Basic Assignment - Operators

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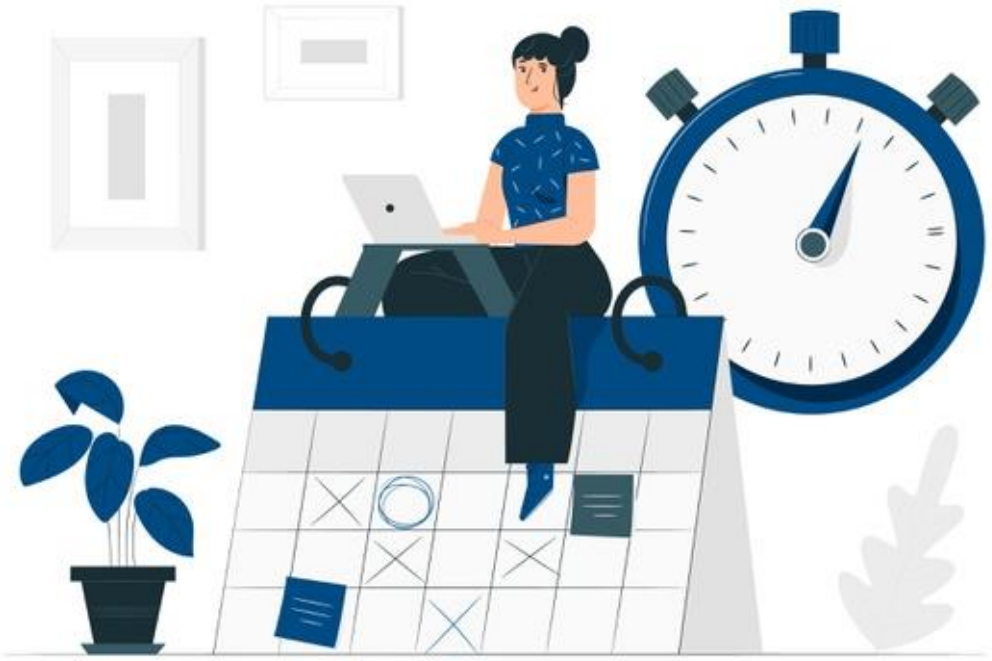
ASSIGNMENT



Basic Assignment – Operators

1. Write a program to show the working of all the following operators:
   a. Arithmetic Operators (Addition, Subtraction, Multiplication, Division, Modulus, Exponentiation and Floor Division)
2. Write a python program to swap the value of two variables.
3. For the program below write down the expected output to the Visual Display Unit. Check your answer by copying the code, pasting it into your Python editor and running the program.

```
w = 2
x = 5
y = 7

a = w + y
b = y - w
c = y % x
d = y // w
e = y ** w
f = w * x
g = y / x
print(a,b,c,d,e,f,g)
```

4. Write a program that asks the user to enter two integers. Have the program output how many times the second number can be divided into the first number. For example if the first number entered was 23 and the second number entered was 4 the program should report 5 times (i.e. the fractional bit is ignored). You are required to implement this program using the *floor* operator.
5. A 1 is always the remainder whenever an odd integer is divided by 2. Write a computer program that asks the user to enter an integer (odd or even) and have it report whether the integer entered is odd. You are required to implement this program using the *modulus* operator and an ***if ...*** Selection construct.
6. For each of the following programs, write down the expected output.

```
a = True
b = False
print(not(a))
print(not(b))
```

```
print(x or y)
print(a or x)
print(x or b)
```

```
a = False
b = False
x = not(a)
y = not(b)
print(a or b)
```

```
a = False
b = False
x = not(a)
y = not(b)
print(a and b)
print(a and x)
```

print(y and b)

print(x and y)

7. For each of the following nonsense programs (i.e. they do not implement any algorithm) write down the expected output.

```
a = 1
b = 20
if a < 10:
    print('Demo string 1')
else:
    print('Demo string 2')
```

```
a = 1
b = 20
if a < 10 or b == 20:
    print('Demo string 1')
else:
    print('Demo string 2')
```

```
a = 1
b = 20
if a < 10 and not(b == 20):
    print('Demo string 1')
else:
    print('Demo string 2')
```

8. A bank will offer a customer a loan if they are 21 or over and have an annual income of at least £21000. The customers age and income are input in response to user friendly prompts. One of the following strings are printed on the Visual Display Unit dependant on the *condition* of an ***if ... else ...*** selection construct:

   We are able to offer you a loan.
   Unfortunately at this time we are unable to offer you a loan.

9. To enrol on an online course a prospective student has to be at least 21 and have passed their qualifying examination. The user will be asked the following questions:

   How old are you?
   Have you passed your qualifying examination (Y/N)?

   In response to the questions the program will display one of the strings shown below:

   You can enrol on the course.
   You cannot enrol on the course.

10. A customer has been entitled for a discount on the total cost with these conditions:
    a. If the amount spent today is greater than INR 7000 – discount is 25%.
    b. If the amount spent today is not greater than INR 7000, then historical purchase (shopping done till date) is entered. If the amount of historical shopping is greater than INR 50000, then customer gets a 25% discount on the amount spent today.
    c. If the historical purchase is between INR 35000 and INR 50000, then customer gets a discount of 15% on the amount spent today.

    Output should include the discount applied and the total amount payable.

11. Write the output of the following code before executing it:

```
w = 20
x = 10
y = 15
z = 2

result_1 = (w+x)*y/z
result_2 = ((w+x)*x)/z
result_3 = ((w+x)*(y/z))**z
result_4 = w+(x*y)/z

print('The value of (w+x)* y/z is',result_1)
print('The value of ((w+x)*x)/z is',result_2)
print('The value of ((w+x)*(y/z))**z is',result_3)
print('The value of w+(x*y)/z is',result_4)
```