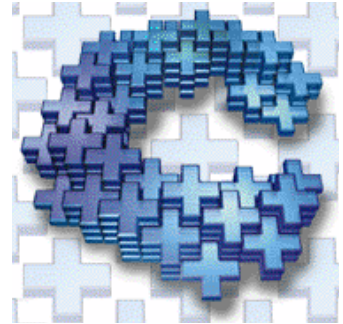


## MS Visual C/C++ IDE II


- ◆ Table of Contents
- ◆ Miscellaneous IDE Considerations
  - Editor Features
  - IDE Help Features
  - Compilation Options
- ◆ Integrated Debugger
  - Debugger Intro
  - Trace Controls
  - Variable Examination
  - Breakpoints
  - Expression Evaluation
  - Lab Exercise: Debugger

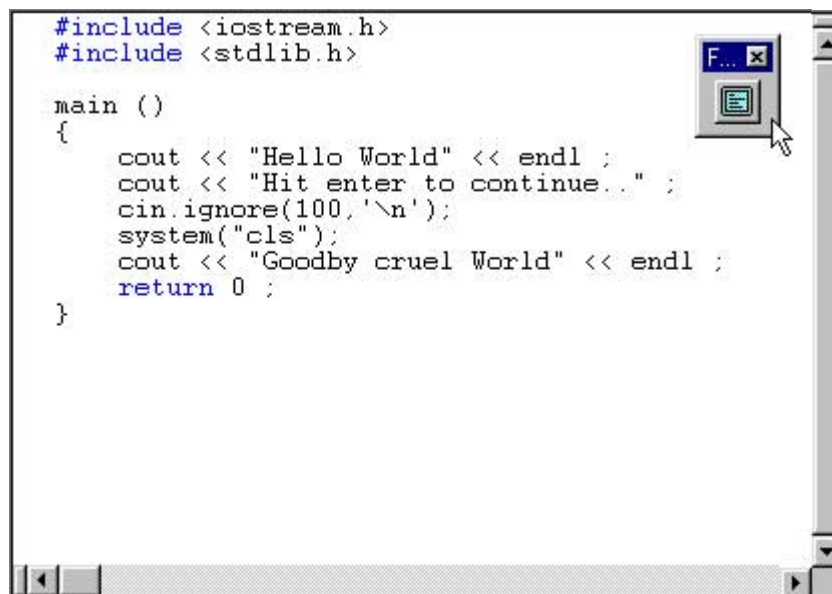
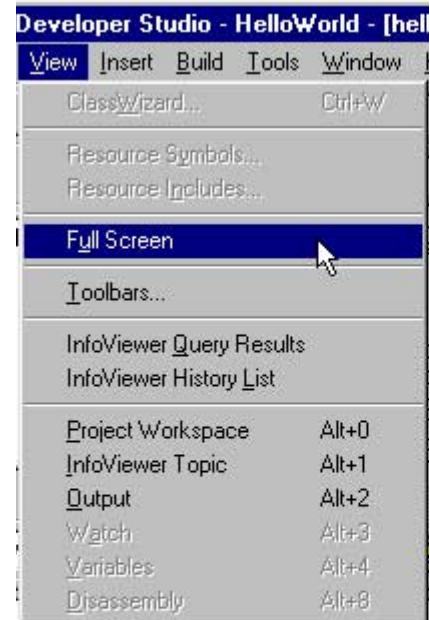


## Editor Features

### ◆ Full Screen Editing

- Select Full Screen options from View menu to enable use of the entire screen for editing.

✚ Hit  button to return to IDE interface..



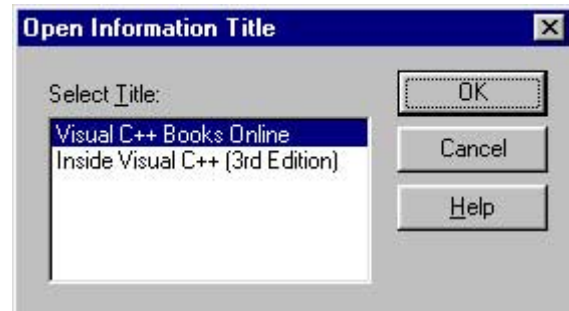
```
#include <iostream.h>
#include <stdlib.h>

main ()
{
    cout << "Hello World" << endl ;
    cout << "Hit enter to continue.." ;
    cin.ignore(100, '\n');
    system("cls");
    cout << "Goodby cruel World" << endl ;
    return 0 ;
}
```

## IDE Help Features

### ◆ Online Help

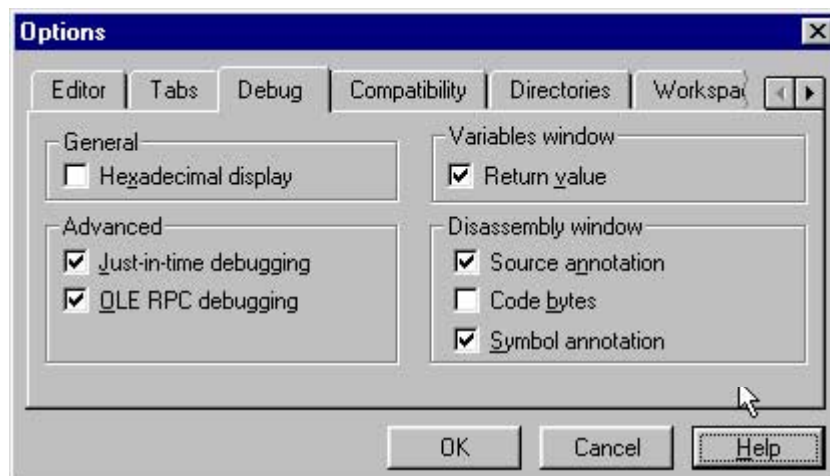
- To access the Online Help texts first choose “Open Information Title...” from the Help menu and select the title of the desired text.



- Choose the Search... option from the Help menu to access the IDE online help for the current text..



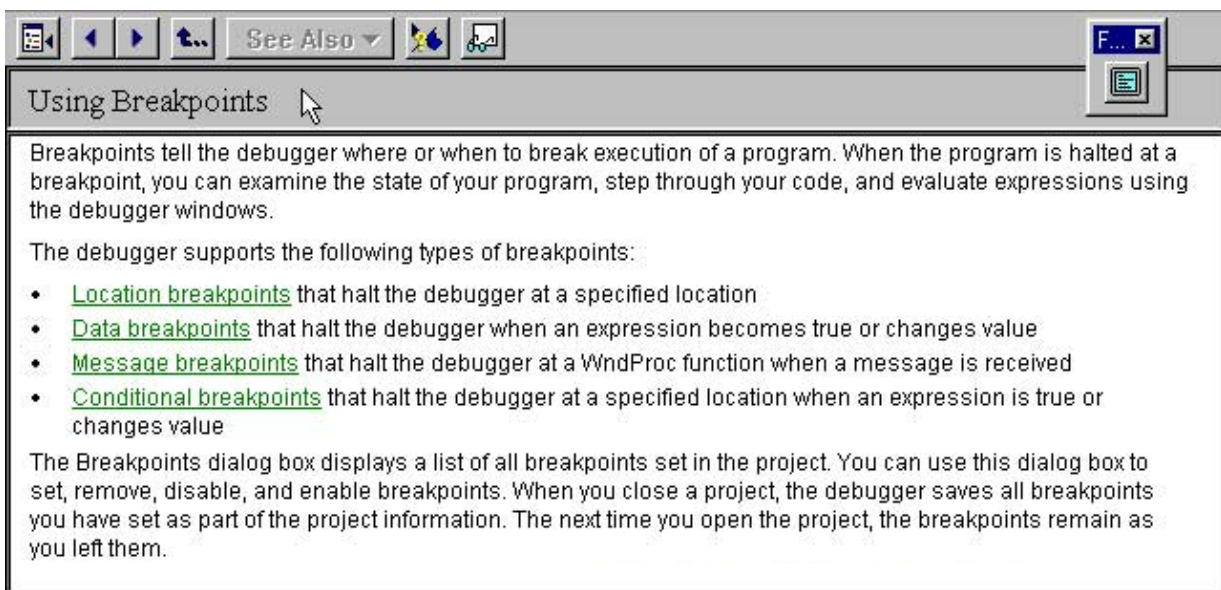
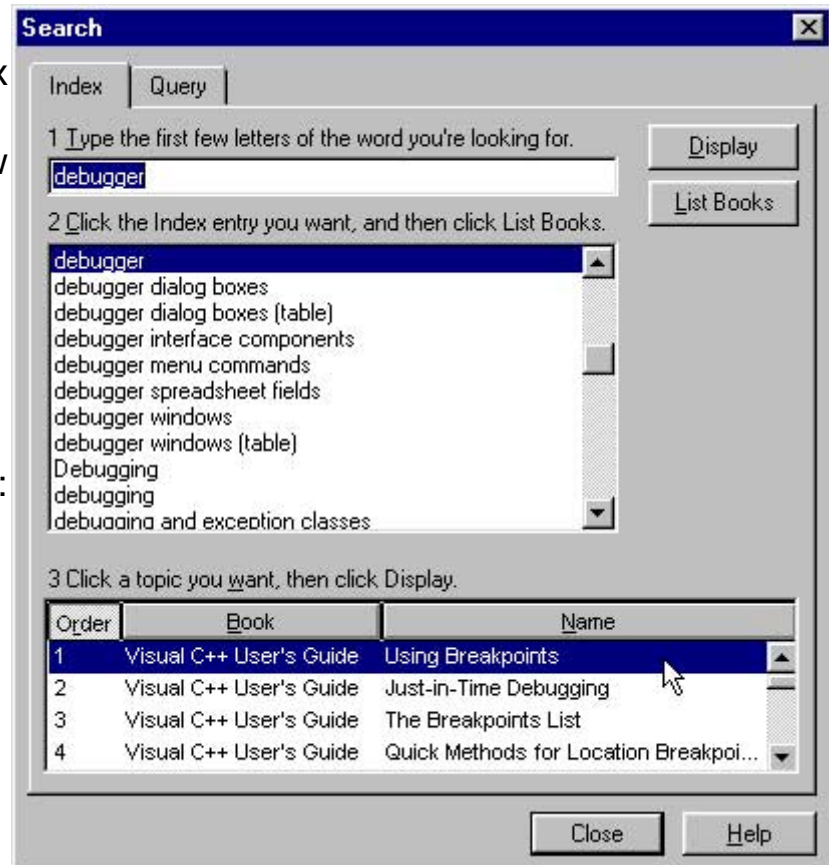
- Context-sensitive help is provided by a help button on dialog windows when performing a particular task.



# IDE Help Features

## ◆ Index Access

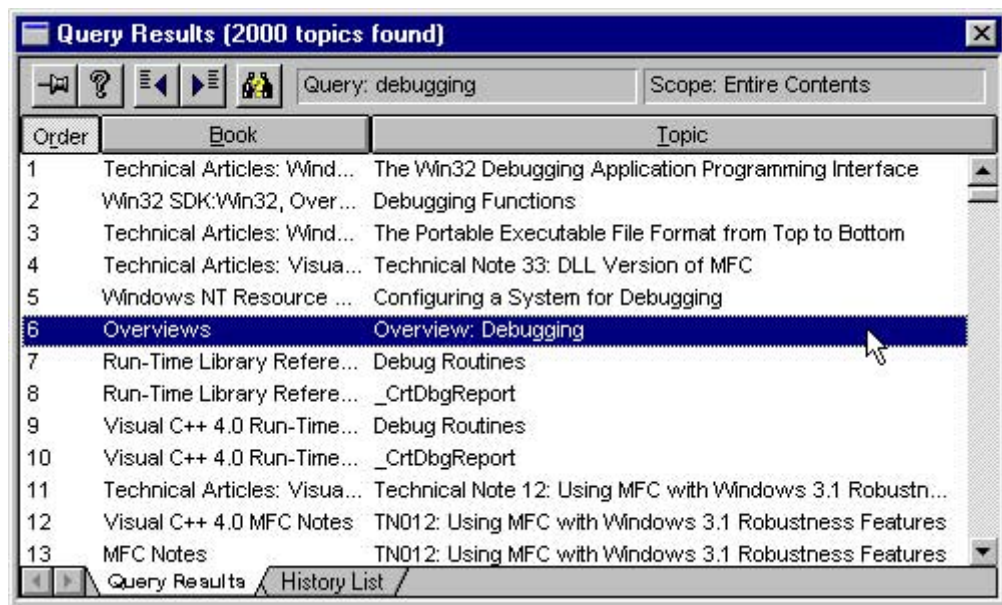
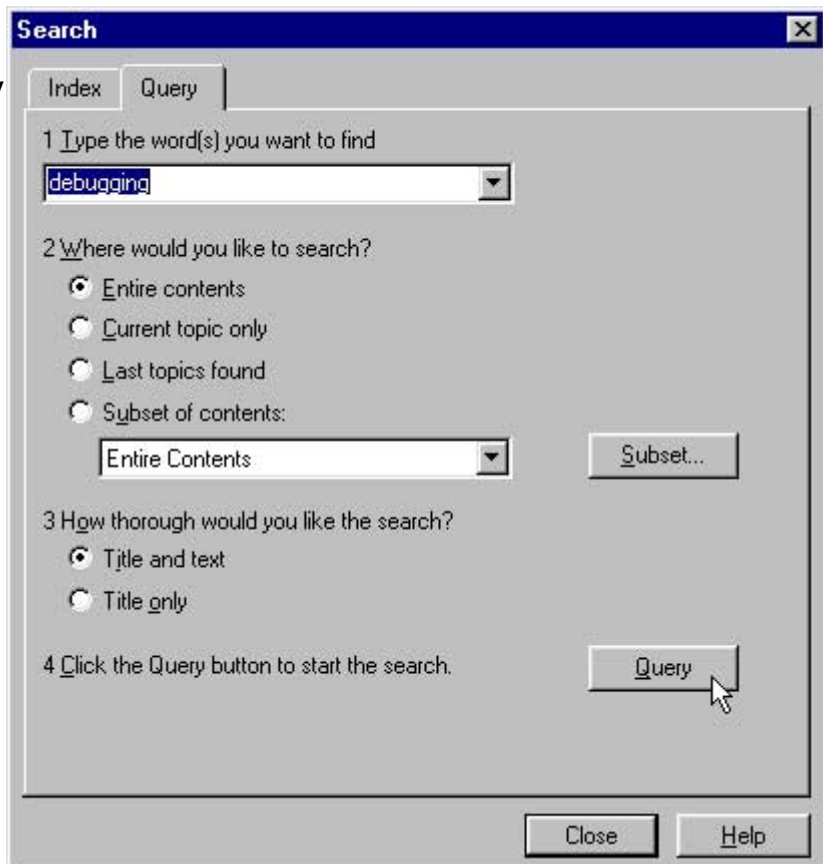
- Select the index tab & enter a keyword to view a list of index entries:
- Select index entry & choose List Books to see topic listing:
- Select topic of book to view:



# IDE Help Features

## ◆ Query Access

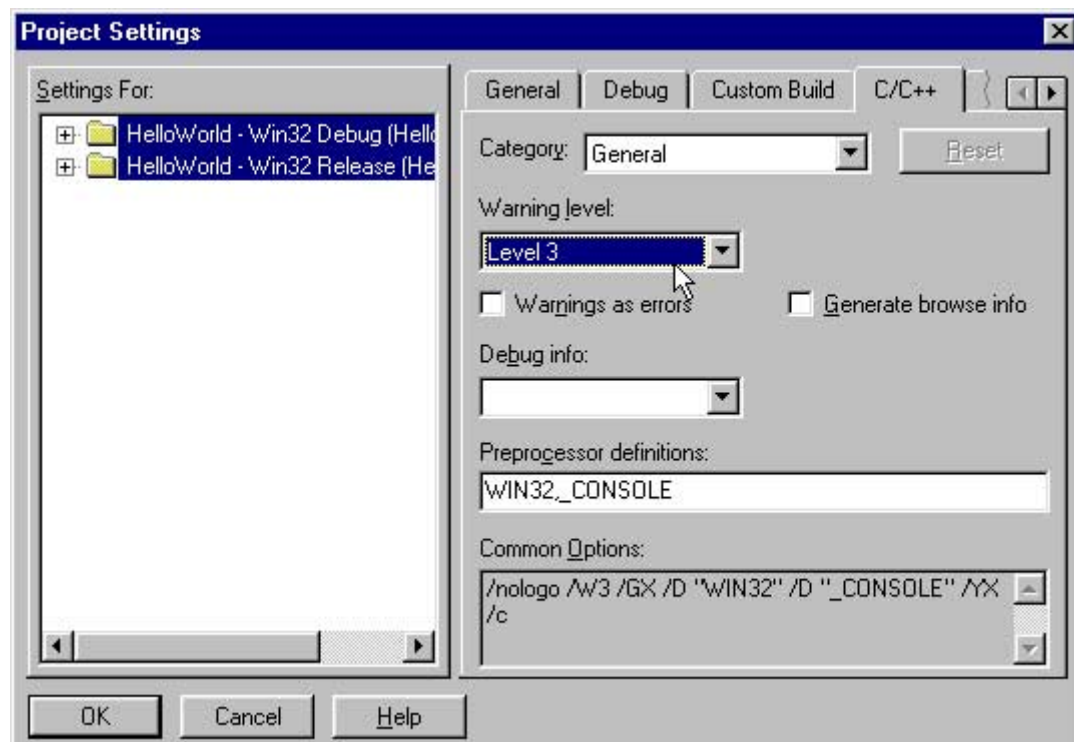
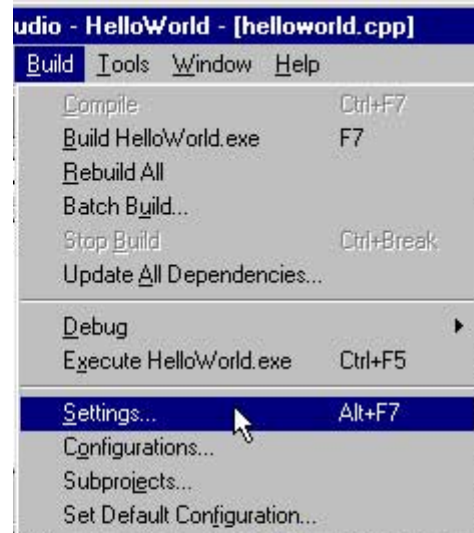
- Select the query tab & enter a keyword to search upon:
- Limit books to search:
- Select title or title & text search:
- Select book in query results to view:



# Compilation Options

## ◆ Controlling Compilation

- Choose Setting... option from the Build menu
- Select the C/C++ tab  
Check that warning level 3 is set in the General Category

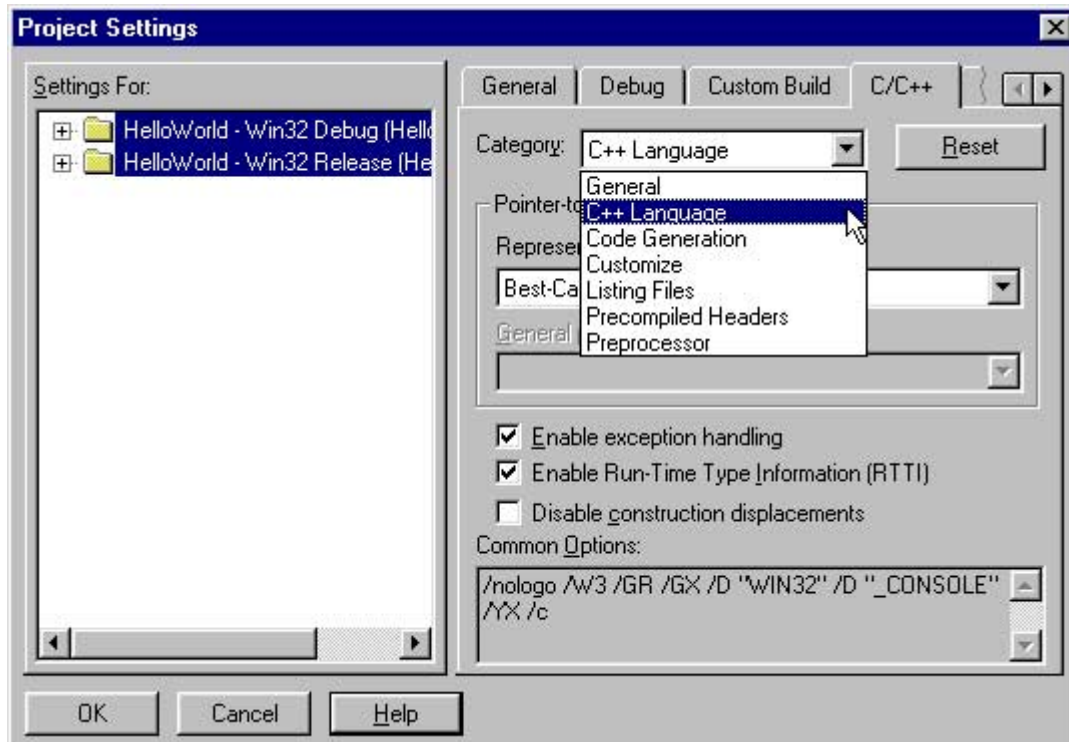




## Compilation Options (cont)

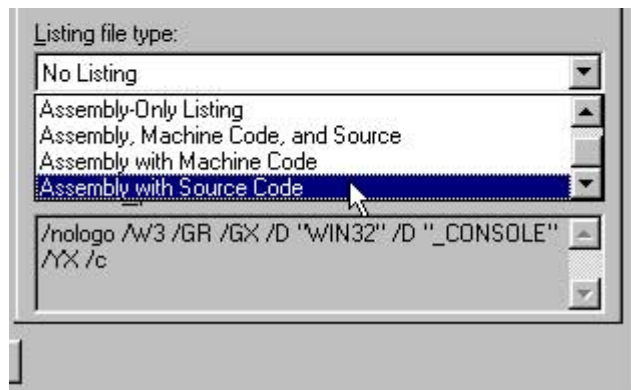
### ◆ C++ Language Category

- Check that exception handling and run-time type information is enabled:



### ◆ Listing Files Category

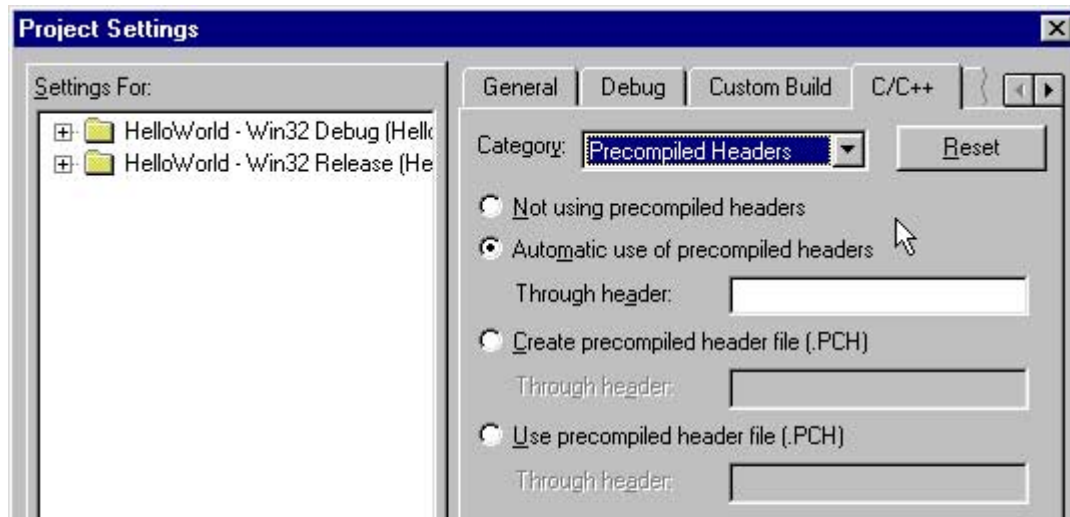
- Allows assembly code listing generation



## Compilation Options (cont)

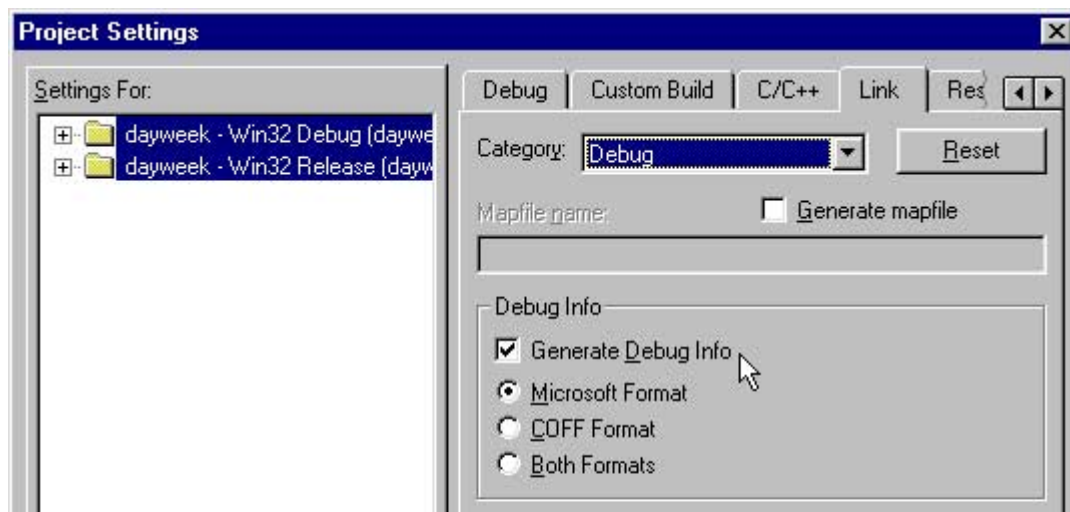
### ◆ Precompiled Headers Category

- Check automatic use of precompiled headers:



### ◆ Link Options

- Check Debug Info Generation





# Debugger Intro

## ◆ Debugger Definition

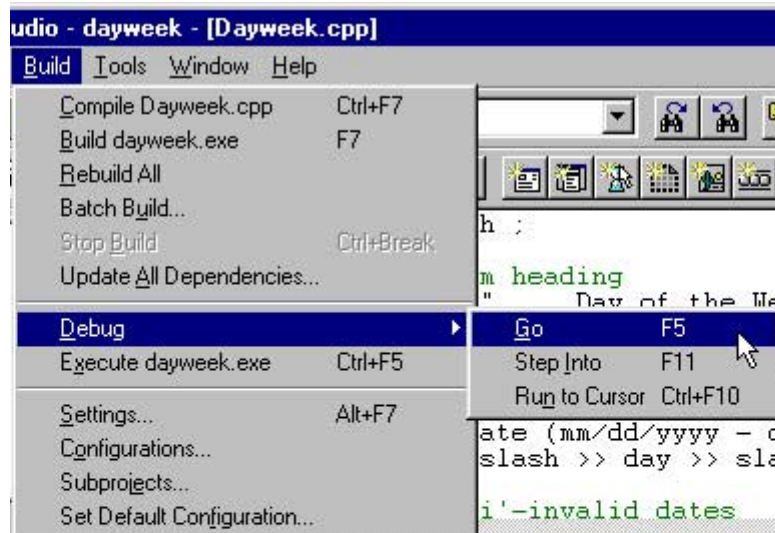
- A program used to control the execution of another program for diagnostic purposes.

## ◆ Debugger Features/Operations

- Single-Stepping
  - ✦ Executing a program one instruction at a time.
- Variable Examination
  - ✦ Inspecting the changes in a variable's value during execution.
- Breakpoints
  - ✦ Setting temporary halting places within a program.
- Expression Evaluation
  - ✦ Determining the value of an arbitrary expression during debugging execution.

## ◆ Integrated MSVisual C/C++ GUI Debugger

- Allows interactive debugging from within the IDE thru the editor window.



# Trace Controls

## ◆ Debugging Code Generation

- Debugging may require recompilation to generate trace data.
- Build menu is replaced by the Debug menu.



## ◆ Start Trace

- To start the debugger (pausing at / and **highlighting** the first executable instruction):
  - ✦ Choose Step Into (F11) from the Debug submenu of the Build menu
  - ✦ Position cursor and Choose Run to Cursor (Ctrl+F10) from the Debug submenu of the Build menu



## ◆ Continue Trace

- To continue single stepping instruction by instruction:
  - ✦ Repeatedly hit F10 or the Step Over button.
  - ✦ The program task execution window opens.



## ◆ Halt Trace

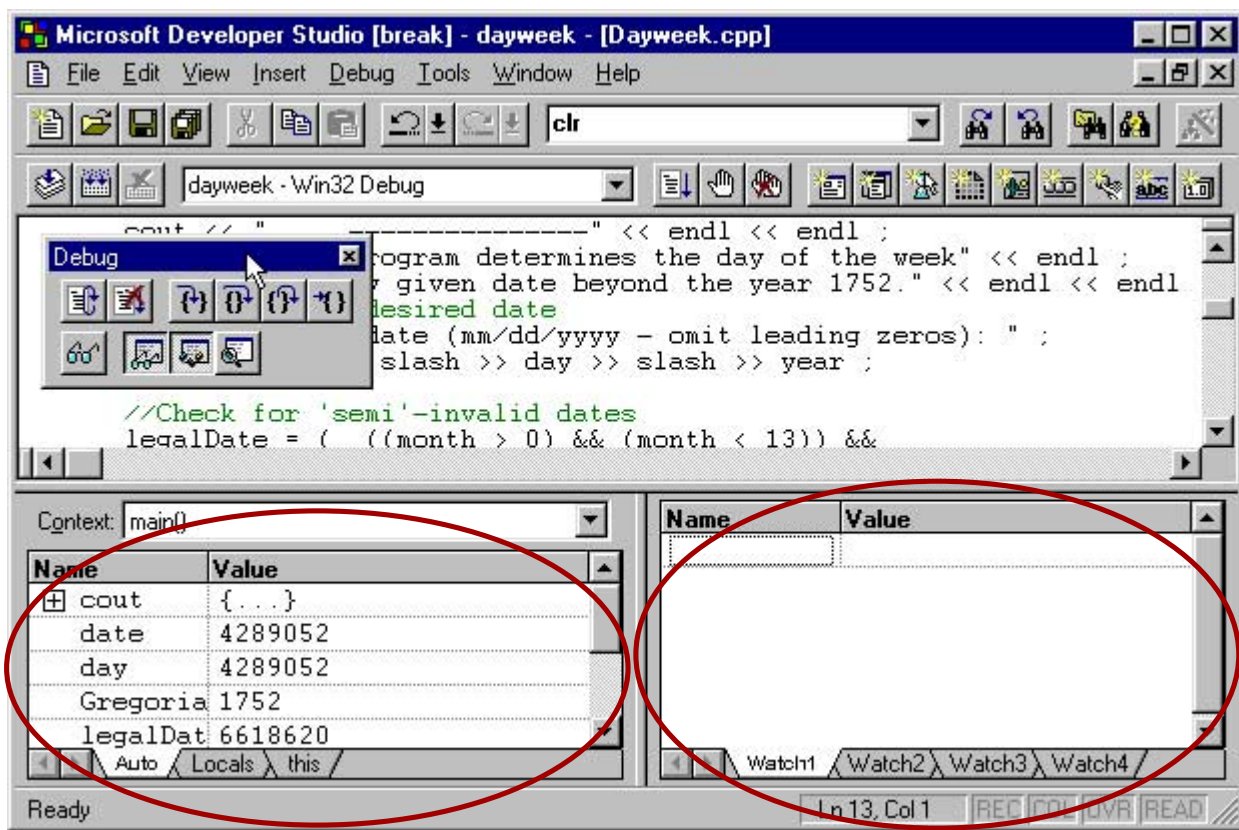
- To stop debugger execution of current program:
  - ✦ Choose Stop Debugging from the Debug menu or hit Shift+F5



# Variable Examination

## ◆ Examination Methods

- Pause mouse over variable name, current value is shown in popup box.
- Variables window (view menu) displays variables and their values from the current expression (auto tab), or local to the current function (locals tab).
- Watch window (view menu), allows variables & expressions to be constantly evaluated single-stepping thru the program.
- Type info can be obtained by right-clicking a variable in either window and selecting properties from the object menu.



Variable Window

Watch Window

# Breakpoints

## ◆ Set unconditional breakpoints

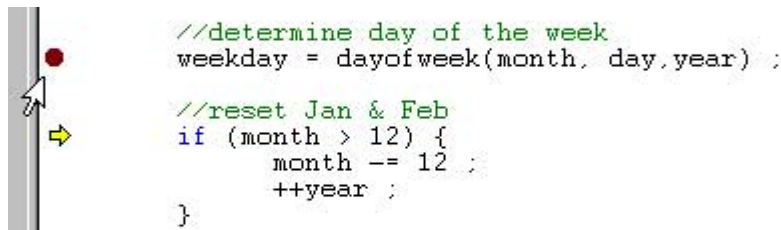
- Position cursor to desired breakpoint line.

✚ Choose the breakpoint toggle button:



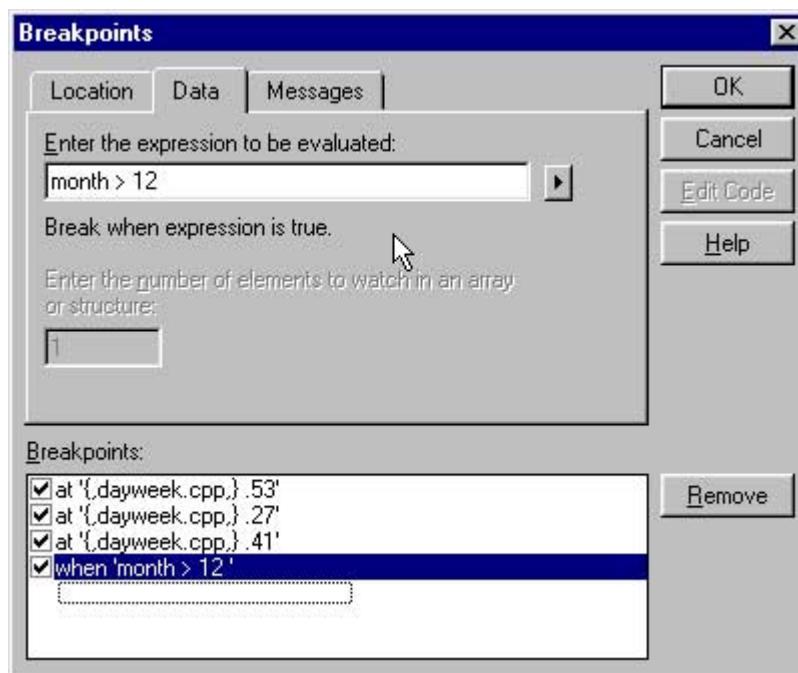
## ◆ Execute to breakpoint

- Select Go from the Debug menu or hit F5 to run the program and pause at the first (next) breakpoint.



## ◆ Conditional breakpoints

- Breakpoints which only stop/pause the program execution if a specified condition is true.
- Choose Breakpoints... (Alt+F9) from the Edit menu

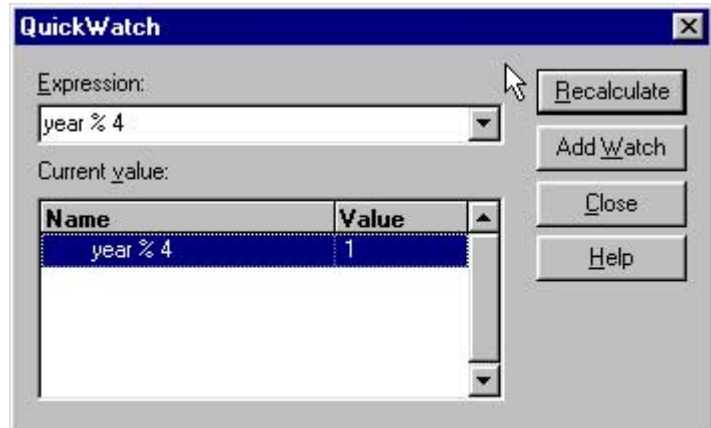


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# Expression Evaluation

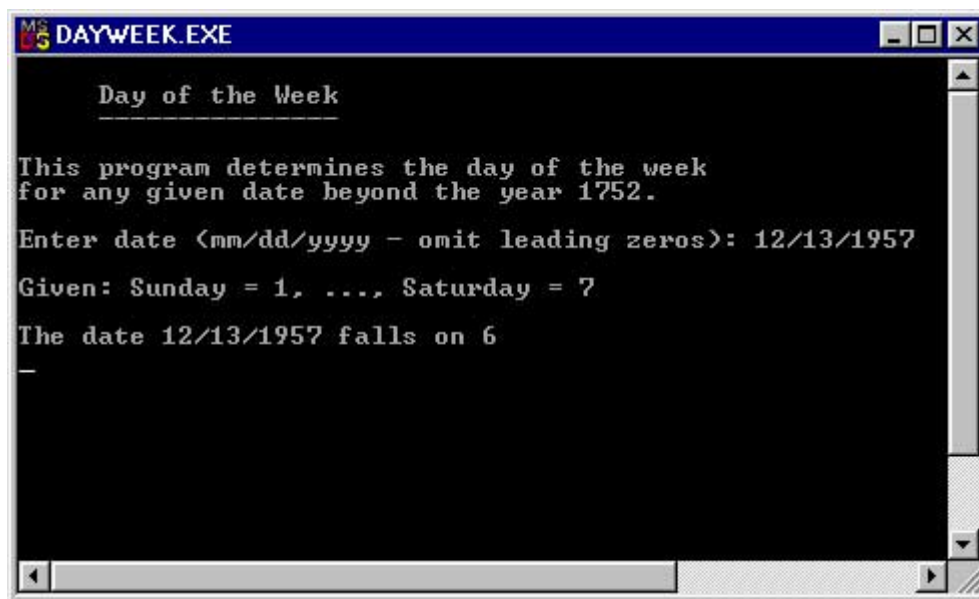
## ◆ Activate Quickwatch

- Choose QuickWatch... from the debug menu or hit Shift+F9 during a debugger trace.
- Expression may contain current (un)initialized program variables.



## ◆ Execution Window

- Displays program output. Must be activated to enter perform interactive I/O.

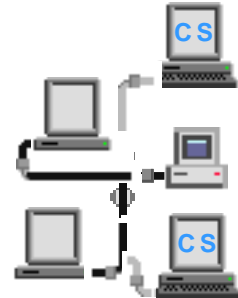


## Lab Exercise

### ◆ Debugger

- Task

Test each of the features of the MS C/C++ IDE Debugger on the DAYWEEK program.



### ◆ Steps

- Step 1

Download the **dayweek.cpp** program from [ftp.cslab.vt.edu](ftp://ftp.cslab.vt.edu/CS/1704/) in /CS/1704/.



- Step 2

Start MS C/C++ IDE and create a DAYWEEK project.



- Step 3

Start the debugger and single step thru the program's first few lines then halt the program.



- Step 4

Add the date, weekday & legalDate variables to the watch window.

- Step 5

Execute the program until the first date variable computation.

- Step 6

Set a breakpoint on the first date variable computation.



- Step 7

Execute the program until the breakpoint.



- Step 8

Single step a couple of lines and then inspect the date variable, halt the program and toggle off the breakpoint.

