2. Controlling Decisions

Selection or Decision Control Instructions

HANDLING DECISIONS!!!

A decision control instruction can be implemented in C using:

a) The **if** statement

b) The **if-else** statement

c) The conditional operators

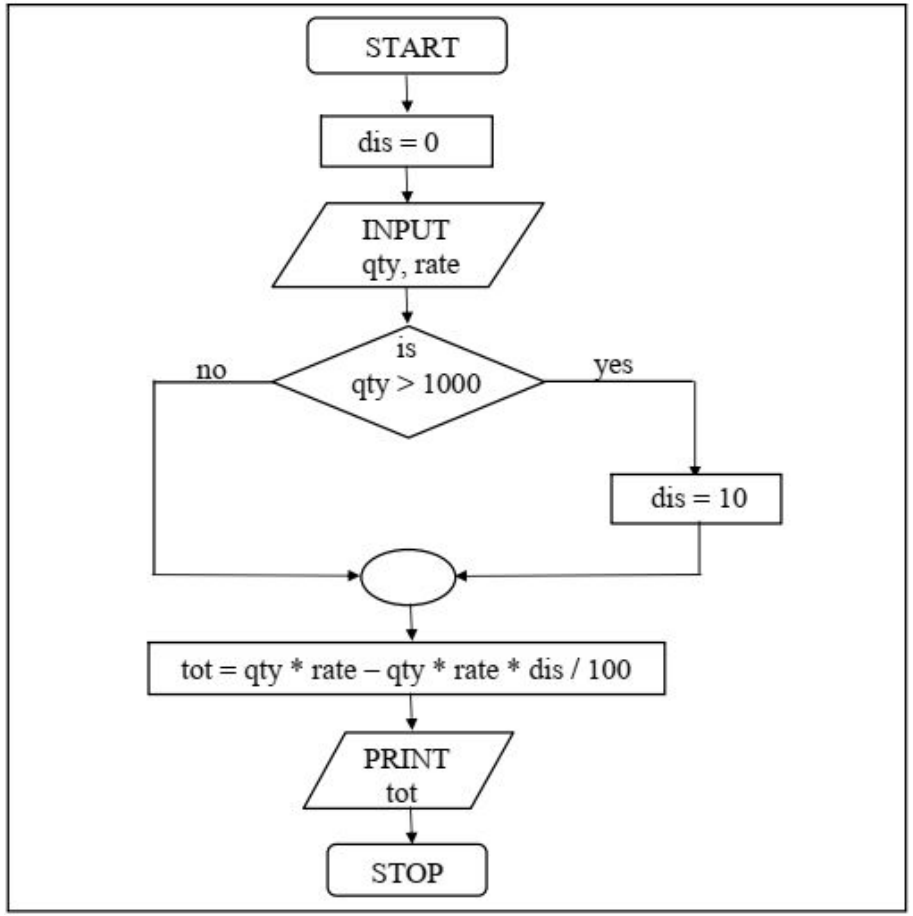
THE *if* STATEMENT

- C uses the keyword if to implement the decision control instruction. The general form of the **if** statement looks like this:

```
if ( this condition is true )
      execute this statement ;
```

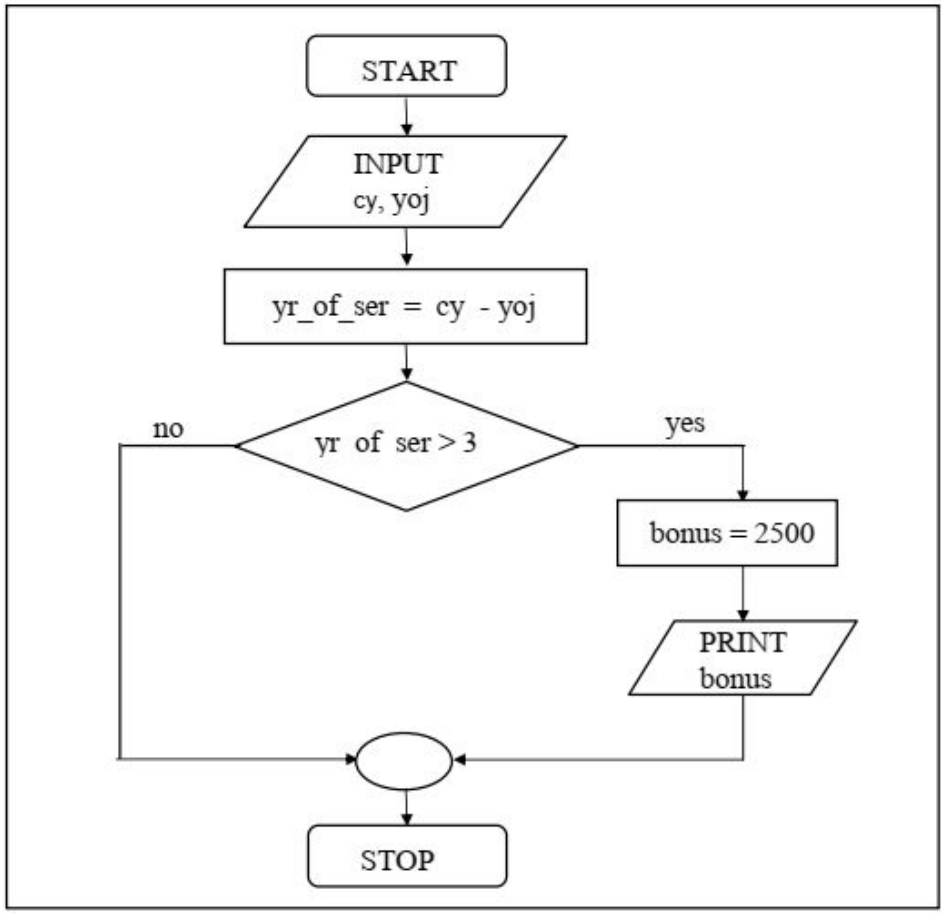
```
/* Demonstration of if statement */
main( )
{
    int num ;
    printf ( "Enter a number less than 10 " ) ;
    scanf ( "%d", &num ) ;
    if ( num <= 10 )
       printf ( "What an obedient servant you are !" ) ;
}
```

Flow chart of Decision



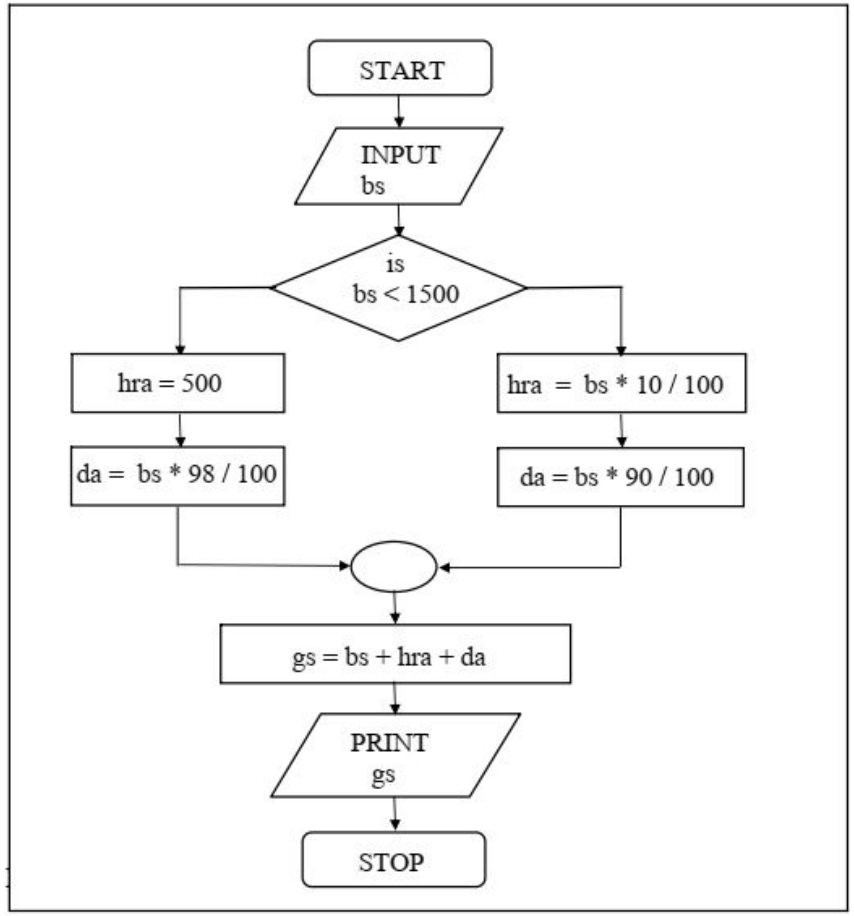

```
/* Calculation of total expenses */
main( )
{
    int qty, dis = 0 ;
    float rate, tot ;
    printf ( "Enter quantity and rate
    " ) ;
    scanf ( "%d %f", &qty, &rate) ;
    if ( qty > 1000 )
        dis = 10 ;
    tot = ( qty * rate ) - ( qty *
    rate * dis / 100 ) ;
    printf ( "Total expenses = Rs.
    %f", tot ) ;
}
```

MULTIPLE STATEMENTS WITHIN *if*




```
/* Calculation of bonus */
main( )
{
    int bonus, cy, yoj, yr_of_ser ;
    printf ( "Enter current year and year
    of joining " ) ;
    scanf ( "%d %d", &cy, &yoj ) ;
    yr_of_ser = cy - yoj ;
    if ( yr_of_ser > 3 )
        {
        bonus = 2500 ;
        printf ( "Bonus = Rs. %d", bonus )
        ;
        }
}
```

THE *if-else* STATEMENT




```
/* Calculation of gross salary */
main( )
{
     float bs, gs, da, hra ;
     printf ( "Enter basic salary " ) ;
     scanf ( "%f", &bs ) ;
     if ( bs < 1500 )
          {
          hra = bs * 10 / 100 ;
          da = bs * 90 / 100 ;
          }
     else
          {
          hra = 500 ;
          da = bs * 98 / 100 ;
          }
     gs = bs + hra + da ;
     printf ( "gross salary = Rs. %f", gs ) ;
}
```

NESTED *if-else*

```
/* A quick demo of nested if-else */
main( )
{
    int i ;
    printf ( "Enter either 1 or 2 " ) ;
    scanf ( "%d", &i ) ;
    if ( i == 1 )
       printf ( "You would go to heaven !" ) ;
    else
       {
       if ( i == 2 )
          printf ( "Hell was created with you in mind" ) ;
       else
          printf ( "How about mother earth !" ) ;
       }
```

FORMS OF *if*

```
(a) if ( condition )
    do this ;

(b) if ( condition )
    {
        do this ;
        and this ;
    }

(c) if ( condition )
    do this ;
    else
    do this ;

(d) if ( condition )
    {
        do this ;
        and this ;
    }
    else
    {
```

THE *else if* CLAUSE

```
/* else if ladder demo */
main( )
{
   int m1, m2, m3, m4, m5, per ;
   per = ( m1+ m2 + m3 + m4+ m5 ) / per ;
   if ( per >= 60 )
      printf ( "First division" ) ;
   else if ( per >= 50 )
      printf ( "Second division" ) ;
   else if ( per >= 40 )
      printf ( "Third division" ) ;
   else
```

The Decisions with Logic

```
/* Insurance of driver - using logical operators */
main( )
{
    char sex, ms ;
    int age ;
    printf ( "Enter age, sex, marital status " ) ;
    scanf ( "%d %c %c" &age, &sex, &ms ) ;
    if ( ( ms == 'M') || ( ms == 'U' && sex == 'M' && age > 30 ) ||
    ( ms == 'U' && sex == 'F' && age > 25 ) )
       printf ( "Driver is insured" ) ;
    else
       printf ( "Driver is not insured" ) ;
}
```

The Conditional Operators

expression 1 ? expression 2 : expression 3

```
int x, y ;
scanf ( "%d", &x ) ;
y = ( x > 5 ? 3 : 4 ) ;
```

THANK YOU