based Control Structures

- **What are Sequential Control Structures?**
  - Step-By-Step as it appears in the code
- **What are Selection Control Structures?**
  - Based on a specific condition
  - if, if...else, if...elif...else
- **What are Iterative Control Structures?**
  - Based on a specific condition in a repetitive manner
  - while, for
- **Other interesting topics**
  - 'else' suite, break, continue, pass, assert

Program: 1

```
print("hello")
print ("I Love India")

a = 10
b = 20
sum = 10 + 20

a = 10
b = 10

print(id(a))
print(id(b))
```

Output:

```
hello
I Love India
2280991517264
2280991517264
```

Program: 2

```
if 1 == 1:
        print(“Hello”)
print(“Hi”)
```

Output:

```
Hello
Hi
```

Program: 3

```
percentage = int(input("Enter Percentage"))
if percentage >= 70:
        print("Distinction")
else:
        print("First Class")
```

Output:

```
Enter Percentage
65
First Class
```

Program: 4

```
percentage = int(input("Enter Percentage\n"))
if percentage >= 70:
        print("Distinction\n")
else:
        if percentage >= 60:
                print("First Class\n")
        else:
                if percentage >= 50:
                        print("Second Class\n")
                else:
                        if percentage >= 40:
                                print("Third Class\n")
                        else:
                                print("Fail\n")
```

Output:

Program: 3

```
percentage = int(input("Enter Percentage\n"))
if percentage >= 70:
        print("Distinction\n")
elif percentage >= 60:
        print("First Class\n")
elif percentage >= 50:
        print( "Second Class\n" )
elif percentage >= 35:
        print( "Third Class\n" )
else:
        print( "Fail\n" )
```

Output:

Program: 4

```
n = 5
while n != 0:
        print(n)
        n = n - 1
```

Output:

Guess The Output:

1)

```
percentage = int(input("Enter Percentage"))
if percentage >= 70:
    print("Distinction")
else:
    print("First Class")
```

2)

```
percentage = int(input("Enter Percentage"))
if percentage >= 70:
    print("Distinction")
```

3)

```
percentage = int(input("Enter Percentage"))
if percentage >= 70:
    print("Distinction")
else:
    print("First Class")
```

4)

```
n = 5
while(n != 0 )
    print(n)
```

5)

```
n = 5
while(n):
    print(n)
```

6)

```
n = 10
sum = 0
current = 1
while current <= n:
    sum = sum + current
print(sum)
```

7)

```
 x = int(input("Enter a number greater than 0: "))
 assert x > 0, "Wrong input entered"
print("U entered: ", x)
```

Program: 5

```
i = 1
while i <= 5:
    print(i)
    i += 1
else:
    print("Done with printing 5 numbers\n")
```

Output:

Program: 6

```
i = 1
while i < 10:
    print(i)
    if i == 5:
        break;
    i += 1
else:
    print("I Love India")
```

Output:

Program: 7

```
i = 1
while i < 10:
    if i == 5:
        i += 1
        continue
    print(i)
    i += 1
```

Output:

Program: 8

```
i = 1
while i < 10:
    if i == 5:
        pass
    print(i)
    i += 1
```

Output:

Program: 10

```
n = 1 in (1,2,3)
print(n)

n = 4 in (1,2,3)
print(n)

n = 1 in [1,2,3]
print(n)

n = “Subhash” in [ “Amitabh”, “Aamir”, “Shahrukh” ]
print(n)
```

Output:

Programming Assignments:

1. WAP to find the area of a circle.
2. WAP to find whether given number is odd or even.
3. WAP to find whether given number is positive or negative.
4. WAP to find the biggest of 3 numbers.
5. WAP to find whether given year is leap year or not
6. WAP to input a month number 1 to 12 and print how many days in that month
7. WAP to convert from Fahrenheit to Celsius and vice-versa. Ask user for 'F' or 'C' and then carry out the operation. Ask user to re-input for input other than 'F' and 'C'.
   [**Formula for F to C:** celsius = (fahr - 32) * 5.0/9.0]
   [**Formula for C to F:** fahr = (9.0/5.0 * celsius) + 32]
8. WAP to find GCD.
9. WAP to print fibonacci series.
10. WAP to find whether a given number is prime or not.

More Assignment Problems:

1. Write a Python program in which the user enters either 'A', 'B', or 'C'. If 'A' is entered, the program should display the word 'APPLE'; if 'B' is entered, it displays 'BANANA'; and if 'C' is entered, it displays 'COCONUT'.
2. Write a program that sums a series of (positive) integers entered by the user, excluding all numbers that are greater than 100.
3. Write a program, in which the user can enter any number of positive and negative integer values, that displays the number of positive values entered, as well as the number of negative values.
4. Write a program containing a pair of nested while loops that displays the integer values 1-100, ten numbers per row, with the columns aligned neatly in an order.