Multimedia Programming 2004

Assignments No. 1

December 8th 2004

Due: December 15th 2004

Goals of the assignments:

- Learn how to compile, build an execute a simple C++ program using Visual C++
- Learn how to create a Visual C++ program from scratch or using the application wizard
- Learn how to program using the basic constructs of C/C++

Assignment 1: Compiling an Building a C++ program

1. Download the code from the MMP2004 web-site and unzip it to a local directory 'assignment01'.
2. Browse to the *HelloThere* directory and double-click the Visual C++ workspace file *HelloThere.dsw*
3. For compilation only select <Build><Compile HelloThere.cpp>. Note that only an object file is constructed (browse to the *Debug* subdirectory).
4. For building the executable select <Build><Build HelloThere.exe>. Now the executable file is built.
5. Execute by selecting <Build><Execute HelloThere.exe>
6. Close your workspace by selecting <File><Close Workspace>

Another way to execute the *HelloThere* program:

7. Start a console by selecting <Start><All Programs><Accessories><Command Prompt>
8. Browse to the Debug subdirectory of the *HelloThere* project
9. Type *HelloThere.exe* <return>

Assignment 2: Create a New Visual C++ Project

1. Start Microsoft Visual C++, if not already started, and Select <File><New>
2. In the dialog select <Projects><Win32 Console Application>
3. Type in the edit box <Project Name>: "HelloWorld" (this is the name of your project)
4. Browse to your local code directory by selecting the […] button besides the edit box <Location>
5. Select <ok>
6. In the new dialog select "A Hello World Application"
7. Select <Finish> and <ok>. A new workspace is created.
8. Now compile, build, and execute this new code as in assignment 1.

Browse your newly created project by selecting the <FileView> sheet and clicking on the different folder, and double clicking the *HelloWorld.cpp* file.

Assignment 3: Printing in C/C++

1. Create an empty Win32 Console Application called *Printing*.
2. Copy the *PrintThis.cpp* file from the code01 directory to the newly created project directory *Printing*.
3. Add the *PrintThis.cpp* file by selecting <Project><Add To Project><Files> and browsing to the project directory *Printing*. Select the *PrintThis.cpp* file and click the <ok> button.
4. Go to the <FileView> and double click the new Source file *PrintThis.cpp* in your project.
5. Exam the code. Go to <Help><Index> and find some extra information on the function printf and about escape characters like '\n' (new line) etc.

Assignment 4: Input in C/C++

1. Create an empty Win32 Console Application Input.
2. Select <Project><Add To Project><New> and select from the dialog <Files><C++ Source File>.
3. Name the file input and click on <ok>
4. Search in <Help><Index> for *scanf*.
5. Select the example code *SCAN.F* (by left mouse and drag) and copy it (by right mouse click and copy).
6. Double click in Microsoft Visual C++ <FileView> the file *input.ccp*. This opens the editor window for *input.cpp*. Right mouse click in it and paste.
7. Exam the code and be sure to understand what is happening. Note that the function *wprintf* is basically the same as *printf*, only that it is for *Unicode* characters (so called wide characters = 2 bytes per character).
8. Compile, build and execute the program.
9. Make sure the outcome is as mentioned in the help files of Visual C++.

Assignment 5: Some Errors

1. Open the ErrorCode workspace
2. Try to compile the code
3. Correct all the syntactical and semantical errors in the program

Assignment 6: Summation

An *even number* is an integer that is equal to a multiple of 2. For example, 2, 4, 6, and 8 are even numbers, while 3, 5, and 7 are not.
Write a little program that reads an integer *n* and calculates the sum of all the *even numbers* from 1 to *n* in three different ways using a while-, do-, and for-loop, respectively. Print the three answers.

Example:
Give an integer: 10
Answer while-loop: 30
Answer do-loop: 30
Answer for-loop: 30

Assignment 7: Command Line Calculator

Write a program that can do some simple calculations on command line input. It should behave as follows:

1. The program starts with printing a random name for your calculator.
2. Then it should ask for a number/argument of the expression
3. After this, it should ask for the '=' symbol or one of the following five operators: + - / * ^
4. If in step 3 the '=' symbol was not given, repeat step 2 and onwards.
5. In step 4 the '=' symbol was given. The program should print the outcome of the calculation, and stop the execution.

Notes:

- '^' is equal to *the power of* operation. For example, 3^6 = '3 to the power 6' = 3*3*3*3*3*3 = 729.
- You are only allowed to use any of the four operators '+, -, /, *' to implement the algorithm to calculate x^y for arbitrary inputs x and y.
- You do not have to take care of the priority of the operations, just execute the operations immediately, in the order that they are given.

Example:

```
**** The CL Calculator v1.0 ****
number 1:       2
operation:      +
number 2:       3
operation:      *
number 3:       4
operation:      =
result:         20
```

Posting Your Work

Assignments 6 and 7 have to be posted on the right thread of the Bulletin Board of this class. You will find a link to the Bulletin Board on the main MMP2004 web-page: www.liacs.nl/~erwin/MMP2004.
There you will also find the request to e-mail your name, and college card number to erwin@liacs.nl with subject 'MMP2004'.

Preparing Your Work

You should put all your work (assignment 6 and 7) in a zip-file: *assignment01_yourname.zip* as follows:

- Make a local directory *temp* with a subdirectory *assignment01_yourname.*
- Copy all the files of the Visual C++ projects for assignment 6 and 7 in the directory that you just created: *temp/assignment01_yourname*.
- Check that the Visual C++ projects compile and execute correctly from this directory.
- Clean each of the projects within Visual C++ by selecting <Build><Clean>.
- Browse to directory *temp* and right click within the File Explorer. Select <New><WinZip File> from the menu that appears.
- Name the WinZip File *assignment01_yourname.zip* and double click it.
- From the WinZip menu select <Actions><Add> and browse to the *temp* directory.
- Check the <Folders><Include subfolders> and click the <Add with wildcards> button.
- Close the WinZip file that you just created and post it on the Bulletin Board.