The *if* Statement

if (this condition is true)

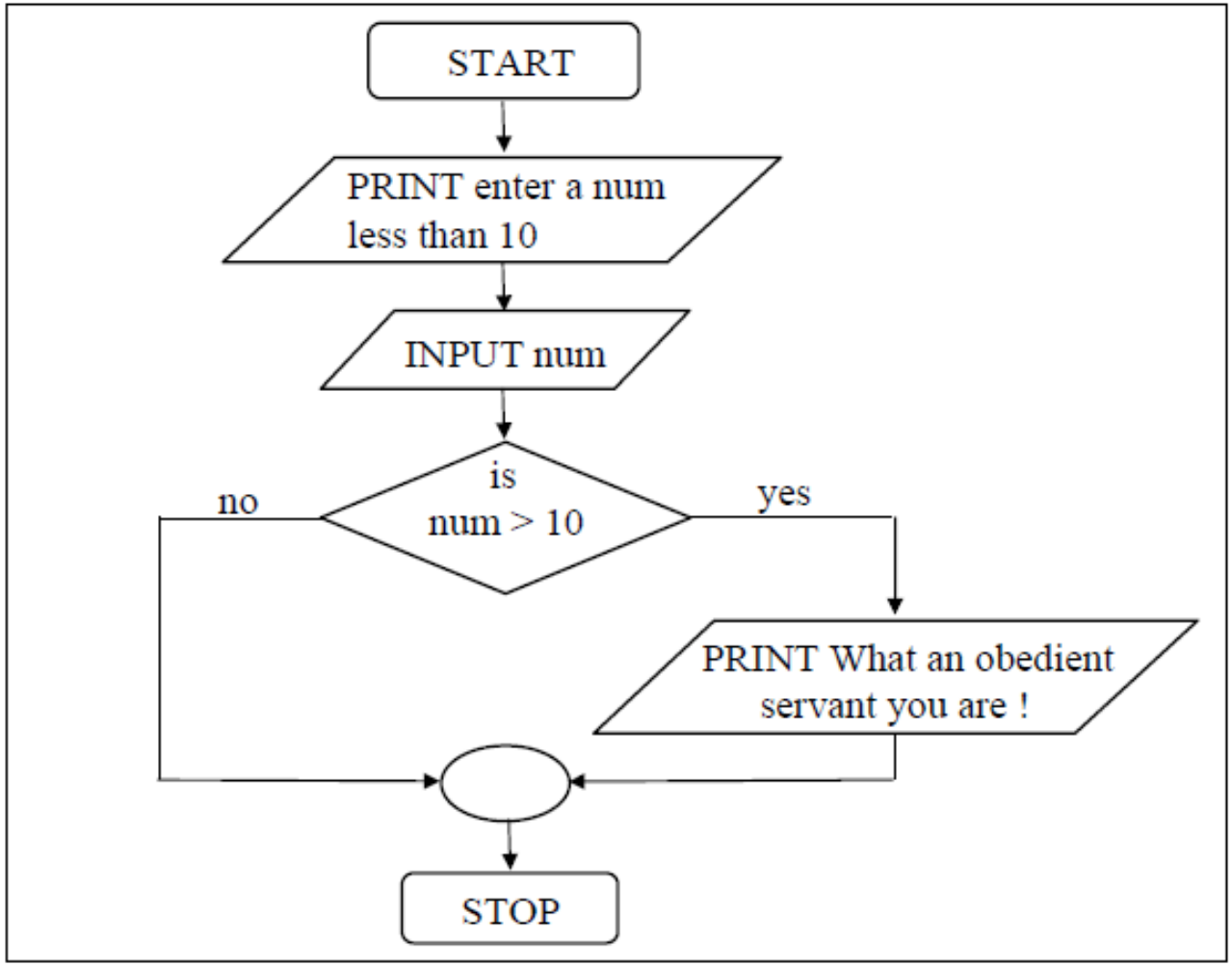
execute this statement ;

this expression	is true if
x == y	x is equal to y
x != y	x is not equal to y
x < y	x is less than y
x > y	x is greater than y
x <= y	x is less than or equal to y
x >= y	x is greater than or equal to y

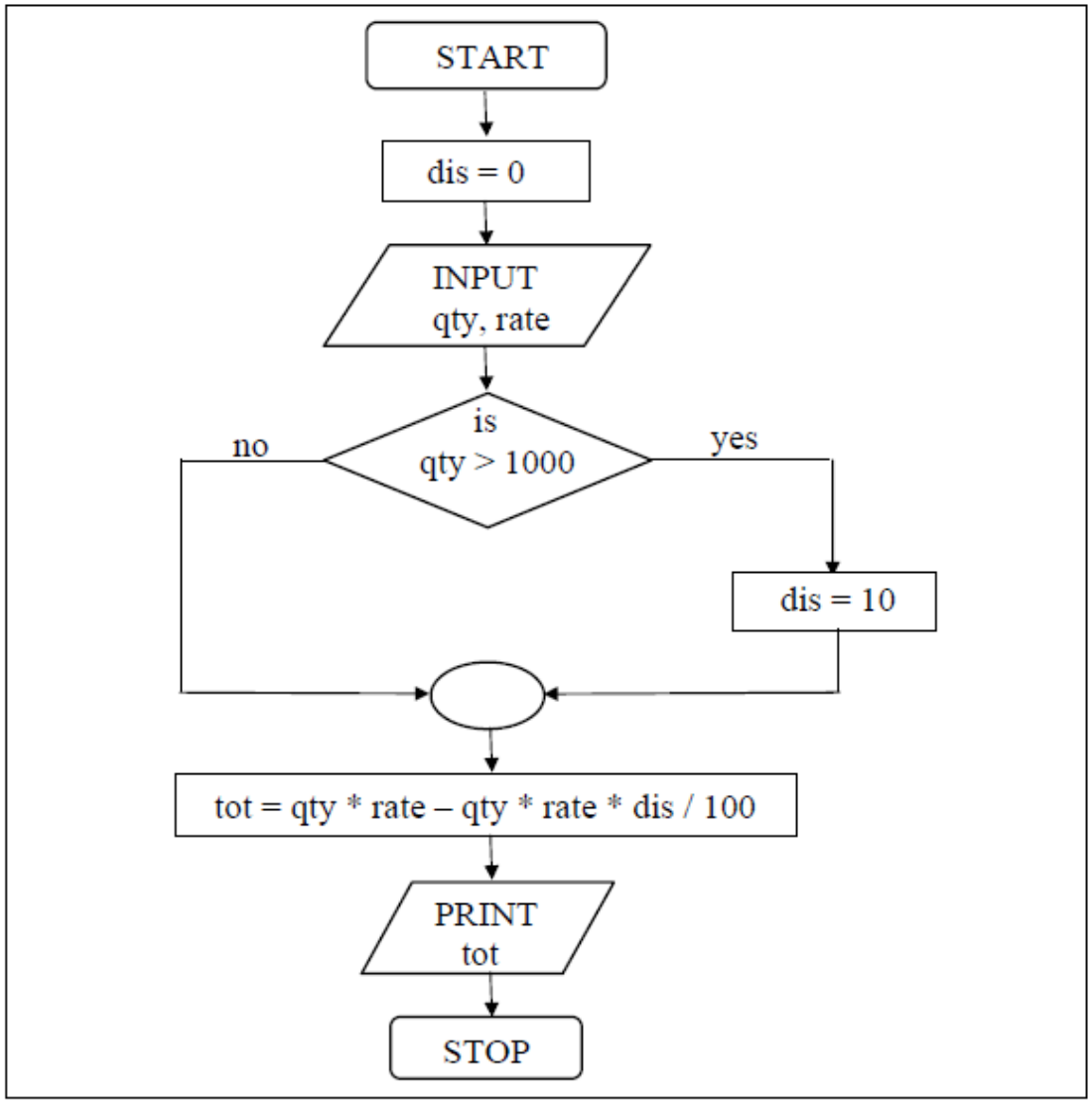
```
/* Demonstration of if statement */
main( )
{
      int   num ;

      printf ( "Enter a number less than 10 " ) ;
      scanf ( "%d", &num ) ;

      if ( num <= 10 )
            printf ( "What an obedient servant you are !" ) ;
}
```


START
PRINT enter a num less than 10
INPUT num
is num > 10
no
yes
PRINT What an obedient servant you are !
STOP

Example 1: While purchasing certain items, a discount of 10% is offered if the quantity purchased is more than 1000. If quantity and price per item are input through the keyboard, write a program to calculate the total expenses.


START
dis = 0
INPUT
qty, rate
is
qty > 1000
no
yes
dis = 10
tot = qty * rate – qty * rate * dis / 100
PRINT
tot
STOP

```
/* 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 ) ;
}
```

```
if ( condition )
statement ;
```

the general form is as follows:

```
if ( expression )
statement ;
```

```
if ( 3 + 2 % 5 )
printf ( "This works" ) ;
if ( a = 10 )
printf ( "Even this works" ) ;
if ( -5 )
printf ( "Surprisingly even this works" ) ;
```

Multiple Statements within *if*

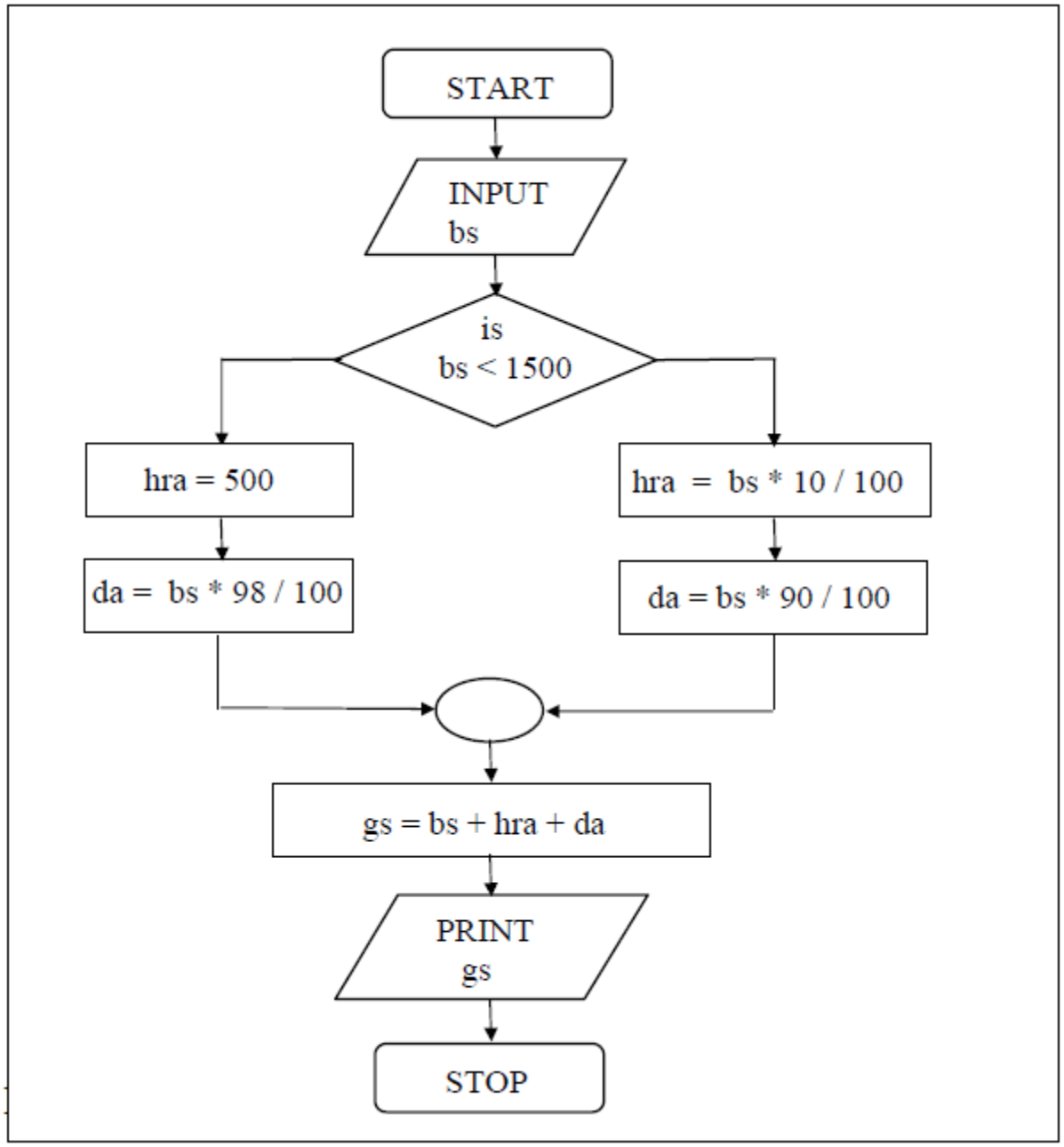
Example 2: In a company an employee is paid as under:

If his basic salary is less than Rs. 1500, then HRA = 10% of basic salary and DA = 90% of basic salary.

If his salary is either equal to or above Rs. 1500, then HRA = Rs. 500 and DA = 98% of basic salary.

If the employee's salary is input through the keyboard write a program to find his gross salary.

```
/* 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 ) ;
}
```


START
INPUT
bs
is
bs < 1500
hra = 500
da = bs * 98 / 100
hra = bs * 10 / 100
da = bs * 90 / 100
gs = bs + hra + da
PRINT
gs
STOP

A few points worth noting...

- The group of statements after the **if** upto and not including the **else** is called an ‘if block’. Similarly, the statements after the **else** form the ‘else block’.
- Notice that the **else** is written exactly below the **if**. The statements in the if block and those in the else block have been indented to the right. This formatting convention is followed to enable you to understand the working of the program better.
- Had there been only one statement to be executed in the if block and only one statement in the else block we could have dropped the pair of braces.

Reverse of a 5 digit number

12345

5 ones

4 tens

3 hundreds

2 thousands

1 ten thousand

To Convert it into 54321

Step 1: Initialize x= 10000, a=12345, sum =0

Step 2: Repeat the below given steps 5 times:

- b= a%10;
- a=a/10;
- sum = sum + x*b
- x =x/10;

Step 3: Print sum

To Convert it into 54321

Step 1: Initialize x= 10000, a=12345, sum =0

Step 2: b= a%10;

- a=a/10;
- sum = sum + x*b
- x =x/10;

Step 3: b= a%10;

- a=a/10;
- sum = sum + x*b
- x =x/10;

Step 4: b= a%10;

- a=a/10;
- sum = sum + x*b
- x =x/10;

Step 5: b= a%10;

- a=a/10;
- sum = sum + x*b
- x =x/10;

Step 6: b= a%10;

- a=a/10;
- sum = sum + x*b
- x =x/10;

Step 7: Print sum

To Convert it into 54321

Step 1: Initialize x= 10000, a=12345, sum =

Step 2: 12345%10 = 5

- 12345/10 = 1234
- sum = 0 + 10000*5 = 50000
- x =10000/10 =1000

Step 3: b= 1234%10 = 4

- a=1234/10 = 123
- sum = 50000 + 1000*4 = 54000
- x =1000/10 = 100

Step 4: b= 123%10 = 3

- a=123/10 = 12
- sum = 54000 + 100*3 = 54300
- x =100/10 = 10

Step 5: b= 12%10 = 2

- a=12/10; = 1
- sum = 54300 + 10*2 = 54320
- x =10/10 = 1

Step 6: b= 1%10; = 1

- a=1/10; = 0
- sum = 54320 + 1*1 = 54321
- x =1/10 = 0

Step 7: Print sum = 54321