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Slides Outline

1 Logic Structure - focus on looping  
Please use separate notes for additional information

2 Determining logic involves two essential questions:  
1. Is the condition satisfied?  
2. What should be done if the condition is satisfied?

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**DO WHILE LOOP**

```

graph TD
    Start(( )) --> Condition{condition}
    Condition -- Y --> Processing[processing]
    Processing --> Condition
    Condition -- N --> Exit(( ))
  
```

**DO WHILE LOOP:**  
 The while loop shown here tests a condition to see if the processing should be done.  
 If the answer to the condition is YES, the processing box shown is executed.  
 If the answer to the condition is NO, the processing box shown is not executed.

This shows the DO while loop which is frequently used in programming to cause processing to be repeated until a specific condition is met. When the condition is met the processing will not be executed and control will drop out of

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A loop needs to set the control information prior to entering the loop. It needs to test the condition to see if the processing being done by the loop should be done and inside the processing it needs to do something to impact the condition.

$ct = 1$

Set condition information

Condition — decides about

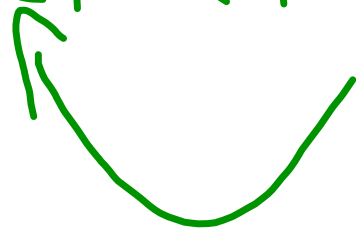
$ct > 5$

Continuing

Inside — change something

that effects cond

$ct = ct + 1$



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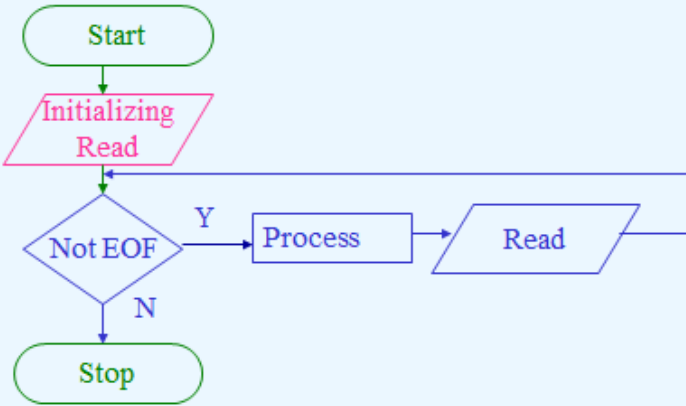
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Shape Fill: Fill the selected shape with a solid color, gradient, picture, or texture.

## DO WHILE LOOP

This example shows a do while loop where I am reading a file (getting input from a file). I want the process as there are records on the file. To do this, I am going to use an initializing read. I read the initial record and then I process a loop until the end of file (EOF) has been reached. To make this work, I always read or input another record at the end of the loop.



```

graph TD
    Start([Start]) --> Read[/Initializing Read/]
    Read --> NotEOF{Not EOF}
    NotEOF -- Y --> Process[Process]
    Process --> Read2[/Read/]
    Read2 --> NotEOF
    NotEOF -- N --> Stop([Stop])
  
```

**Pseudocode:**

```

start
input/read record
do while not EOF
  process
  input/read record
end while loop
stop
  
```

Note that I use the term initializing read, priming read is another term that can be used. When you are inputting a record you can use the word read, the word input, the word get, or any word that implies

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3 4 5 6 7

**DO UNTIL LOOP**

This example shows a do until loop controlled by a counter. I have determined that I always want to process once and that I want to continue the looping process until the counter equals the stop point. When this condition is true, I will exit the loop

**Pseudocode:**  
 counter = startPoint  
 do  
   process  
   increment counter  
 until counter = stopPoint

```

graph TD
    A[counter = start point] --> B[process]
    B --> C[increment counter]
    C --> D{counter not = stop point}
    D -- Y --> B
    D -- N --> E[ ]
  
```

The looping structure where I want to use the **until loop** to do something a certain number of times, requires the following:

- **initialize the counter outside the loop to a specific start point**
- **process**
- **increment the counter inside the loop**
- **test the counter to determine whether or not to loop again**

In the do until loop, I will always process at least once. I think it is clearer when writing the pseudocode, to show the until condition at the bottom of the loop rather than at the top

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1 Loop Assignment  
2  
3  
4  
5  
6

Start

Initializing  
Read a record

Not EOF

Y

Calculate profit

Set up line for report

Write line on report

Read a record

N

Stop

Problem #1: I want to produce a report using the logic shown. The report should contain ItemNo, ItemName, Price, Cost and Profit. Profit is the difference between Price and Cost.

ItemNo	ItemName	OnHand	OnOrder	ReorderPt	Cost	Price	VendorNo
1111	Oak	5	10	50	75	95.89	123
1212	Red Maple	26	22	25	100	117.99	124
1234	Sugar Maple	45	15	50	45	65.89	123
1245	Hemlock	10	17	50	35	49.99	125
1256	Blue Spruce	10	29	25	75	110.99	127
1267	White Pine	25	50	50	35	45.75	125
1275	Black Pine	7	12	25	70	105.98	127
1290	Birch	11	0	25	80	110.75	124
2000	Dogwood	12	20	45	75	95.99	124
2012	Cherry	35	10	25	60	75.75	124
2036	Elm	50	25	25	75	90	123

Click to add notes

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Slides Outline

1 Loop Assignment  
Therese's spider web is  
inherently recursive.

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Then check to see if the loop should be executed again.

First the computer goes to process and executes the code.

When Process is done it returns.

Start

initializing  
Read a record

Not EOF

Y

N

Stop

process()

Process

OnHand > 25

N

Y

Set up line for report

Write line on report

Read a record

End Process

Item No	Item Name	OnHand	OnOrder	ReorderPt	Cost	Price	VendorNo
1111	Oak	5	10	50	75	95.89	123
1212	Red Maple	26	22	25	100	117.99	124
1234	Sugar Maple	45	15	50	45	65.89	123
1245	Hemlock	10	17	50	35	49.99	125
1256	Blue Spruce	10	29	25	75	110.99	127
1267	White Pine	25	50	50	35	45.75	125
1275	Black Pine	7	12	25	70	105.98	127
1290	Birch	11	0	25	80	110.75	124
2000	Dogwood	12	20	45	75	95.99	124
2012	Cherry	35	10	25	60	75.75	124
2036	Elm	50	25	25	75	90	123

Problem #3: Produce this report. The output should show ItemNo, ItemName, OnHand and OnOrder.

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1 Loop Assignment  
There are again some emergency assignments.

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### Program:

```

start
input/read record
do while not EOF
    process()
end while loop
stop

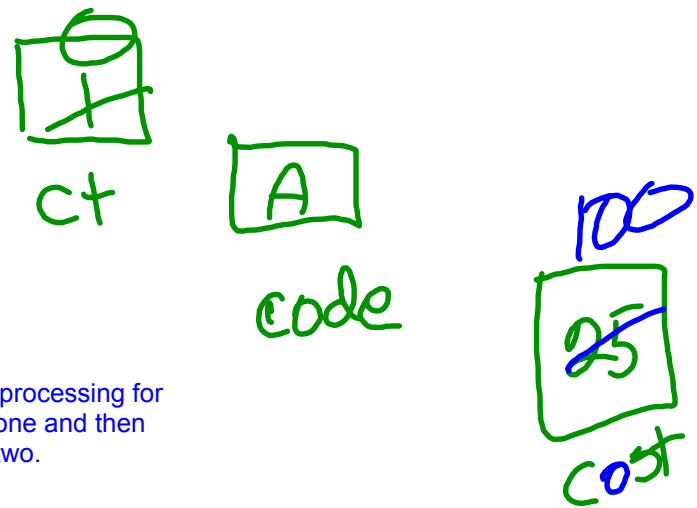
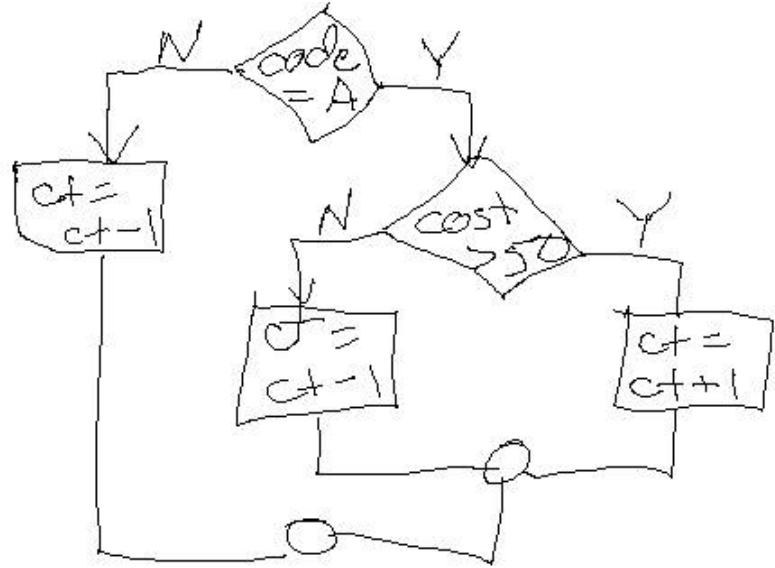
    process()
        if VendorNo = "124" and (OnOrder > 10 or Price > 100)
            setup line for report
            write line for report
        end if
        input/read a record
    end process

```

Item No	Item Name	OnHand	OnOrder	ReorderPt	Cost	Price	VendorNo
1111	Oak	5	10	50	75	95.89	123
1212	Red Maple	26	22	25	100	117.99	124
1234	Sugar Maple	45	15	50	45	65.89	123
1245	Hemlock	10	17	50	35	49.99	125
1256	Blue Spruce	10	29	25	75	110.99	127
1287	White Pine	25	50	50	35	45.75	125
1275	Black Pine	7	12	25	70	105.98	127
1290	Birch	11	0	25	80	110.75	124
2000	Dogwood	12	20	45	75	95.99	124
2012	Cherry	35	10	25	60	75.75	124
2036	Elm	50	25	25	75	90	123

Problem #8: Produce this report. The output should show ItemNo, ItemName, OnHand, OnOrder and Price.

This quiz is going to give you a flowchart for a condition and ask you to answer questions about it.



Showing processing for problem one and then problem two.

Problem #1: Assume the following:

- 1 will be put into the memory variable ct
- A will be put into the memory variable code
- 25 will be put into the memory variable cost

After following the logic in the flowchart, what will be in the memory variable ct?

Problem #2: Assume the following:

- the memory variable ct will contain your answer from problem #1
- A will be put into the memory variable code
- 100 will be put into the memory variable cost

After following the logic in the flowchart, what will be in the memory variable ct?