Ex 3: Python Programming – Conditionals

**Aim**

To execute programs using conditionals in python

**Q.No 1 :** Find the roots of a quadratic equation.

**Python Code**

#find the roots of a quadratic equation

a = int(input('enter coefficient of x2:'))

b = int(input('enter coefficient of x:'))

c = int(input('enter constant:'))

D = (b\*\*2)-(4\*a\*c)

if D>0:

print('roots are real')

elif D==0:

print('roots are real and equal')

else:

print('imaginary roots')

r1 = (-b+(D\*\*0.5))/(2\*a)

r2 = (-b-(D\*\*0.5))/(2\*a)

print('roots of equation:',r1,'and',r2)

**Test Cases**

**enter coefficient of x2:1**

**enter coefficient of x:-3**

**enter constant:2**

**roots are equal**

**roots of equation: 2.0 and 1.0**

**=========================== RESTART: D:/quadratic.py ===========================**

**enter coefficient of x2:-7**

**enter coefficient of x:5**

**enter constant:6**

**roots are equal**

**roots of equation: -0.635174570674986 and 1.3494602849607003**

**Q.No 2 :**

: Read three sides of a triangle and check whether the triangleisequilateral, isosceles or scalene.

**Python code:**

**#Assignment3 2.Triangle classification based on the number of equal sides**

**a=int(input('Enter the side 1 measurement:'))**

**b=int(input('Enter the side 2 measurement:'))**

**c=int(input('Enter the side 3 measurement:'))**

**if a==b==c:**

**print('The given triangle is an Equilateral triangle')**

**elif a==b or b==c or a==c:**

**print('The given triangle is an Isoceles triangle')**

**else:**

**print('The given triangle is an Scalene triangle')**

**Test cases:**

**Enter the side 1 measurement:20**

**Enter the side 2 measurement:20**

**Enter the side 3 measurement:20**

**The given triangle is an Equilateral triangle**

**Enter the side 1 measurement:1**

**Enter the side 2 measurement:4**

**Enter the side 3 measurement:5**

**The given triangle is an Scalene triangle**

**Q.No.3:**

Find the smallest of three numbers.

Python code:

#Assignment3 3.Smallest of 3 numbers

a=int(input('Enter 1st no.:'))

b=int(input('Enter 2nd no.:'))

c=int(input('Enter 3rd no.:'))

mini=a

if b<mini:

mini=b

if c<mini:

mini=c

print('The smallest number is:',mini)

Test cases:

Enter 1st no.:30

Enter 2nd no.:45

Enter 3rd no.:56

The smallest number is: 30

Enter 1st no.:-4

Enter 2nd no.:5

Enter 3rd no.:67

The smallest number is: -4

QNo.4:

The marks obtained by a student in 3 different subjects areinputbythe user. Your program should calculate the average of subjects anddisplaythe grade. The student gets a grade as per the following rules:

Average Grade

90-100 A

80-89 B

70-79 C

60-69 D

0-59 F

Python Code:

#Assignment3 4.Calculate average and display grade

a=int(input('Enter mark1:'))

b=int(input('Enter mark2:'))

c=int(input('Enter mark3:'))

avg=(a+b+c)/3

if avg>=90 and avg<=100:

print('Grade A')

elif avg>=80 and avg<=89:

print('Grade B')

elif avg>=70 and avg<=79:

print('Grade C')

elif avg>=60 and avg<=69:

print('Grade D')

elif avg>=0 and avg<=59:

print('Grade F')

Test cases:

Enter mark1:96

Enter mark2:97

Enter mark3:100

Grade A

Enter mark1:85

Enter mark2:89

Enter mark3:70

Grade B

QNo. Q.No 5 : A company decides to give bonus to all its employees for Diwali. A5% bonus on salary is given to the male workers and 15%bonus onsalarytothe female workers. If the salary of the employee is less than Rs. 10000/- then the employee gets an extra 2% bonus on salary. Calculate thebonusthatthe employee will get and display the total salary

Python program:

#Assignment3 5.alculate salary with bonus based on conditions

salary=int(input('Enter salary:'))

g=input('Enter gender (F/M):')

totsal=salary

if salary<10000:

totsal+=2/100\*salary

if g.upper()=='F':

totsal+=15/100\*salary

elif g.upper()=='M':

totsal+=5/100\*salary

print('Total salary:',totsal)

Test cases:

======================================= RESTART: D:/salary.py =======================================

Enter salary:12000

Enter gender (F/M):f

Total salary: 13800.0

**Learning Outcomes**

<Write down the results in-terms of, i.e what you have done, how you solved the given exercise, what you learnt from the exercise>