

## Lecture #4: While...do

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## Iteration

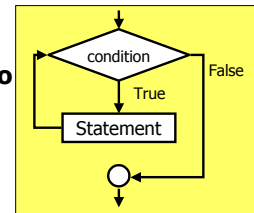
- Loop
- Execute a set of command repeatedly

## Iteration

While Loop    Repeat-until Loop    For Loop

## While Loop

**While** condition **do**  
statement

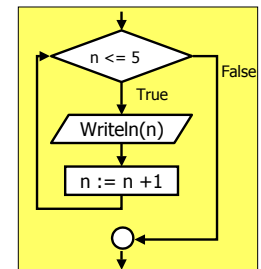


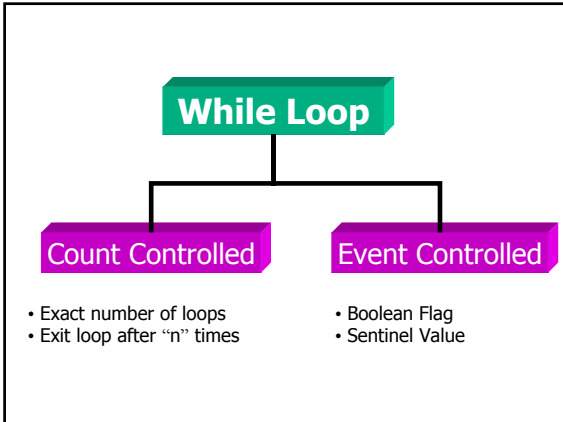
## While Loop

Count Controlled    Event Controlled

## While Loop :Count Controlled

```
n = 0;  
While n <= 5 do  
  begin  
    writeln(n);  
    n := n + 1;  
  end; {while}
```





## Event Controlled: Boolean Flag

```

rain := True;
While rain do
begin
  readln (n);
  if n > 0 then
    writeln(n)
  else
    rain := False
end; {while}
  
```

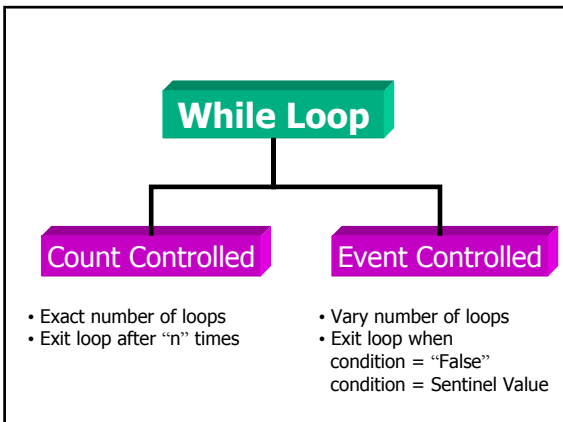
## Event Controlled: Sentinel Value

- Read on or more data in each loop
- When should we stop reading ?
  - Instruct user to enter a unique number called "Sentinel Value"

## Event Controlled: Sentinel Value

```

Program test;
Const Stop_Value = -999;
Var num,sum: integer;
Begin
  Readln(num);
  while num <> Stop_value do
    begin
      sum := sum + num;
      Readln (num);
    end; {while}
  writeln(sum);
End.
  
```



## Number of loop

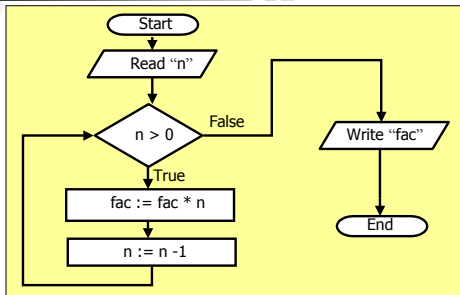
- Exact number of loop
- Vary number of loop
- The least number of loop ? **NONE**

Example:

```

Readln (n);
While n <= 5 do
  begin
    writeln(n);
    n := n + 1;
  end; {while}
  
```

## Example 1 Calculate the "n!" (n-factorial)



## n! program

```

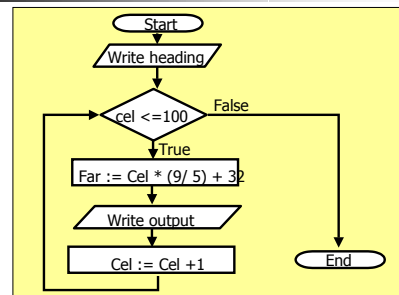
begin
  fac := 1;
  write('Please input n ');
  readln(n);
  while n > 0 do
    begin
      fac := fac * n;
      n := n - 1;
    end; {while}
  writeln(n, '! = ', fac)
end. {main}
  
```

## Example 2 Convert Celcius to Farenheit

Celcius	Farenheit
0.0	32.0
1.0	33.8
2.0	35.6
...	...
...	...
99.0	210.2
100.0	212.0

$$\text{Farenheit} = \text{Celcius} * (9/5) + 32$$

## Example 2 Convert Celcius to Farenheit



## Convert Celcius to Farenheit program

```

begin
  Writeln('Celcius':10, 'Farenheit':15);
  Cel := 0;
  while Cel <= 100 do
    begin
      Far := Cel * (9/5) + 32;
      writeln(cel:10:1, farenheit:15:1);
      Cel := Cel + 1
    end {while}
end.
  
```