

**Programming: Logic, Design and Implementation CIS120/17**

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**Week #5**  
 Week of October 5th

**Separate speaker notes to accompany presentation on logical if structures**  
 Please look at this PowerPoint on loops and repetition:  
**Presentation on structure (focus on loops)**  
**Separate speaker notes to accompany presentation structure (focus on loops)**

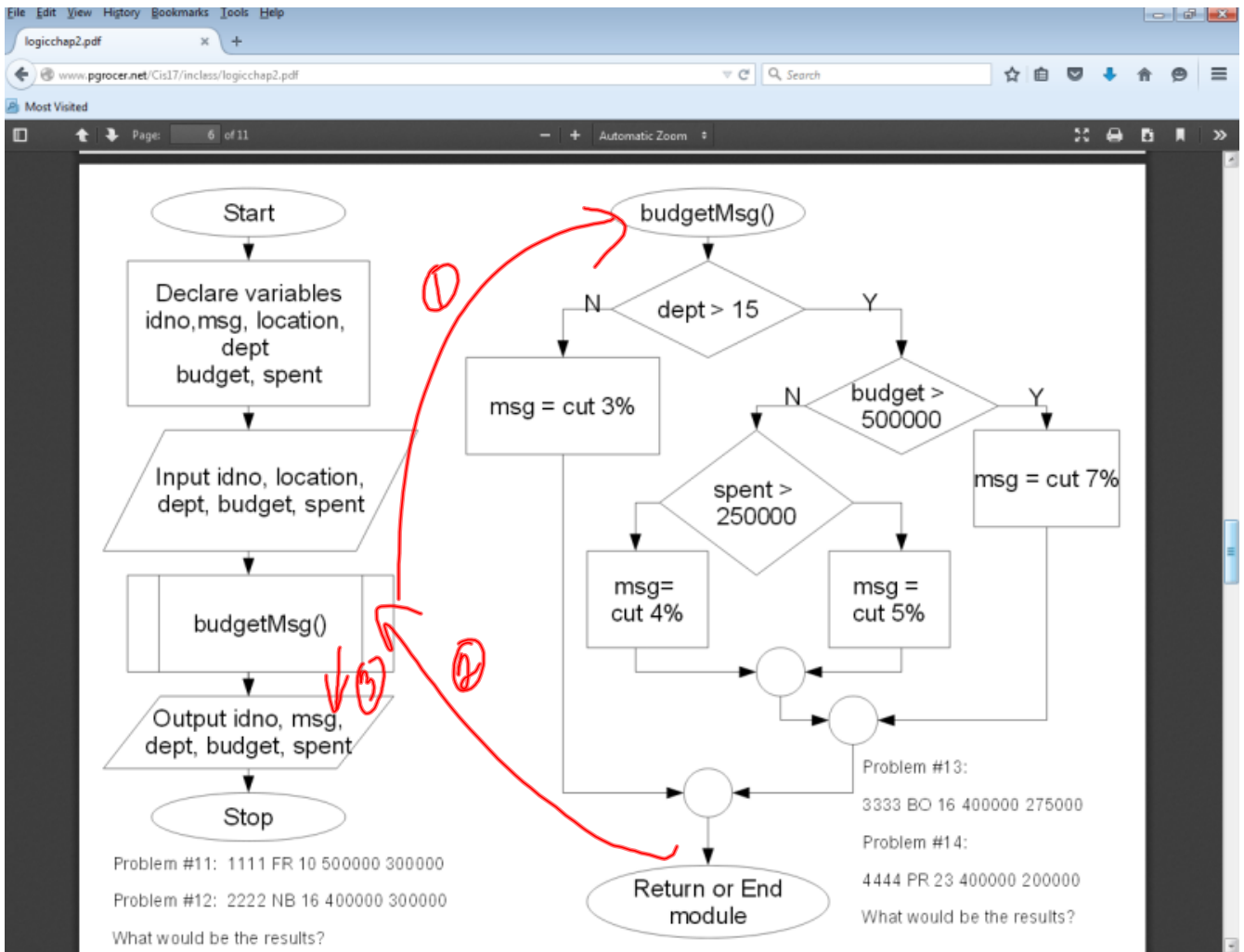
**Assignments:**  
**In class logic exercise** If you were not in class (proved by signing the list) you need to do this check off assignment and send it to me. Follow the logic flowchart and process the input, then tell me the output.  
**Logic PowerPoint assignment**  
**Flowchart and Pseudocode assignment** This is a quiz - however it is not due until next Thursday (October 15th) when homework is due - you need to work on it individually because it is a quiz (that also means no resubmit). This quiz also counts more than the quick quizzes - guess I should have called it a test. It counts like a high-end homework.

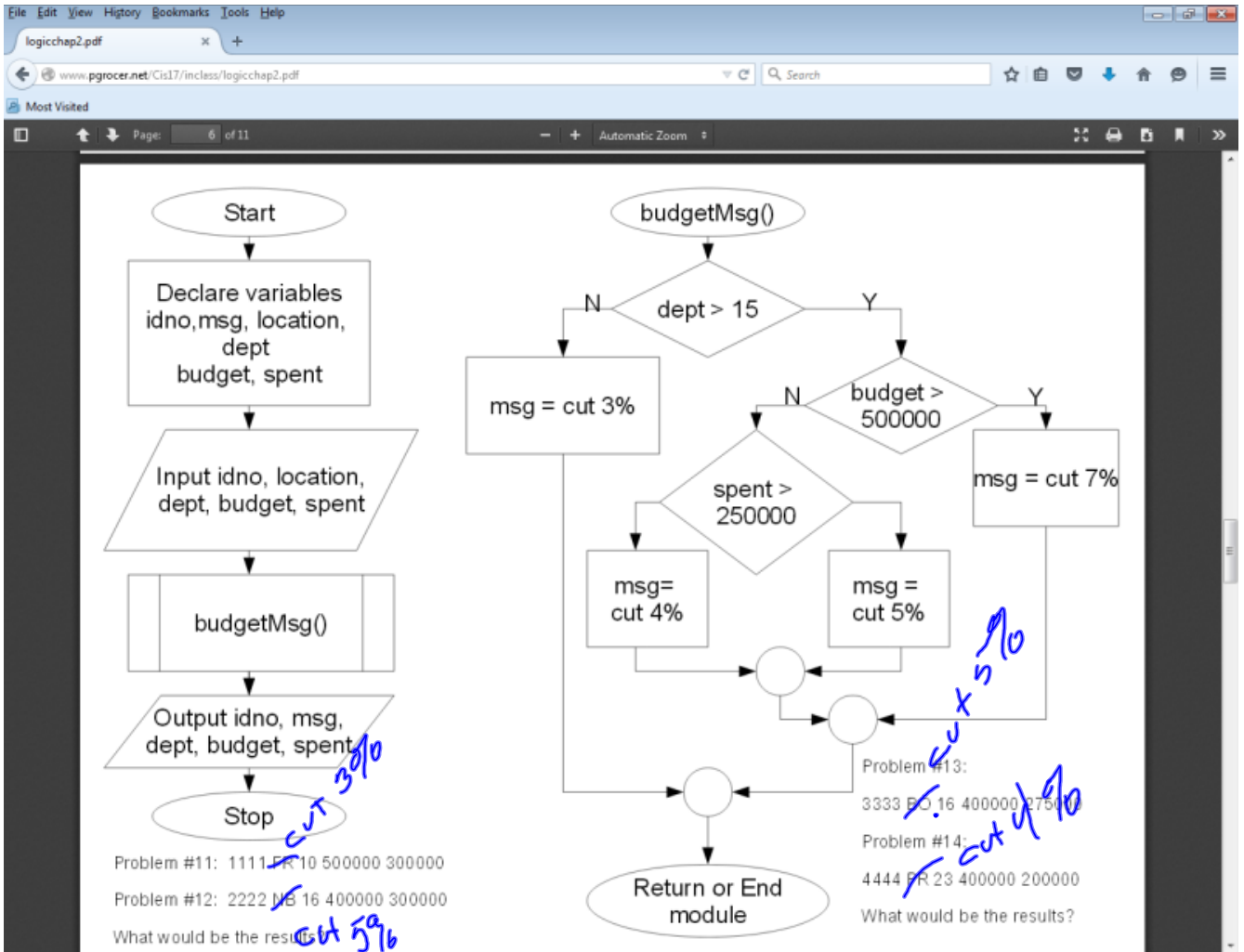
**Week #4**  
 Week of September 28th

Carolyn will be available Tues 2 - 3 and Thurs 2 - 4, I will come and go. I have an office hours Mon at 10 in my office. Next I want you to move on and read chapter #3 and look at those videos as well. Please work on relating what we are doing in class to the textbook.  
 This is Enrollment Verification week and I have to verify you are in the class. If you have not passed in work or the email a week verifying you are in the class, then you need to contact me now to make sure you are not withdrawn from the class.  
 Please listen to this video and read this handout about note taking.  
**Note taking video**  
**Cornell method of note taking** is the specific one to read. I also suggest checking out the other links on this page.  
 This is not assignment even though it says it is. We are going to do it in class. For online students you should definitely take the time to go over this because it deals with flowcharts and Access.  
**Access SQL project (document version)**  
**Books database with SQL version**  
**SQL code (document version)** This is a copy of the SQL code in case it gets messed up  
 We will start looking at logic and will work on the practice exercise below.  
**Practice exercise:**  
**Practice exercise**  
**Practice continued**  
**Presentation on using pseudocode to play computer**  
**Separate speaker notes to accompany presentation on using pseudocode to play computer**

**Assignments:**  
**Quiz #2** Usually quizzes are due in 3 days but since I am going away this weekend we will make the due date October 5th. If you have questions, let me know.  
**Logic Assignment**  
 Check back!

Help: Carolyn will be available Tues at 2 and Thurs at 2 until 4 in K101. I will be joining her when I can.  
 If you need help with something, now would be the time to ask your questions!  
 Read chapter #1 in the text book. Be sure to watch the videos that go with the chapter (note there are 5 with a time of about 4 minutes each or less). You can download the videos from **Cengage Chapter 1 videos**  
**Directions for downloading Access are located under Notes and Handouts.**  
 Next I want you to move on and read chapter #2 and look at those videos as well.  
 Check back to see what we are doing on Thursday.  
**Assignments:**





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logicchap2.pdf

www.pgrocer.net/Crs17/inclass/logicchap2.pdf

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Main Program:

```
Start
Declare variables idno, location, dept, budget, spent, msg
Input idno, location, dept, budget, spent
If dept < 20
  msg = cut 5%
Else
  If budget > 350000
    msg = cut 7%
  Else
    msg = cut 6%
  End if
End if
Output idno, location, dept, budget, spent, msg
Stop
```

Problem #15:  
1111 BO 20 400000 300000 *cut 7%*

Problem #16:  
2222 PR 14 100000 110000 *cut 5%*

Problem #17:  
3333 FR 25 200000 100000 *cut 6%*

What are the results?

logicchap2.pdf

www.pgrocer.net/Cis17/inclass/logicchap2.pdf

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Automatic Zoom

Main Program:

```
Start
Declare variables idno, location, dept, budget, spent, msg
Input idno, location, dept, budget, spent, msg
budgetMsg()
Output idno, location, dept, budget, spent, msg
Stop
```

budgetMsg()

```
If dept < 20
  If budget > 350000
    msg = cut 7%
  Else
    msg = cut 6%
  End if
End if
```

```
graph TD
    Start([Start]) --> Decl[Declare variables idno, location, dept, budget, spent, msg]
    Decl --> Input[Input idno, location, dept, budget, spent, msg]
    Input --> Call[budgetMsg()]
    Call --> Output[Output idno, location, dept, budget, spent, msg]
    Output --> Stop([Stop])
```

Problem #18: 1111 BO 20 400000 300000  $\Delta$

Problem #19: 2222 PR 14 100000 110000  $\Delta$  cut 6%

Problem #20: 3333 FR 25 200000 100000  $\Delta$

What are the results?

logicchap2.pdf

www.pgrocet.net/Cis177/inclass/logicchap2.pdf

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Main Program:

```
Start
Declare variables idno, location, dept, budget, spent, msg
Input idno, location, dept, budget, spent
budgetMsg()
Output idno, location, dept, budget, spent, msg
Stop
```

```
budgetMsg()
If dept < 20
  If budget > 350000
    msg = cut 7%
  Else
    msg = cut 6%
  End if
Else
  msg = cut 5%
End if
```

Problem #21: 1111 BO 20 400000 300000 cut 5%

Problem #22: 2222 PR 14 100000 110000 cut 6%

Problem #23: 3333 FR 25 200000 100000 cut 5%

What are the results?

logicchap2.pdf

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Main Program:

```

Start
Declare variables idno, location, dept, budget, spent, msg
Input idno, location, dept, budget, spent, msg
budgetMsg()
Output idno, location, dept, budget, spent, msg
Stop

budgetMsg()
If dept < 20
  If budget > 350000
    msg = cut 7%
  Else
    If spent > 250000
      msg = cut 6%
    End if
  End if
End if
    
```

Problem #24:  
1111 BO 14 400000 300000 cut 7%

Problem #25:  
2222 FR 21 100000 110000 Δ

Problem #26:  
3333 FR 10 300000 275000 cut 6%

What are the results?  
175000 Δ

```
Main Program:  
Start  
Declare variables idno, location, dept, budget, spent, msg  
Input idno, location, dept, budget, spent  
budgetMsg()  
Output idno, location, dept, budget, spent, msg  
Stop  
  
budgetMsg()  
If dept < 20  
If budget > 350000  
msg = cut 7%  
Else  
If spent > 250000  
msg = cut 6%  
Else  
msg = cut 5%  
End if  
End if  
Else  
msg = cut 4%  
End if
```

Problem #27:	1111	BO	21	400000	300000	cut 4%
Problem #27:	2222	PR	19	100000	110000	cut 5%
Problem #29:	3333	FR	10	300000	275000	cut 6%
Problem #30:	4444	NB	15	200000	150000	cut 5%

What are the results?



Logic Flowchart and Pseudocode Quiz

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

```

    graph TD
      Start(( )) --> D1{code = A}
      D1 -- N --> P1[ct = ct - 1]
      D1 -- Y --> D2{cost > 50}
      D2 -- N --> P2[ct = ct - 1]
      D2 -- Y --> P3[ct = ct + 1]
      P1 --> Join(( ))
      P2 --> Join
      P3 --> Join
      Join --> End(( ))
  
```

Handwritten notes in red:

ct:  $\frac{\cancel{10}}{1}$

code: A

cost:  $\frac{25}{100}$

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? **0**

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? **1**

Problem #3: Assume the following:

- the memory variable ct will contain your answer from problem #2
- B will be put into the memory variable code
- 200 will be put into the memory variable cost

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

Problem #4: Assume the following:

- the memory variable ct will contain your answer from problem #3
- A will be put into the memory variable code
- 75 will be put into the memory variable cost

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

The screenshot shows a web browser window with the address bar containing [www.pgrocer.net/Cic17/assign/flowpseudoquiz1.html](http://www.pgrocer.net/Cic17/assign/flowpseudoquiz1.html). The main content area displays a hand-drawn logic flowchart. The flowchart starts with a diamond-shaped decision node labeled "State = MA". If the answer is "N" (No), it goes to a process box "MSG = Problem". If "Y" (Yes), it goes to another diamond decision node "yr = 1987". From "yr = 1987", a "Y" leads to a process box "MSG = OK", and an "N" leads to a diamond decision node "income > 25000". From "income > 25000", a "Y" leads to a process box "MSG = OK", and an "N" leads to a process box "MSG = Problem".

Below the flowchart are three problem questions:

**Problem #9:** Assume the following:

- MA will be put into the memory variable state
- 1987 will be put into the memory variable yr
- 25000 will be put into the memory variable income
- the memory variable msg will be blank

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

**Problem #10:** Assume the following:

- RI will be put into the memory variable state
- 1987 will be put into the memory variable yr
- 25000 will be put into the memory variable income
- the memory variable msg will be blank

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

**Problem #11:** Assume the following:

- MA will be put into the memory variable state
- 1975 will be put into the memory variable yr
- 25000 will be put into the memory variable income
- the memory variable msg will be blank

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

1st record

EOF

Data that you should use in doing this assignment.

assignplay1.ppt [Read-Only] [Compatibility Mode] - PowerPoint

FILE HOME INSERT DESIGN TRANSITIONS ANIMATIONS SLIDE SHOW REVIEW VIEW ADD-INS STORYBOARDING

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1 Long Assignment  
2  
3  
4  
5  
6  
7

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.

*1st record*

*Profit*  
20.89  
17.99

*2nd record and all records read here*

*1111 Oak 95.89 75 20.89*  
*1212 Rm 117.99 100 17.99*

ItemNo	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

Click to add notes

SLIDE 3 OF 10

NOTES COMMENTS

100%

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FILE HOME INSERT DESIGN TRANSITIONS ANIMATIONS SLIDE SHOW REVIEW VIEW ADD-INS STORYBOARDING

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```
graph TD; Start([Start]) --> Init[/Initializing Read a record/]; Init --> NotEOF{Not EOF}; NotEOF -- Y --> process[process()]; process --> Process([Process]); Process --> Calc[Calculate profit]; Calc --> Setup[Set up line for report]; Setup --> Write[/Write line on report/]; Write --> Read[/Read a record/]; Read --> EndProcess([End Process]); EndProcess --> NotEOF; NotEOF -- N --> Stop([Stop]);
```

Problem #2: Is there any difference in the output using the logic in problem #1 and using the logic shown here? Explain.

module subroutine routine procedure

2nd record on until EOF

Click to add notes

SLIDE 4 OF 10

assignplay1.ppt [Read-Only] [Compatibility Mode] - PowerPoint

FILE HOME INSERT DESIGN TRANSITIONS ANIMATIONS SLIDE SHOW REVIEW VIEW ADD-INS STORYBOARDING

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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

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

Click to add notes

SLIDE 5 OF 10

assignplay1.ppt [Read-Only] [Compatibility Mode] - PowerPoint

FILE HOME INSERT DESIGN TRANSITIONS ANIMATIONS SLIDE SHOW REVIEW VIEW ADD-INS STORYBOARDING

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2

3

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5

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7

8

Program:

```

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

```

process()
    if OnHand > 25 and Price > 75
        setup line for report
        write line for report
    end if
input/read a record
end process
    
```

Problem #5: Produce this report. The output should show ItemNo, ItemName, OnHand and Price.

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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NOTES COMMENTS

1:25 PM 10/8/2015