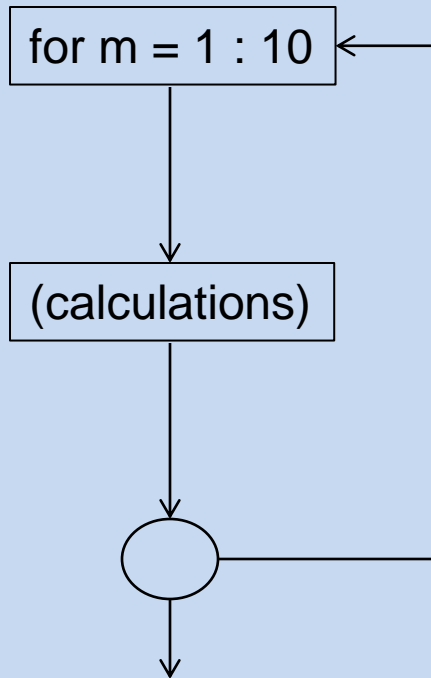# KMU 255
Computer Programming

Examples for loops and their flowcharts

Hacettepe University
Department of Chemical Engineering
Fall Semester

FOR LOOP (DO LOOP)

for m = 1 : 10
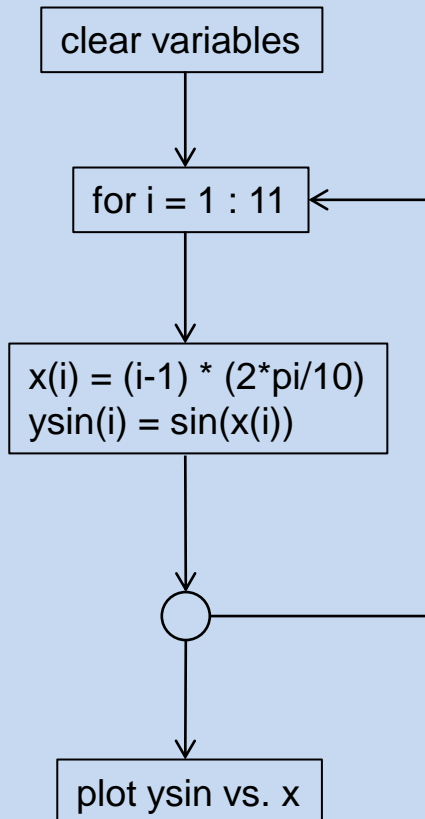
(calculations)

m is a counter to track the number of passes through the calculations.

```
a = 0
for m = 1:10;
        m
        a = a + m
        pause
end
```

pause command stops the program and waits for user to press a key. Useful to monitor the values of the variables.
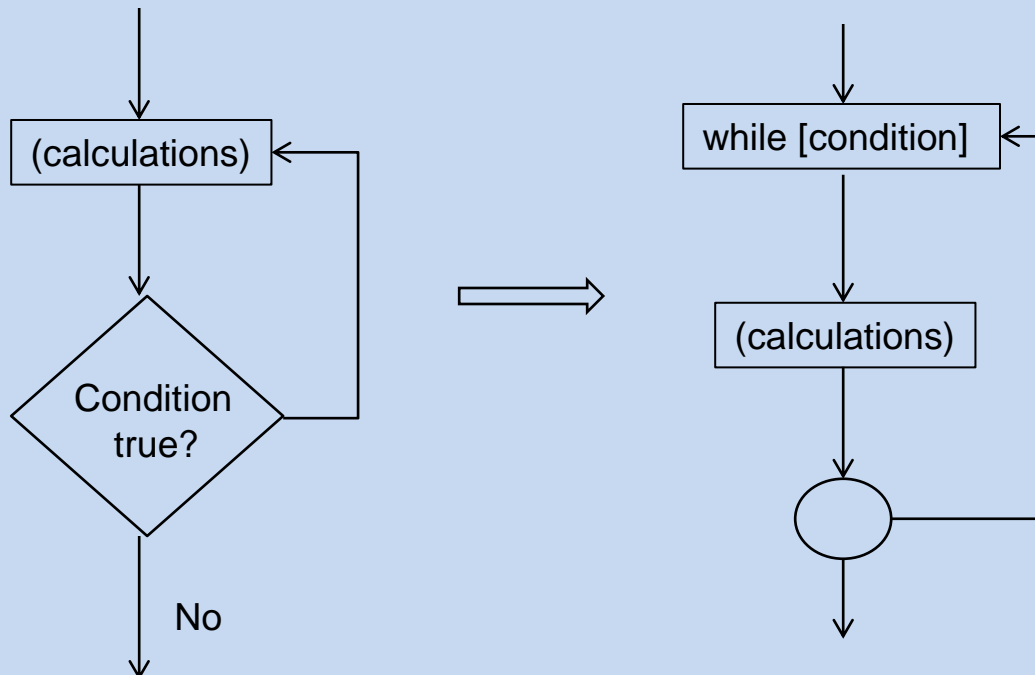
Matlab codes: FOR LOOP EXAMPLE

```
clear variables
        |
        v
for i = 1 : 11
        |
        v
x(i) = (i-1) * (2*pi/10)
ysin(i) = sin(x(i))
        |
        v
        O
        |
        v
plot ysin vs. x
```

```
clear
for i = 1:11;

    x(i) = (i-1) * (2*pi/10);
    ysin(i) = sin(x(i));

end
plot (x,ysin)
```
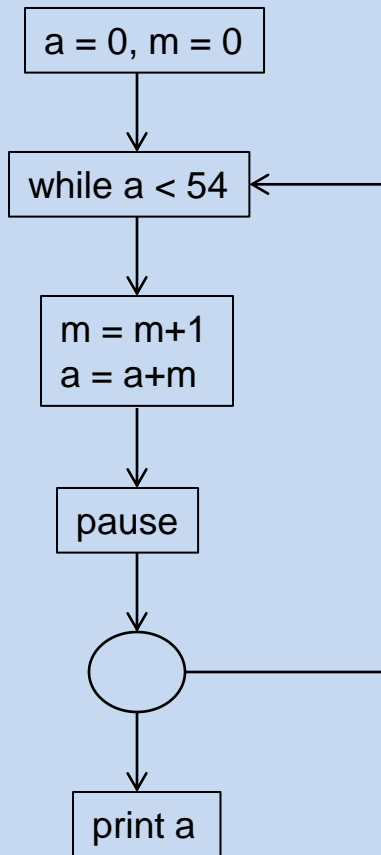
WHILE LOOP

- a counter variable is not required.
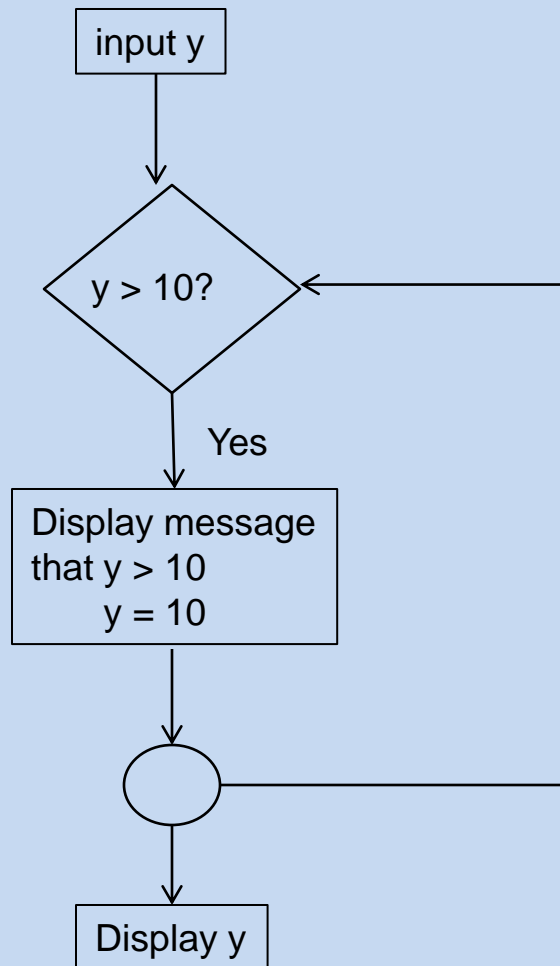- must contain a logical condition to control the looping.

WHILE LOOP

```
a = 0, m = 0
```
↓
```
while a < 54
```
↓
```
m = m+1
a = a+m
```
↓
```
pause
```
↓
( )

↓
```
print a
```

$\Longrightarrow$

m = 0;
a = 0;

while a < 54;
    m = m+1
   a = a+m
  pause

end
a

IF Statement

```
input y
```

```
y > 10?
```

Yes

```
Display message
that y > 10
   y = 10
```

```
Display y
```
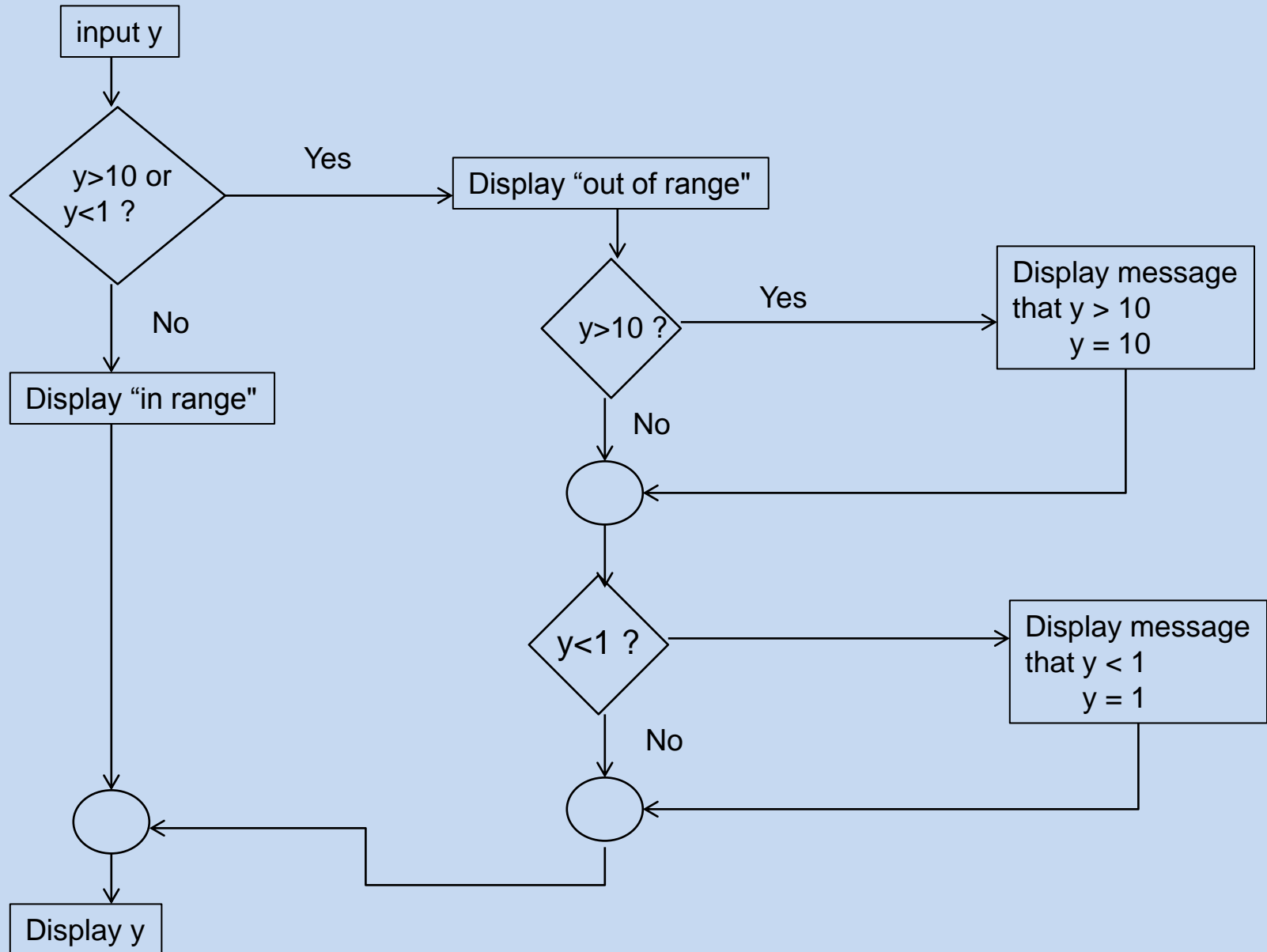
y = input ('Enter a number less than or
equal to 10:');
if y > 10
    fprintf('The number you entered is
                greater than 10. It
        will be changed to 10\n')
    y = 10;
end
y

If, else, elseif

input y

y>10 or
y<1 ?

Yes → Display "out of range"

No → Display "in range"

y>10 ?

Yes → Display message
that y > 10
y = 10

No

y<1 ?

Display message
that y < 1
y = 1

No

Display y

```
y = input ( 'Enter a number between 1 and 10:');

if  y > 10 I y < 1
      fprint f( 'The number you entered outside the range. It will be
changed. \n')

       if y > 10;
          y = 10;
          fprintf ( 'The number has been changed to 10. \n');
       end

       if y < 1
          y = 1;
          fprintf( 'The number has been changed to 1. \n');
       end
else
 fprintf ( 'The number is in the range. \n')
end
y
```