IF statement

(i) Single statement.

IF (*logical expression*) *statement*

Example:

```
read(*,*) a
if (a. lt. 0)  a = -a
write(*,*) a
```

relational operators:

.lt., .le., .gt., .ge., .eq., and .ne.

Or

```
read(*,*) a
if (a < 0)  a = -a
write(*,*) a
```

relational operators:

<, <=, >, >=, ==, and /=

IF statement

(ii) Single block of statements.

IF (*logical expression*) THEN
things to be done if true
END IF

Example:

```
Read(*,*) a, b
if (a > b) then
        temp = a
        a = b
        b = temp
end if
write(*,*) 'numbers are in ascending order'
write(*,*) a, b
```

IF statement

(iii) Alternative actions.

IF (*logical expression*) THEN
things to be done if true
ELSE
things to be done if false
END IF

Example:

```
Read(*,*) a, b, c
d = b**2-4*a*c
if (d<0) then
        print *,'No real roots'
else
        root1=(-b+sqrt(d))/(2*a)
        root2=(-b-sqrt(d))/(2*a)
end if
```

IF statement

(iv) Several alternatives (there may be several ELSE Ifs, and there may or may not be an ELSE).

IF (*logical expression-1*) THEN

.....

ELSE IF (*logical expression-2*) THEN

.....

[ELSE

.....

]

END IF

Example:

```
Read(*,*) mark
if (mark.le.100.and.mark.ge.80) then
        Write(*,*) 'mark = ', mark, ' Grade A'
else if (mark.lt.80.and.mark.ge.60) then
        Write(*,*)'mark = ', mark, ' Grade B'
else if (mark.lt.60.and.mark.ge.40) then
        Write(*,*)'mark = ', mark, ' Grade C'
else if (mark.lt.40.and.mark.ge.0) then
        Write(*,*)'mark = ', mark, ' Fail'
else
        Write(*,*) ' incorrect mark'
end if
```

Mark:

90

76

45

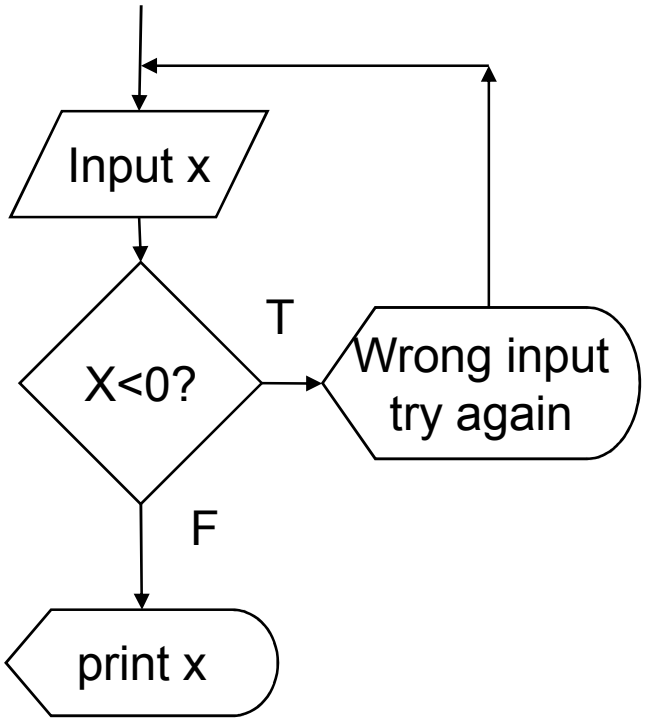
102

30

100

More Examples

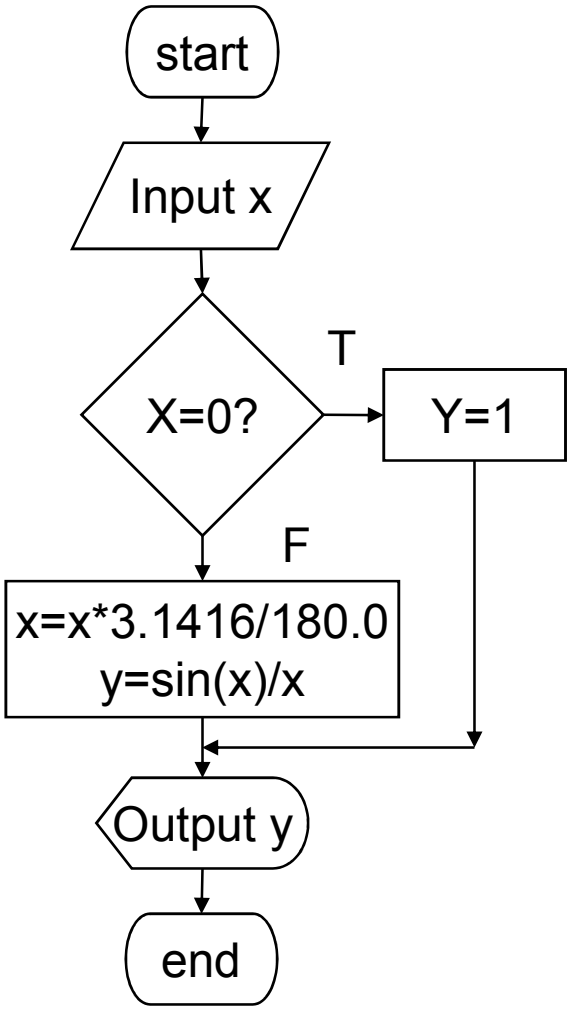
1. Use an if statement to trap an unwanted input: if the input number is less than zero, the program displays error messages and ask to get a new input.




```
100     Read(*,*) x
        If (x < 0) then
        print *,' Wrong input'
        print *,' try again'
        goto 100
        end if
        print *, x
```

More Examples

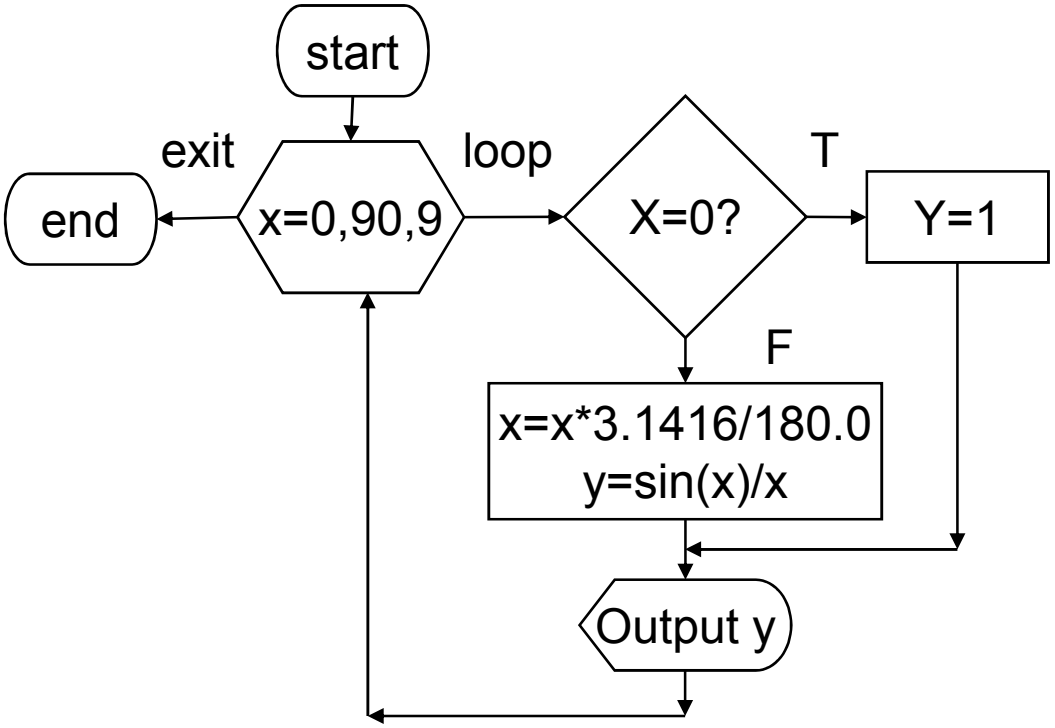
2. Write a program to calculate function y=sin(x)/x; x is an angle input from the keyboard.




```
Read(*,*) x
If (x ==0) then
        ! If (abs(x)<0.000000001) then
   y=1
else
   x = x * 3.1416/180.0
   y = sin(x)/x
end if
Print *,' y=',y
end
```

More Examples

3. Write a program to calculate function y=sin(x)/x for x between 0-90˚ at every 9˚.




```
do x = 0, 90, 9
If (x==0) then
    y=1
else
    x = x * 3.1416/180.0
    y = sin(x)/x
end if
Print *,' y=',y
end do
end
```