Matters of Style

Topic 0

Why have style?

- Why have style?
  - Readability
  - Reusability
  - Modifiability
  - Easier to debug!
- You need to really read this chapter
- Follow up with me if you have questions

Some style guidelines

- Name identifiers properly
  - Variables → lowercase
  - Constants → UPPERCASE
- Indent blocks of code

```
int main()
{
    indent here
}
```


Commenting your code

For all programs in this class

- Before int Main
  - Use comments to describe your program
- Data Table
  - The declaration section must contain a data table
  - The data table
    - states the use of the variable or named constant &
    - how its value is obtained/used.
- Other comments should be used throughout your code to
  - Describe what each section is doing
    - (think in terms of input, processing, & output)
  - Complicated parts of the code → be descriptive!

Data Tables

Should state: use of the identifier & how it is used

Comments should be lined up

All identifiers should have their own line and datatype

Which of these are correct?

```
int firstNum;          // INPUT - first value to average
int secondNum;         // INPUT - second value to average
float average;         // CALC & OUT  - average of two values
```

CORRECT

```
int firstNum; // INPUT - first value to average - INPUT
int secondNum; // INPUT - second value to average - INPUT
float average; // CALC & OUT  - average of two
```

INCORRECT

```
int firstNum;          // input value
int secondNum;         // input value
float average;         // calculated average
```

INCORRECT

Create a Template

- Create a project
- Put all this in there
- Call it 0-template
- Cut & paste the project

```
/*************************************************************
 *  AUTHOR       : Michele Rousseau
 *  Assignment #1: Template
 *  CLASS        : CS1B
 *  SECTION      : MW: 10:30a - 12p
 *  Due Date     : 1/5/12
 *************************************************************/
#include <iostream>
using namespace std;
/*************************************************************
 *
 * ADD TWO INTS
 *
 * This program accepts two integers in from a user, sums
 *   them and then outputs the result to the monitor.
 *
 * INPUT:
 *   inp1: First integer to be summed -> input from user
 *   inp2: Second integer to be summed -> input from user
 *
 * OUTPUT:
 *   sum:     The sum of the two ages
 *************************************************************/
int main()
{
    // constants
    int inp1;      // INPUT - First integer to sum
    int inp2;      // INPUT - Second integer to sum
    int sum;       // CALC & OUT - contains the result of
                   //      the sum of two inputs -

    // output the class heading to the screen
                cout << "****************************************\n";
    cout << "   Programmed by: Michele Rousseau\n";
    cout << "   Student ID   : 750125\n";
    cout << "   CS1B         : MW - 6p-7:30\n";
    cout << "   Lab #1       : Eclipse Tutorial\n";
    cout << "****************************************\n";
;
    // INPUT:  A description of what is being input.
    // PROCESSING:  Detail what is being processed.
    // OUTPUT:  Details of what is being output.
    return 0;
}
```

Class Heading

Pre-processor directives

General Program description

Data Table

Output Class Heading

Doc throughout code

6

Class heading information

First lines in your source file

```
/*************************************************************
 *   AUTHOR     : Michele Rousseau
 *   Lab #1     : Template
 *   CLASS      : CS1B
 *   SECTION    : MW: 10:30a - 12p
 *   Due Date   : 1/5/12
 *************************************************************/
```

Note the alignment

Replace the data in purple with the appropriate data.

Next…

- Preprocessor Directives then doc for the main program
  → Including a list of inputs and outputs

```
#include <iostream>
#include<iomanip>
using namespace std;

/*************************************************************
*
* ADD & MULTIPLY TWO INTS
*
*_____________________________________________________________
* This program does whatever this program does
*  save this template and fill in the info appropriately
*  for your program
*_____________________________________________________________
* INPUT:
*   int1: First integer to be summed received as input
*   int2: Second integer to be summed received as input
*
* OUTPUT:
*   sum: the sum of the two integers (int1 & int2)
*   product: The product of the two integers (int1 & int2)
*************************************************************/
```

Program Title

General Description

Describe the Inputs & Outputs here

Notice the indentation

Next → int main

```
int main ()
{
        // Declare your constants here
        //       document constants above the declarations

        // Declare variables here - include your data table

        // Initialize variables

        // OUTPUT your header and class information here
        //    (see next slide)

        // INPUT:  A description of what is being input.

        // PROCESSING:  Detail what is being processed.

        // OUTPUT:  Details of what is being output.

        return 0;

}
```

Double space

Header & Class Information

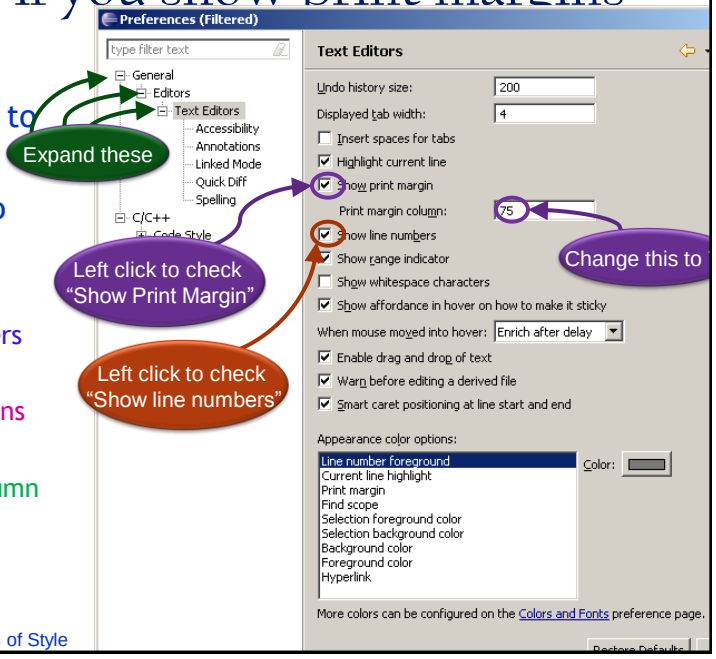
```
cout << "****************************************\n";
cout << "   Programmed by: Michele Rousseau\n";
cout << "   Student ID    : 750125\n";
cout << "   CS1B          : MW - 6p-7:30\n";

// put lab # or Assignment # as appropriate
cout << "   Lab # 7       : Lab Name\n";
cout << "****************************************\n";
```

Change everything in purple to the appropriate information for the project.

It is easier if you show print margins

Right click on the scroll bar to the left of the Editor window to get this menu

1. Check show line numbers
2. Check Show print margins
3. Change Print margin column to 75



Documenting executable code

```
int main()
{
    // Declare your constants here
    //      document constants above the declarations

     int    num1;          // INPUT - first value to average
     int    num1;          // INPUT - second value to average
     float  average;       // CALC & OUT - integer

     // INPUT -- get numbers to average from user
     cout  << "Enter first value to double: ";
     cin     >> num1;

     // PROCESSING -- calculate the average
     average = float(num1 + num2) / 2;

     // OUTPUT -- output the average
     cout  << "\n\nThis average is: " << average;
     return 0;
}
```

All programs have a data table

Space Between operators

Document above each code segment

Double space between code segments

Block of code is indented

CORRECT

Initializing Variables

DO NOT INITIALIZE VARIABLES IN THE DECLARATION SECTION.

- Initialize variables just before their use in the program.

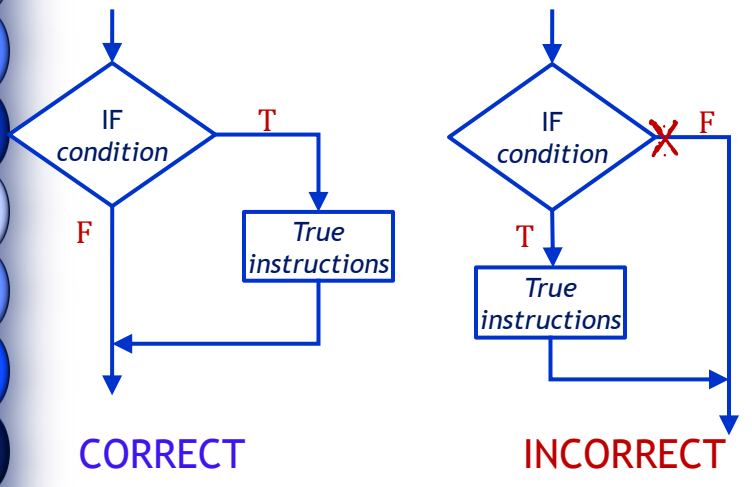
```
int count;
count = 0;
```

CORRECT

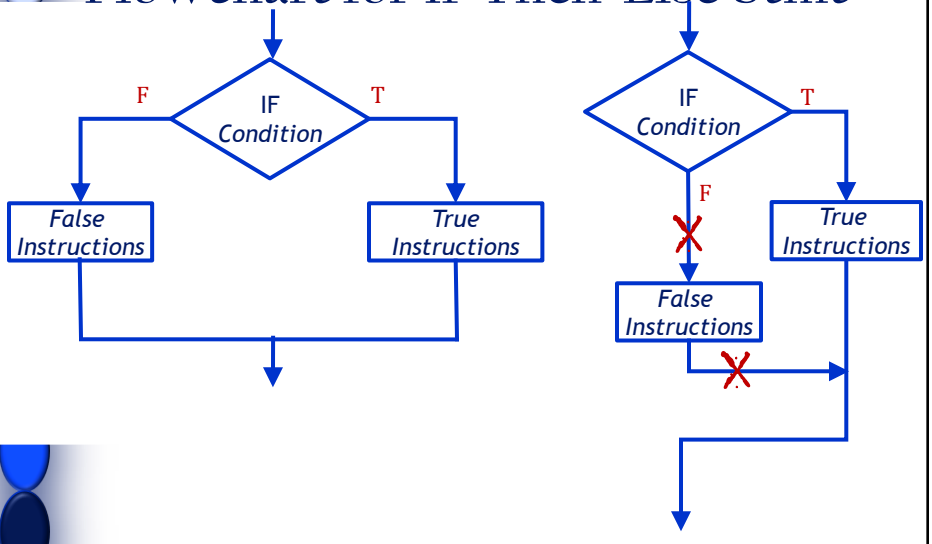
```
int count = 0;
```

INCORRECT

Flowcharting – REVIEW If-Then Statement



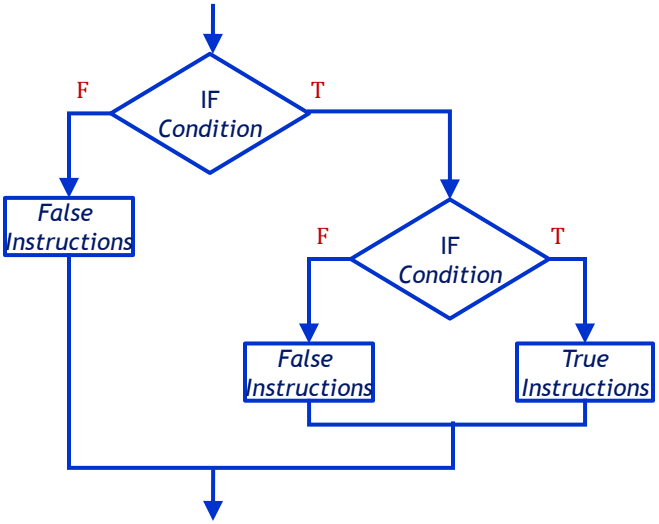
Flowchart for If-Then-Else Stmt



CORRECT

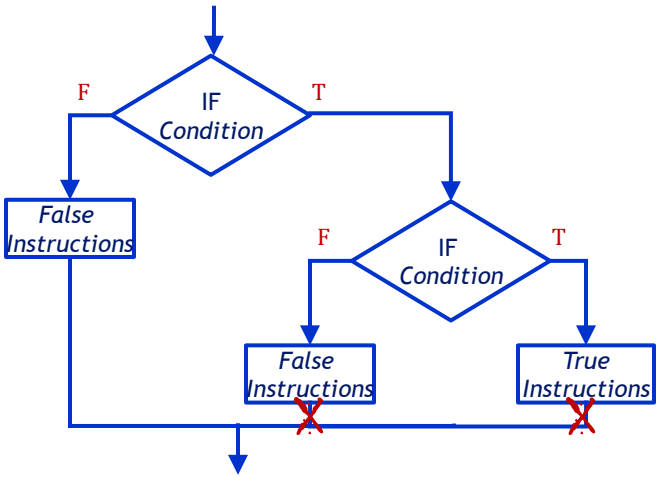
INCORRECT

Nesting If-Then-Else Statements



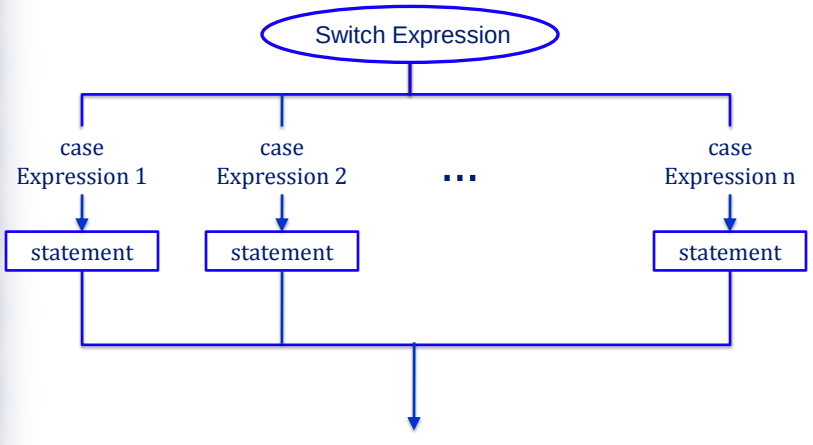
CORRECT

Nesting If-Then-Else Stmt



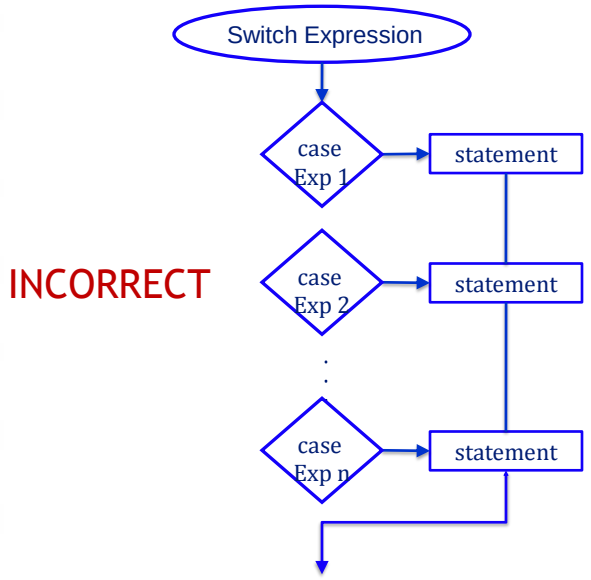
INCORRECT

Flowchart for Switch Statements



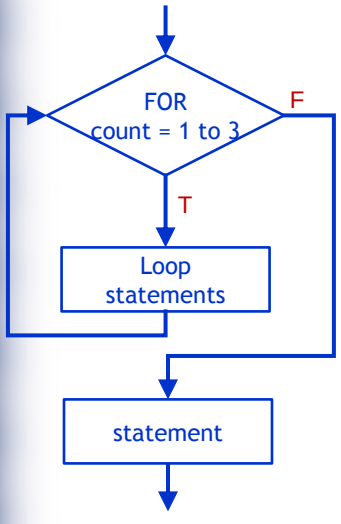
CORRECT

Flowchart Switch Statements

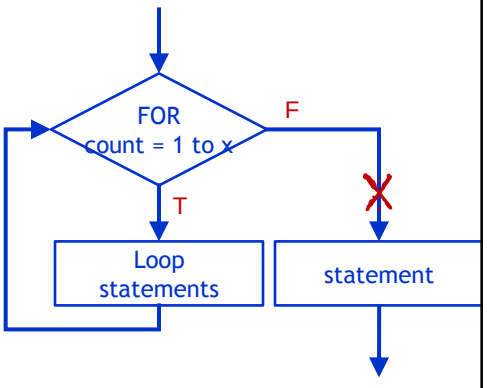


INCORRECT

For Loops

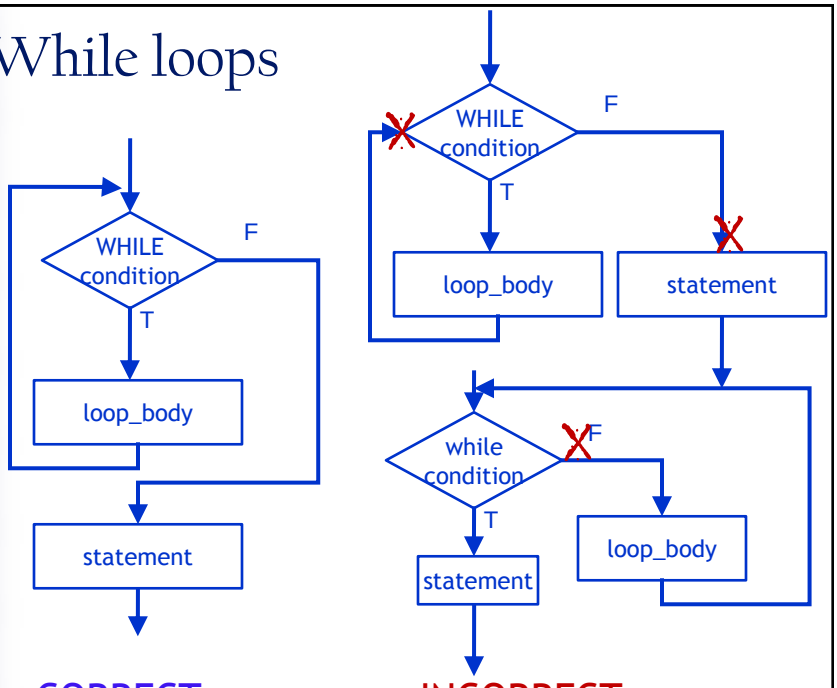


CORRECT



INCORRECT

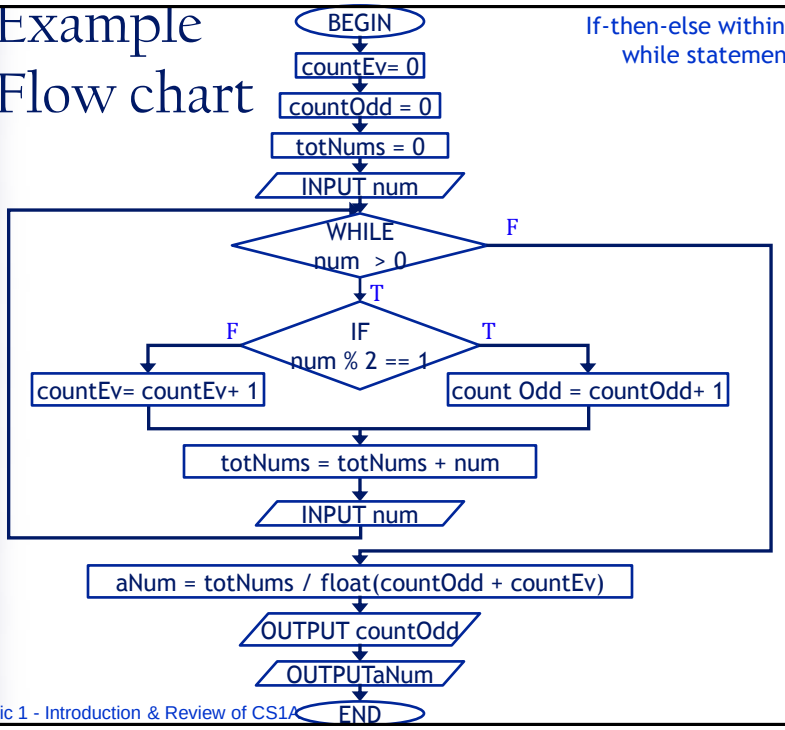
While loops



21

Example Flow chart

If-then-else within a while statement



22