

File Edit View History Bookmarks Tools Help

CIS120/17 Course Page

www.pgrocer.net/PFGCIS120.html

SMART Ink

Programming: Logic, Design and Implementation CIS120/17

About This Course:

- Need help or support?
- Read Me First
- Introduction to CIS120/17
- Syllabus
- Withdrawal Policy as of Fall 2017

Site Resources:

- Notes and Handouts
- Examples
- Programs
- Presentations
- SmartBoard Presentations
- Audio/lectures

Weekly Schedule:

- Weekly schedule
- Assignment summary

Links:

- Links & Tutorials

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Week #4
Week of September 23rd

I strongly recommend setting up study groups that can meet when help is available.
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not passed in work or the email a week verifying the class, then you need to contact me now to make sure you are not withdrawn from the class.
Reading - there is not a required text but there is reading that will add to your knowledge base and that is required:
If you bought the optional text, read chapter 1 (you might note that at Amazon much of the first chapter is available for [Just Enough Programming Design](#) in the Look inside feature). Might help you decide about the book.

[Compiler definition](#)
[Compiler vs interpreter](#)
[Types of software](#)
[Memory and RAM](#)
[Programming Process](#)
[Examples: Pseudocode and Flowcharts](#)
[Pseudocode and Flowcharts](#)
[If statements](#)
[Loops](#)
[Data types](#)

I also want to include some information on skills, so please listen to this video and read this handout about note taking.
[Note taking plus other techniques for being successful - I suggest checking out the other links on this page.](#)
[Cornell method of note taking](#)

This week, we will go over some of the principles from the readings above and start looking at logic. We will work on the practice exercise below

[Practice exercise:](#)
[Practice exercise:](#)
[Practice continued](#)

[Be sure to look at the solutions to the practice](#) and I also recommend listening to the accompanying audio.

[Presentation on using pseudocode to play computer](#)
[Separate speaker notes to accompany presentation on using pseudocode to play computer](#)

For help on if statements, look at this presentation:
[Presentation on logical if structures](#)
[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:](#)
[Logic Assignment](#)
Check back!

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www.pgrocet.net/Cis17/indass/loopifplay.html

SMART Ink

In Class Exercise on loops and if statements:

These are unrealistic problems, but they help to make sure that you understand the flow of logic and can follow it through to completion.

Problems #1:

```

start
firstNum = 100
secondNum = 5
thirdNum = 12
theResult = 0
do while secondNum <= thirdNum
    if firstNum > 500
        firstNum = firstNum * 2
        secondNum = secondNum + 1
    else
        firstNum = firstNum + 100
        thirdNum = thirdNum - 1
    end if
end while loop
theResult = firstNum + secondNum + thirdNum
display theResult
end

```

condition variables

True

False

firstNum

secondNum

thirdNum

theResult

100

200

300

400

500

600

1000

2400

4800

5

6

7

8

12

11

10

9

8

7

0

4815

4815

Problem #2:

```

start
firstNum = 25
secondNum = 50
thirdNum = 75
fourthNum = 100
ct = 0
workAns = 0
theAns = 0
do while ct < 6
    workAns = firstNum + secondNum
    if workAns > thirdNum
        fourthNum = fourthNum / 2
        firstNum = firstNum * 3
        secondNum = firstNum - secondNum
        thirdNum = thirdNum * 2
    else
        firstNum = firstNum + 10
        secondNum = secondNum + 10
        thirdNum = thirdNum + 10
    end if
    ct = ct + 1
end do
theAns = firstNum + secondNum * thirdNum + fourthNum
display theAns
end

```

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start

www.pgrocet.net/Cis17/indclass/loopifplay.html

SMART Ink

In Class Exercise on loops and if statements:
These are unrealistic problems, but they help to make sure that you understand the flow of logic and can follow it through to completion.

Problems #1:

```

start
  firstNum = 100
  secondNum = 5
  thirdNum = 12
  theResult = 0
  do while secondNum <= thirdNum
    if firstNum > 500
      firstNum = firstNum * 2
      secondNum = secondNum + 1
    else
      firstNum = firstNum + 100
      thirdNum = thirdNum - 1
    end if
  end while loop
  theResult = firstNum + secondNum + thirdNum
  display theResult
end

```

condition variables

firstNum	secondNum	thirdNum	theResult
100	5	12	0
200	6	11	4815
300	7	10	
400	8	9	
500		8	
600		7	

True
False

Problem #2:

```

start
  firstNum = 25
  secondNum = 50
  thirdNum = 75
  fourthNum = 100
  ct = 0
  workAns = 0
  theAns = 0
  do while ct < 6
    workAns = firstNum + secondNum
    if workAns > thirdNum
      fourthNum = fourthNum / 2
      firstNum = firstNum * 3
      secondNum = firstNum - secondNum
      thirdNum = thirdNum * 2
    else
      firstNum = firstNum + 10
      secondNum = secondNum + 10
      thirdNum = thirdNum + 10
    end if
    ct = ct + 1
  end do
  theAns = firstNum + secondNum * thirdNum + fourthNum
  display theAns
end

```

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firstNum	secondNum	thirdNum	fourthNum
25	50	75	100
75	25	150	50
225	15	300	25
675	5	600	12.5

4815

Windows

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www.pgrocet.net/Cis17/indass/loopifplay.html

In Class Exercise on loops and if statements:

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Problems #1:

```

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firstNum = 100
secondNum = 5
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theResult = 0
do while secondNum <= thirdNum
    if firstNum > 500
        firstNum = firstNum * 2
        secondNum = secondNum + 1
    else
        firstNum = firstNum + 100
        thirdNum = thirdNum - 1
    end if
end while loop
theResult = firstNum + secondNum + thirdNum
display theResult
end

```

Problem #2:

```

start
firstNum = 25
secondNum = 50
thirdNum = 75
fourthNum = 100
ct = 0
workAns = 0
theAns = 0
do while ct < 6
    workAns = firstNum + secondNum
    if workAns > thirdNum
        fourthNum = fourthNum / 2
        firstNum = firstNum * 3
        secondNum = firstNum - secondNum
        thirdNum = thirdNum * 2
    else
        firstNum = firstNum + 10
        secondNum = secondNum + 10
        thirdNum = thirdNum + 10
    end if
    ct = ct + 1
end do
theAns = firstNum + secondNum * thirdNum + fourthNum
display theAns
end

```

firstNum	secondNum	thirdNum	fourthNum	ct	workAns	theAns
25	50	75	100	0	0	0
35	60	85	50	1	75	
105	45	170	25	2	95	
115	55	180		3	150	
125	65	190		4	170	
135	75	200		5	190	
405	330	400		6	210	

Handwritten calculations for Problem #2:

$$\begin{array}{r}
 330 \\
 + 400 \\
 \hline
 730 \\
 + 405 \\
 \hline
 1135 \\
 + 25 \\
 \hline
 1160
 \end{array}$$

Microsoft Word window: ifexample510 (Protected View) - Word

File Home Insert Draw Design Layout References Mailings Review View Help Tell me what you want to do

PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing

Practice exercise:

Payroll file: (each record is payRecord)

idno	name	payHr	regHrs	ovtHrs
1111	John Doe	20	40	10
1234	Ann Costa	25	40	0
2222	Linda Ryan	30	40	20
2345	Bob Smith	30	35	10
EOF				

Handwritten notes and calculations:

- Left margin: "Rec 1", "Rec 2", "Rec 3", "Rec 4" with arrows pointing to the first four rows of the table. "end of file" with an arrow pointing to the EOF row.
- Right margin: "Read" written four times with arrows pointing to the first four rows of the table. A box containing a list of totals: 1100, 1000, 2100, 1500.
- Below the table: Several handwritten multiplication calculations for each record:
 - Record 1: $20 \times 40 = 800$ (blue), $20 \times 10 = 200$ (blue), $200 \times 1.5 = 300$ (blue).
 - Record 2: $25 \times 40 = 1000$ (red), $25 \times 0 = 0$ (red), $0 \times 1.5 = 0$ (red).
 - Record 3: $30 \times 40 = 1200$ (green), $30 \times 20 = 600$ (green), $600 \times 1.5 = 900$ (green).
 - Record 4: $30 \times 35 = 1050$ (black), $30 \times 10 = 300$ (black), $300 \times 1.5 = 450$ (black).

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ifexampleS10 (Protected View) - Word

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PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing

Practice exercise:

Payroll file: (each record is payRecord)

idno	name	payHr	regHrs	ovtHrs
1111	John Doe	20	40	10
1234	Ann Costa	25	40	0
2222	Linda Ryan	30	40	20
2345	Bob Smith	30	35	10
EOF				

```
start
  read payRecord
  do while not endOfFile
    if ovtHrs > 0
      regPay = payHr * regHrs
      ovtPay = payHr * ovtHrs * 1.5
      totPay = regPay + ovtPay
    else
      totPay = payHr * regHrs
    end if
    display totPay
    read payRecord
  end do while loop
stop program
```

EOF

Initializing read

Read all other records at bottom of loop

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Microsoft Word window titled "alogicasgnF12 (Protected View) - Word". The ribbon shows File, Home, Insert, Draw, Design, Layout, References, Mailings, Review, View, and Help. A yellow bar at the top states "PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing".

Logic Assignment

I want you to play computer. Step through these problems and determine the result.

<pre>start var1 = 10 var2 = 20 wksum = 0 rslt = 0 do while var2 < 30 wksum = var1 + var2 if wksum > 30 var1 = var1 - 2 var2 = var2 + 1 else var1 = var1 - 1 var2 = var2 + 3 end if end while loop rslt = var1 + var2 display rslt end</pre>	<p>Problem #1: When the pseudocode displays rslt, what number will rslt be?</p> <ol style="list-style-type: none">1. rslt = 282. rslt = 293. rslt = 304. rslt = 315. rslt = 32
<pre>start var1 = 10 var2 = 20 wksum = 0 rslt = 0 do until var2 > 30 wksum = var1 + var2 if wksum > 30 var1 = var1 - 2 var2 = var2 + 1 else var1 = var1 - 1 var2 = var2 + 3 end if end until loop rslt = var1 + var2 display rslt end</pre>	<p>Problem #2: When the pseudocode displays rslt, what number will rslt be?</p> <ol style="list-style-type: none">1. rslt = 282. rslt = 293. rslt = 304. rslt = 315. rslt = 32

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Windows taskbar at the bottom shows the Start button, search bar, and taskbar icons for File Explorer, Microsoft Store, Word, and other applications. The system clock shows 12:10 PM on 9/24/2019.