Basic Computer Programming and Networking

Selections

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Exercise 5.1

- Write a C++ program to read an examination mark from keyboard and print “pass” if mark >= 40.

C++ Selection (if Statement)

- **One-Way (if) Selection**

Syntax

```
if (expression)
    {
       statement(s)
    }
```

```
if(mark >= 40)
{
      cout << "PASS";

}
```

- Statement executed if value of expression **true**

C++ Selection (if Statement)

- **Two-Way (if...else)**

```
if (expression)
{
   statement1;
}
else
{
   statement2;
}
```

```
if(mark >=40)
{
      cout << "PASS";
}
else
{
      cout << "FAIL";
}
```

- If expression true, statement1 executed, otherwise statement2 executed

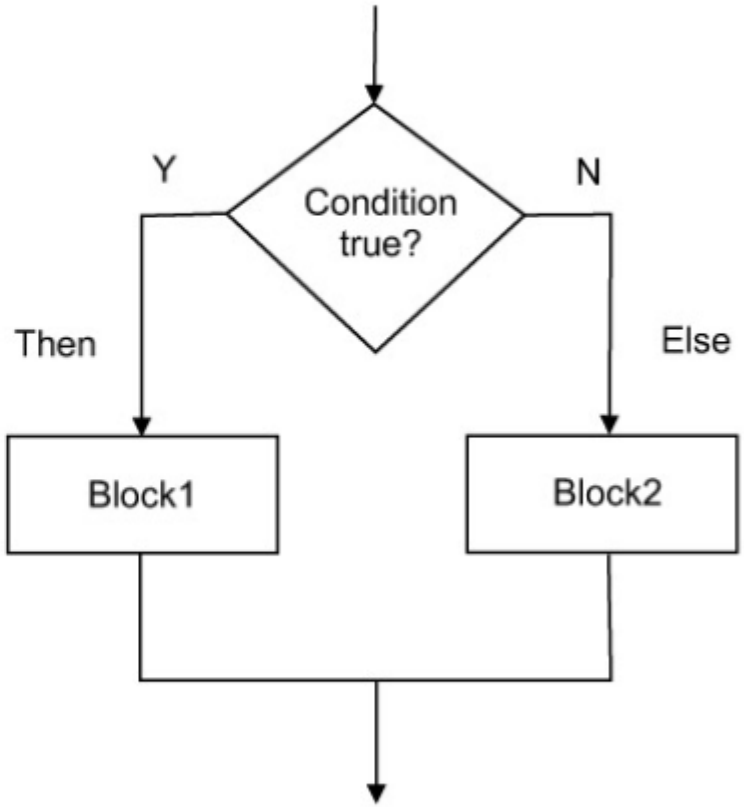
if-then-else Statement

- Syntax

```
if (Condition) {
        statement(s)
}
else {
        statement(s)
}
```

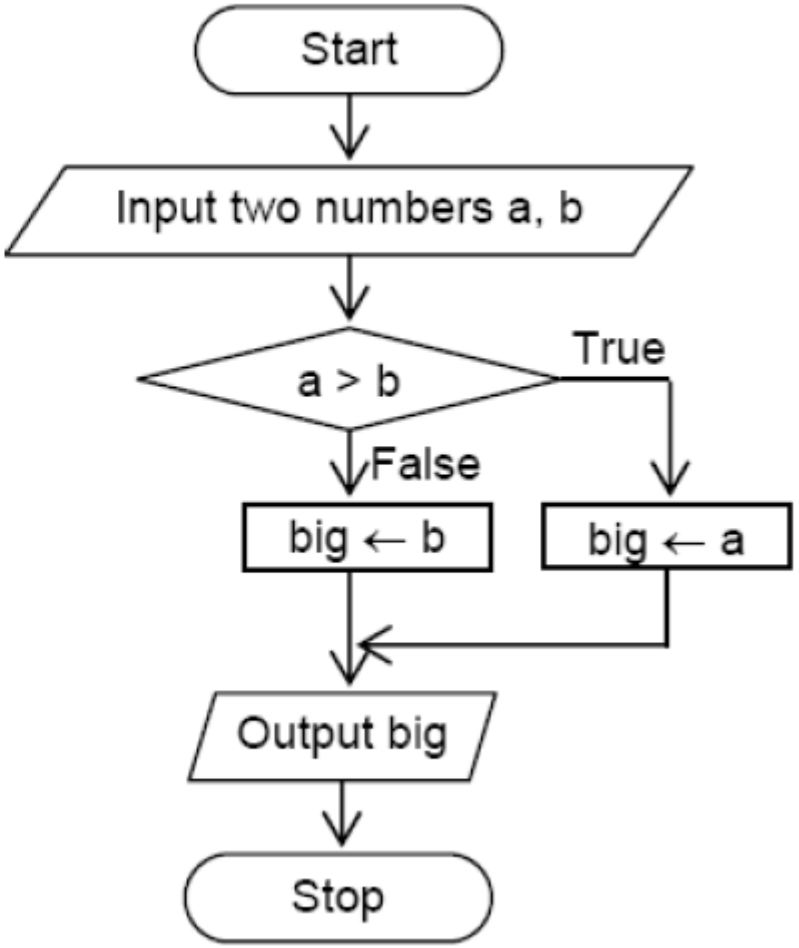
- Example

```
if(mark >= 40)
{
    cout << "PASS";
}
else
{
    cout << "FALL";
}
```



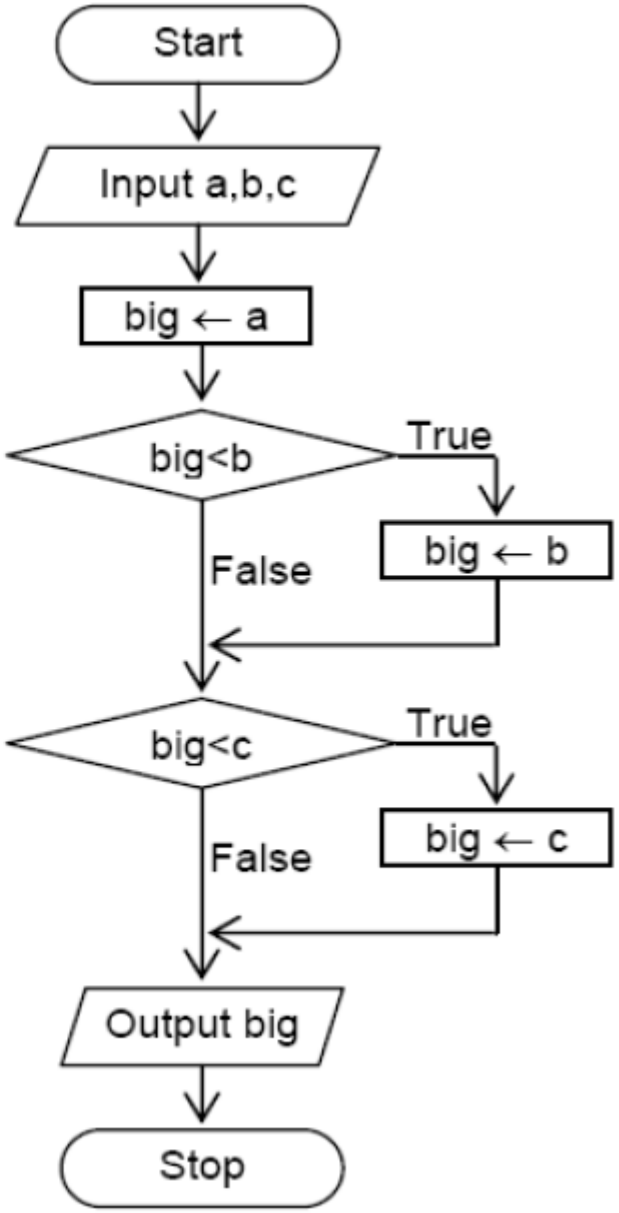
Exercise 5.1

Write a C++ program to print the biggest number of the two given numbers



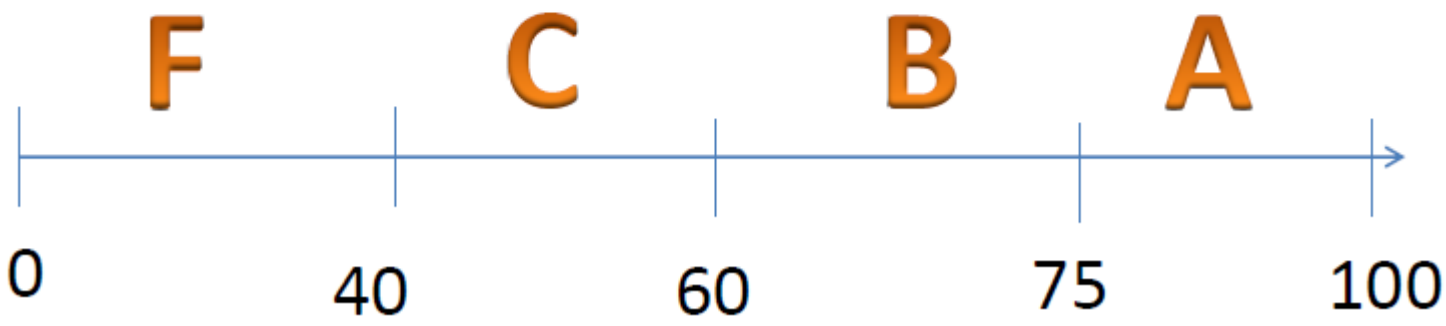
Exercise 5.2

Write a C++ program to print the biggest number of the three given numbers



Exercise 5.3

- Write a C++ program to print the grade for a given mark.



Solution 1

```
if(mark >=0 && mark <40)
      cout << "F";
if(mark >=40 && mark <60)
      cout << "C";
if(mark >=60 && mark <75)
      cout << "B";
if(mark >=75 && mark <=100)
      cout << "A";
```

Nested if and if...else Statements

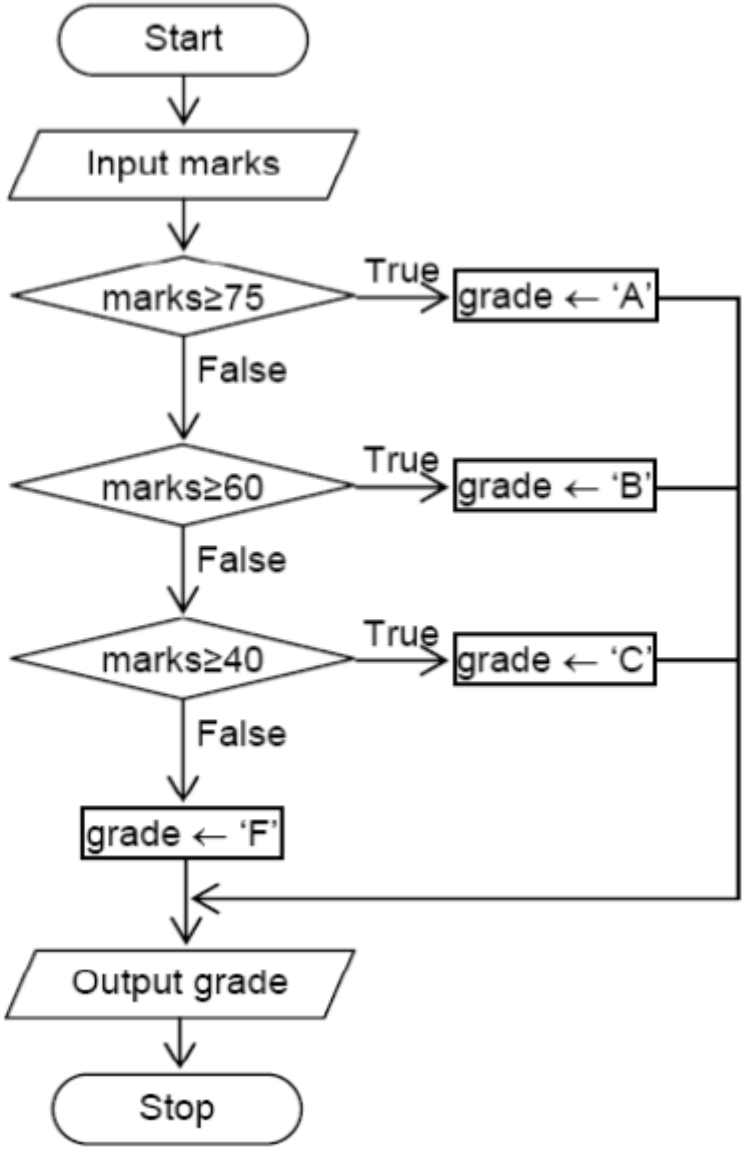
- **Nesting**: one control statement in another
- Syntax of nested if...else statements:

```
if (condition1)
        statement1;
   else if (condition2)
        statement2;
        . . .
        else if (condition-n)
                statement-n;
              else statement-z;
```

```
if (x < 0)
   y = -1;
else if (x == 0)
   y = 0;
else                    //(x > 0)
   y = 1;
}
```

Exercise 5.4

Write a C++ program to print the grade for a given marks



Debug

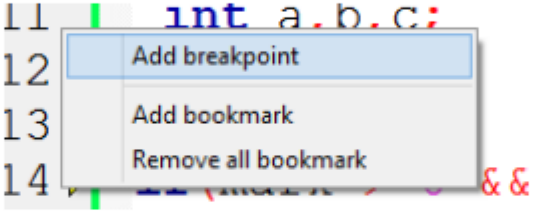
Debugging is a methodical process of finding and reducing the number of bugs, or defects

Debug

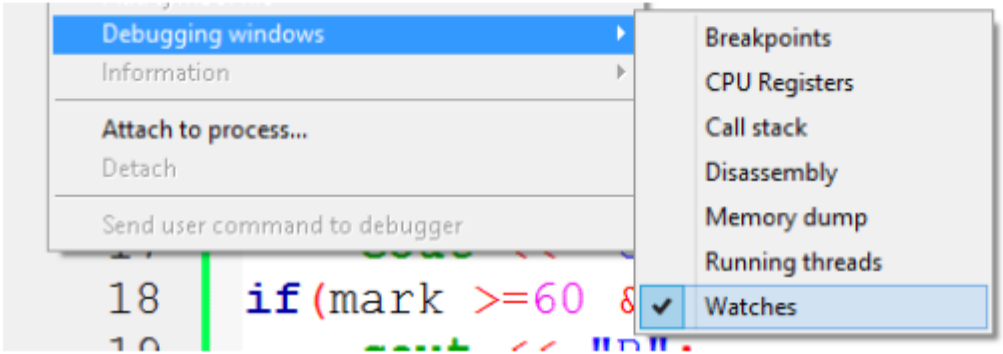
- Programming errors are called **bugs**
- Programming errors may be
  - **Compiler errors**
  - **Runtime errors**
  - **Logical errors**
- Going through the code, examining it and looking for something wrong in the implementation (bugs) and correcting them is called **debugging**

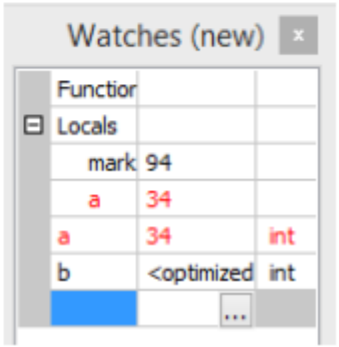
Debugging Options

- Make break points
  - Right click on statement and add break point



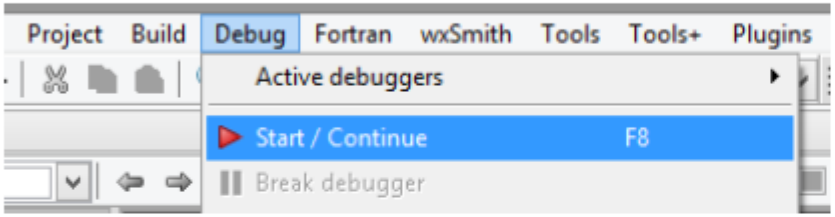
- Add watches to see the values of the variables
  - Click Debug – Debugging window - Watches



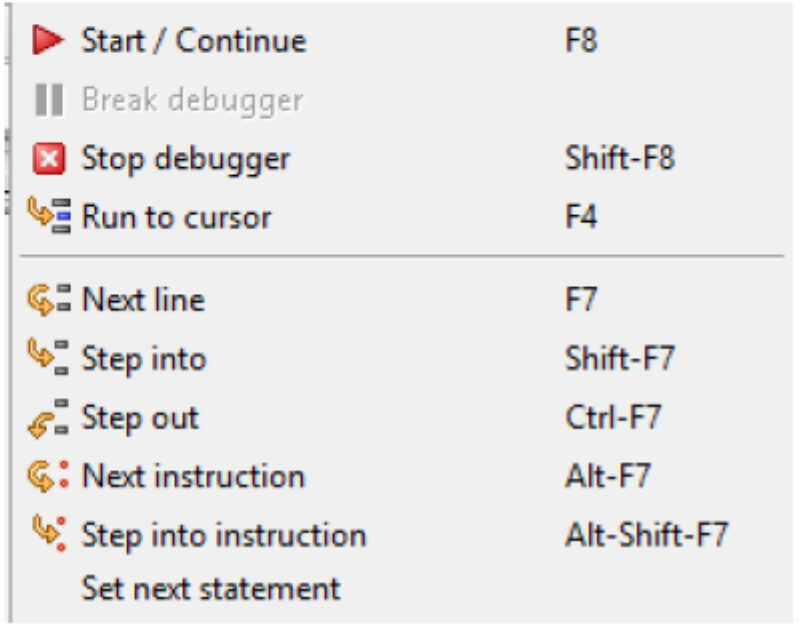


Debugging cont....

- Start debugging (Press F8)



- Debug Commands
  - F8 – Start / Continue
  - F7 – Next Line
  - Shift+F8 Stop



Exercise 5.5

- Write a C++ program that reads month as an integer and print the name of the month
- Draw a flowchart to describe your solution
- Debug your code and find execution path for the following
  - Month = 1;
  - Month = 12;
  - Month = 6;

Switch

Run with number of possible execution paths

A switch works with the byte, short, char, and int primitive data types

Switch

Use the switch statement to select one of many code blocks to be executed.

Syntax

```
switch(expression) {
  case x:
    // code block
    break;
  case y:
    // code block
    break;
  default:
    // code block
}
```

Switch

This is how it works:

The switch expression is evaluated once

The value of the expression is compared with the values of each case

If there is a match, the associated block of code is executed

The break and default keywords are optional

Switch

- switch structure: alternate to if...else

- **Example 1:**

```
switch(x)      {
        case x1:      statements1;
                      break;

        case x2:      statements2;
                      break;
        …
        default:      statements4;
                      break;
              }
```

Exercise 5.6

- Write a C++ program that reads month as an integer and print the name of a month.

  (Use Switch)

```
switch(month)
{
    case 1: cout << "JANUARY";
            break;
    case 2: cout << "FEBRUARY";
            break;

    default: cout<<"ERROR";
            break
}
```

Exercise 5.7

- Write a C++ program that reads day as an integer (1-7)and print the name
  - Use only if-else statement and implement your solution
  - Use switch statement and implement your solution

Exercise 5.8

- Write a C++ program to display a given date as the following formats.

  Your program should read date as the three inputs (day, month and year) and generates the output forms.

  - **Option 1**: 21.05.2001
  - **Option 2**: 21.05.01
  - **Option 3**: 21 st May 2001

Solution

1. Print a day
2. Print (st/nd/rd/th)
3. Print month
4. Print year

```
switch(day)
{
        case 1:
        case 21:
        case 31: cout << "st";
                 break;
        case 2:
        case 22: cout << "nd";
                 break;
        case 3:
        case 23: cout << "rd";
                 break;
        default: cout <<"th";
                 break
}
```

Exercise 5.9

- Write a C++ program to print the bill for an item bought by a customer from a shop.
  - The program should ask unit price and quantity of an item and calculate the total cost
  - If item quantity greater than 10 give one item free
  - Add 3.5 % discount for the total if total cost grater than 2500.
  - The bill should contain all the above information and amount of money tendered and the correct amount of change.

Thank You