

## ANSWERS TO PRACTICE QUESTIONS – IF CONSTRUCT

```
1 a=int(input("Enter the first number:"))
  b=int(input("Enter the second number:"))
  c=int(input("Enter the third number:"))
  if a<=b and a<=c:
      if b<=c:
          print(a,b,c)
      else:
          print(a,c,b)
  elif b<=a and b<=c:
      if a<=c:
          print(b,a,c)
      else:
          print(b,c,a)
  else:
      if a<=b:
          print(c,a,b)
      else:
          print(c,b,a)
```

```
2 import math
  a=int(input("Enter the value of a:"))
  b=int(input("Enter the value of b:"))
  c=int(input("Enter the value of c:"))
  D=b*b-4*a*c
  if D>0 :
      print("Roots are real and unequal")
      r1=(-b+math.sqrt(D))/(2*a)
      r2=(-b-math.sqrt(D))/(2*a)
      print("The roots are",r1,r2)
  elif D==0:
      print("Roots are real and equal")
      r1=r2=-b/(2*a)
      print("The roots are",r1,r2)
  else:
      print("Roots are imaginary")
```

Roots of the quadratic equation is given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

```

3  admno=int(input("Enter admission number:"))
    sname=input("Enter name:")
    m1=float(input("Enter marks of subject 1:"))
    m2=float(input("Enter marks of subject 2:"))
    m3=float(input("Enter marks of subject 3:"))
    m4=float(input("Enter marks of subject 4:"))
    m5=float(input("Enter marks of subject 5:"))
    count=0
    perc="-"
    if m1<35:
        count+=1
    if m2<35:
        count+=1
    if m3<35:
        count+=1
    if m4<35:
        count+=1
    if m5<35:
        count+=1
    if count>1:
        result="Fail"
    elif count==1:
        result="Compartment"
    else:
        perc=(m1+m2+m3+m4+m5)/500*100
        if perc>=75:
            result="Distinction"
        elif perc>=60:
            result="First Class"
        elif perc>=50:
            result="Second Class"
        else:
            result="Pass"
    print("Your percentage is:",perc)
    print("Your result id :",result)

```

count variable will keep a count of the number of subjects in which a students has failed .

We did not write the if ..elif construct because a student could fail in more than one subject and that too any subject

This else will be executed when count = 0 which means the student has not failed in any subject

```

4 empno=int(input("Enter employee number:"))
  sname=input("Enter name:")
  cat=input("Enter category (A,B,C):")
  bsal=float(input("Enter basic salary:"))
  if cat=="A":
      HRA=55/100*bsal
      DA=44/100*bsal
      Tax=10/100*bsal
  elif cat=="B":
      HRA=25/100*bsal
      DA=0
      Tax=5/100*bsal
  elif cat=="C":
      HRA=15/100*bsal
      DA=0
      Tax=0
  else:
      print("Invalid category")

  if cat in ["A","B","C"]:
      NP=bsal+HRA+DA-Tax
      print("Your HRA is:",HRA)
      print("Your DA is:",DA)
      print("Your Tax is:",Tax)
      print("Your Net Pay is:",NP)

```

We want to display all the calculated values only if the category is a valid category. The **in operator** is a membership operator which checks if category is in the given list of values and executes the lines below only if it is True.

```

5 msal=float(input("Enter monthly salary:"))
  asal=msal*12
  if asal>600000:
      taxinc=asal-600000
      if taxinc>100000:
          Etax= 7/100*(taxinc-100000)
          Scharge=1000
          Itax=12/100*taxinc
      elif taxinc>=50001:
          Etax= 5/100*(taxinc-50000)
          Scharge=750
          Itax=7/100*taxinc
      else:
          Etax= 1500
          Scharge=250
          Itax=5/100*taxinc
      print("Your Taxable income is:",taxinc)
      print("Your Education tax is:",Etax)
      print("Your Surcharge is:",Scharge)
      print("Your Income Tax is:",Itax)
  else:
      print("Your income is not taxable")

```

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- Jini Mathai

```

6  cname=input("Enter customer name:")
   season=input("Enter season(S-Summer,W-Winter,M-Monsoon:")
   typecar=input("Enter type of Car(L-Luxury,S-Standard):")
   ndays=int(input("Enter number of days:"))
   if season=="S":
       if typecar=="L":
           rate=8000
       else :
           rate=4500
   elif season=="W":
       rate=5000
   else:
       if typecar=="L":
           rate=10000
       else :
           rate=6000
   bill=rate*ndays
   if bill>30000:
       dis=5/100*bill
   else:
       dis=0
   finalbill=bill-dis
   print("Your Bill Amount before discount:",bill)
   print("Your discount:",dis)
   print("Your Bill Amount after discount:",finalbill)

```

In this program we are assuming that the user would be entering valid season and type of car. You could also do it like we did the previous programs , informing the user about incorrect season or car type.