Math 157

.h, .cpp, and .lib files

Jan. 29, 2007

File structure : .h and .cpp files

What do we put in .h files?

- Class declarations
- Function declarations/prototypes

Why is there this convention?

What do we put in .cpp files?

- main() program
- Class implementations
- Function implementations
- Static data member initializations

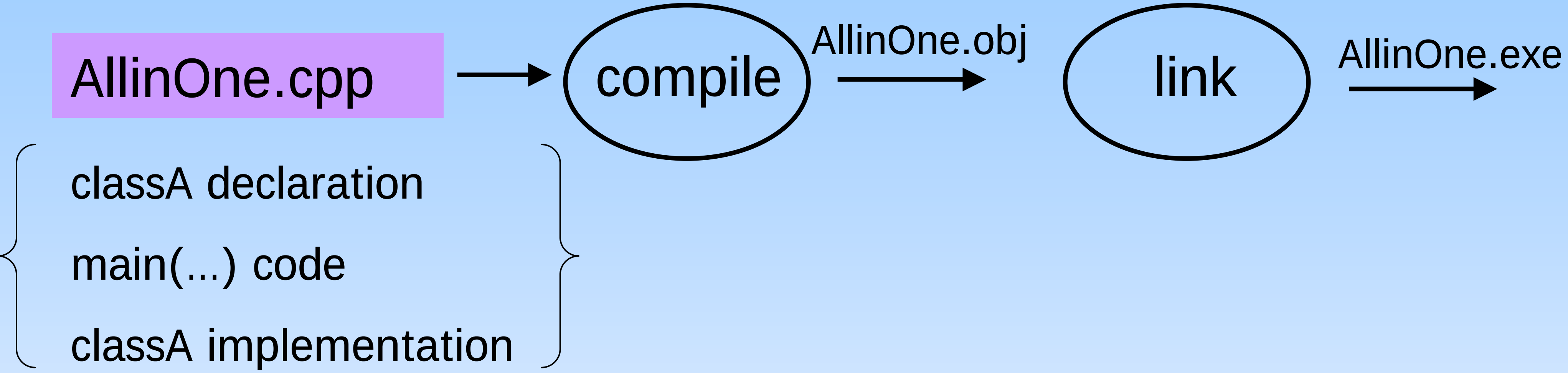
Why .h and .cpp file conventions?

- Enables modular code construction/management
- Enables the construction of collections of pre-compiled routines (libraries)

Example :

Suppose one has a main() program that uses a single class “classA”

“All in one” approach ...



AllinOne.cpp

compile

AllinOne.obj

link

AllinOne.exe

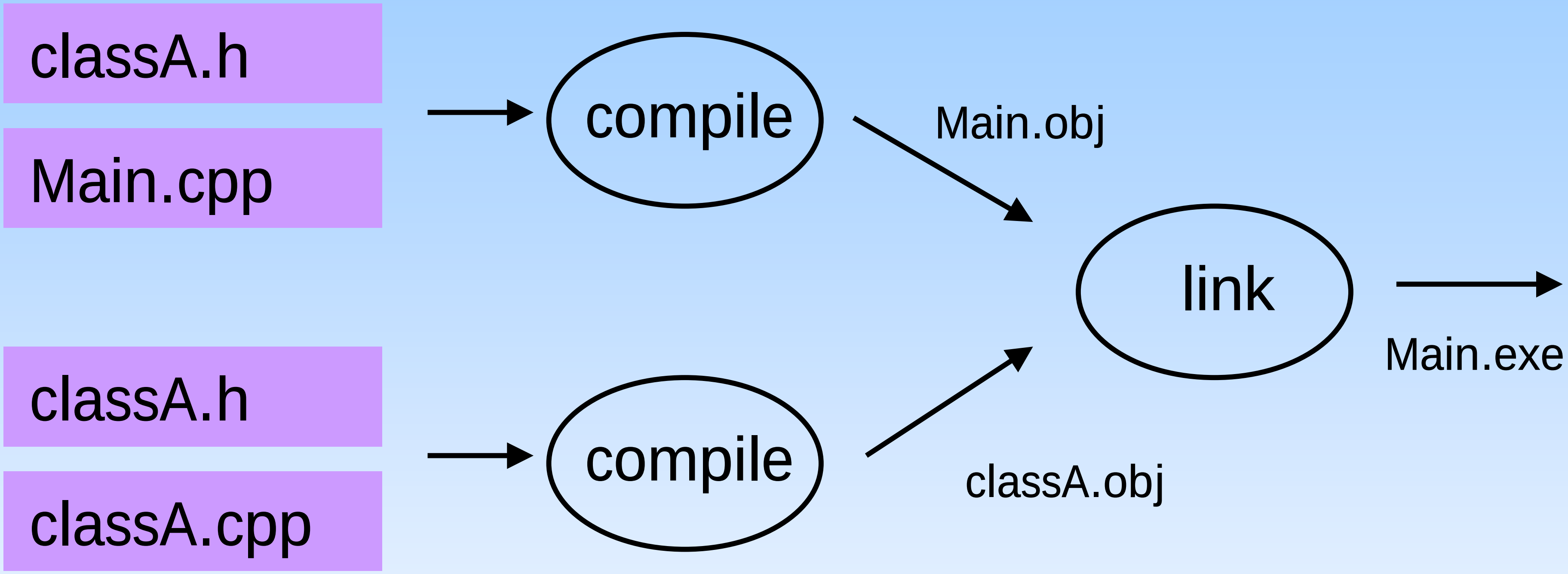
classA declaration

main(...) code

classA implementation

- Any change in main(...) induces a re-compile of classA.
- classA source (implementation) is required to use it.

Using .h/.cpp convention”…



classA.h

Main.cpp

compile

Main.obj

link

Main.exe

classA.h

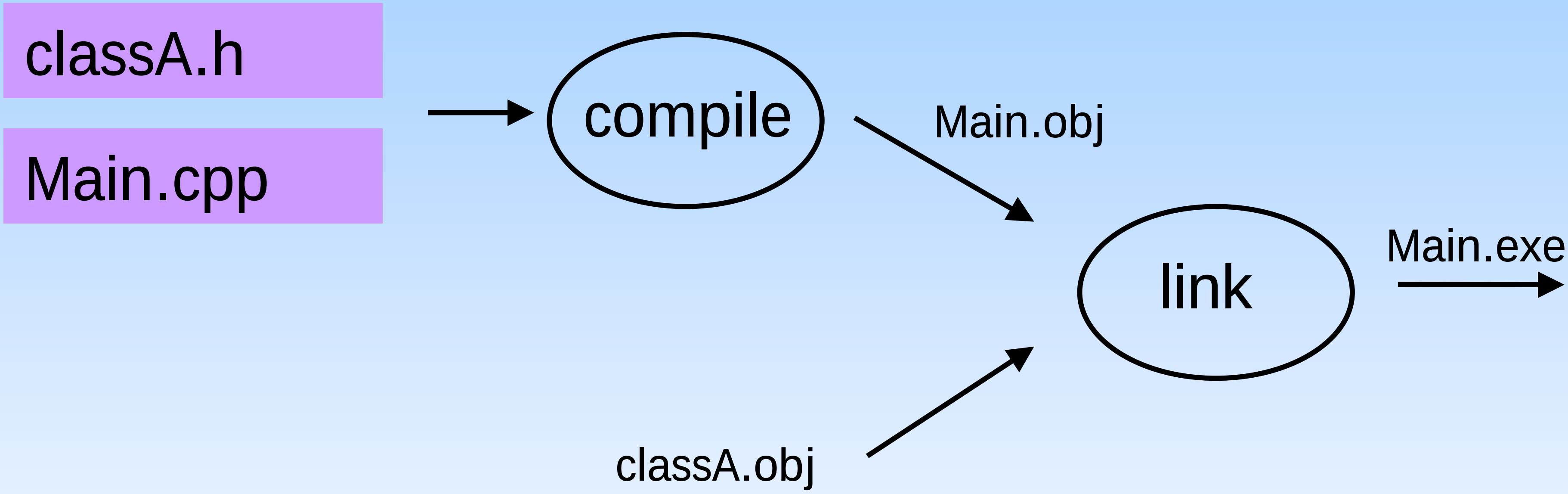
classA.cpp

compile

classA.obj

Why .h and .cpp file conventions?

You only need classA.h and classA.obj to use classA …



classA.h

Main.cpp

compile

Main.obj

link

Main.exe

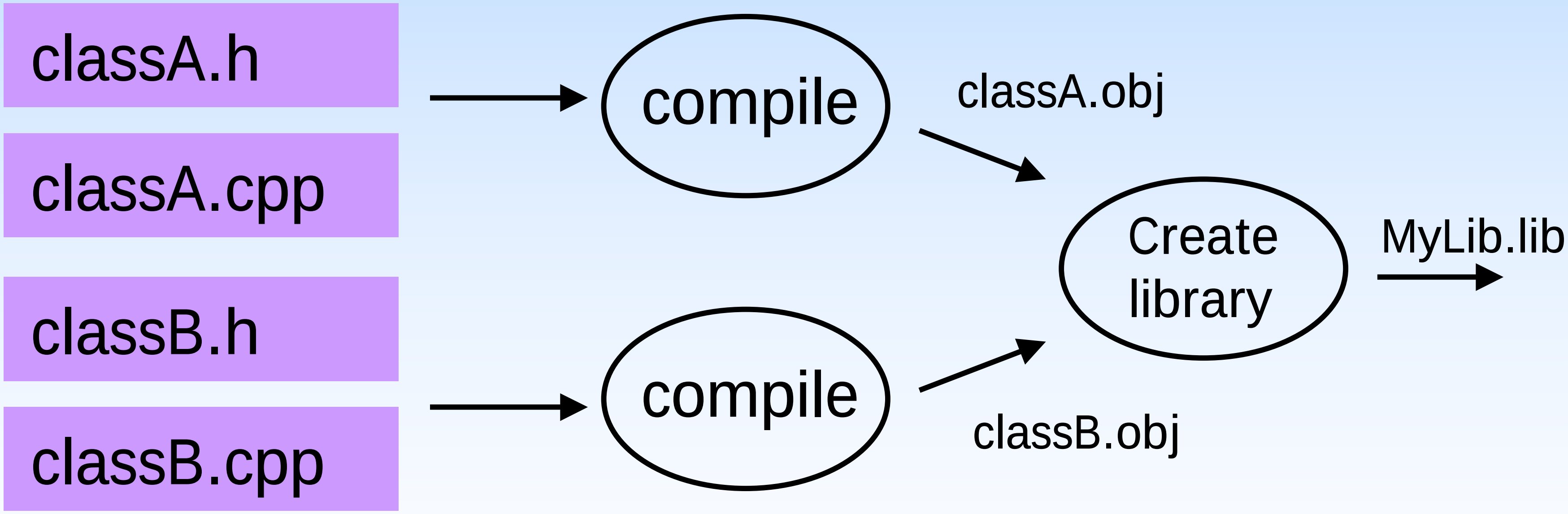
classA.obj

- classA is not re-compiled when main(..) changes
- classA source (implementation) is not required to use it.

Why .h and .cpp file conventions?

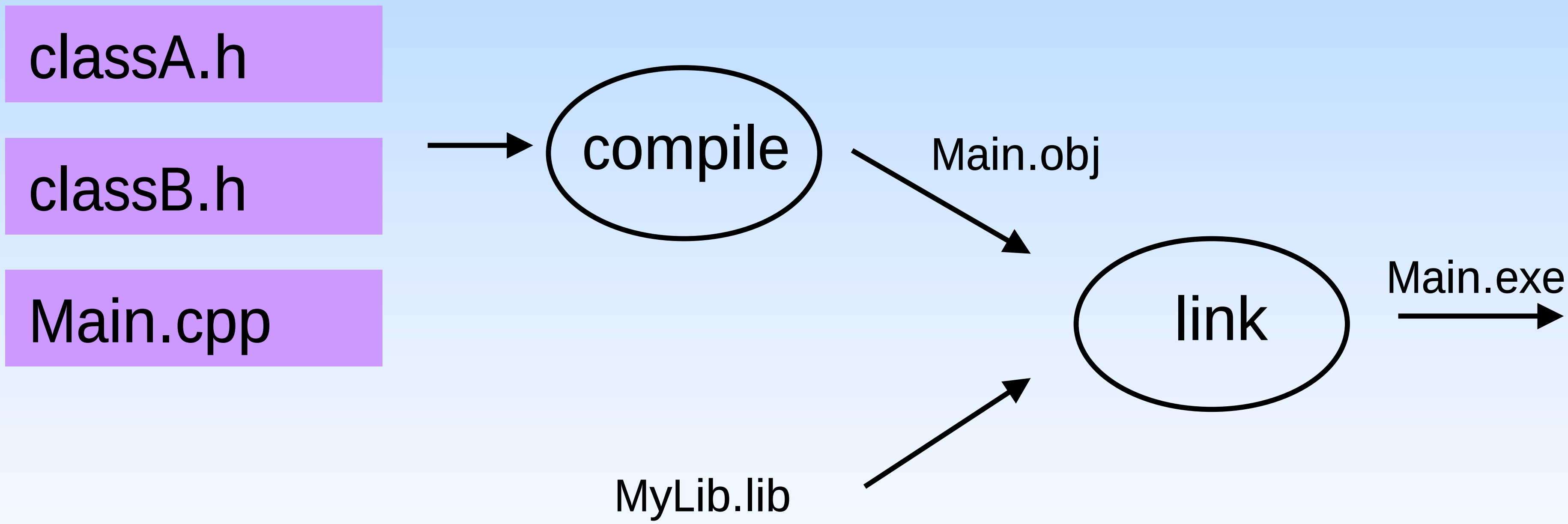
- If one uses the .h/.cpp convention, then one need only distribute .h files and .obj files.

- Collections of .obj files can be constructed ... one creates libraries (.lib) files.



To use .lib files...

Include header (.h) files; link to .lib file.



classA.h

classB.h

Main.cpp

compile

Main.obj

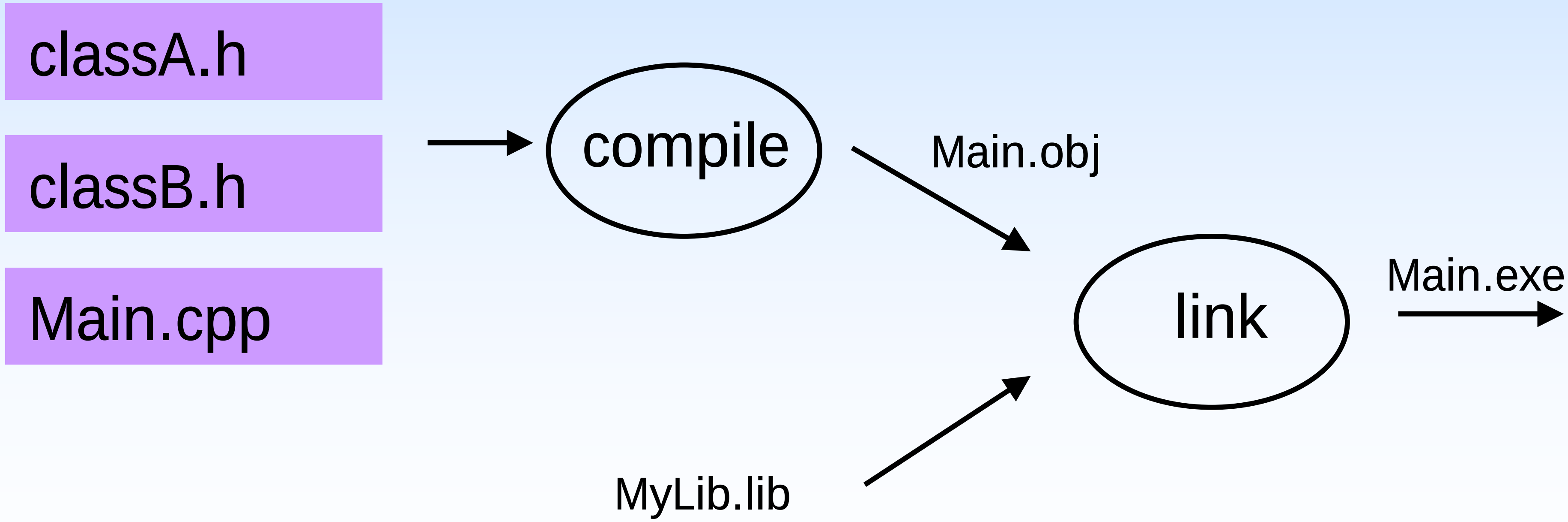
link

Main.exe

MyLib.lib

To use .lib files in a project...

- You need to specify the location of the headers for the library routines (add an “include path”).
- You need to include the library file in the project, or specify the name and location of the library.
- The project compiler settings must match those used to create the library.



classA.h

classB.h

Main.cpp

compile

Main.obj

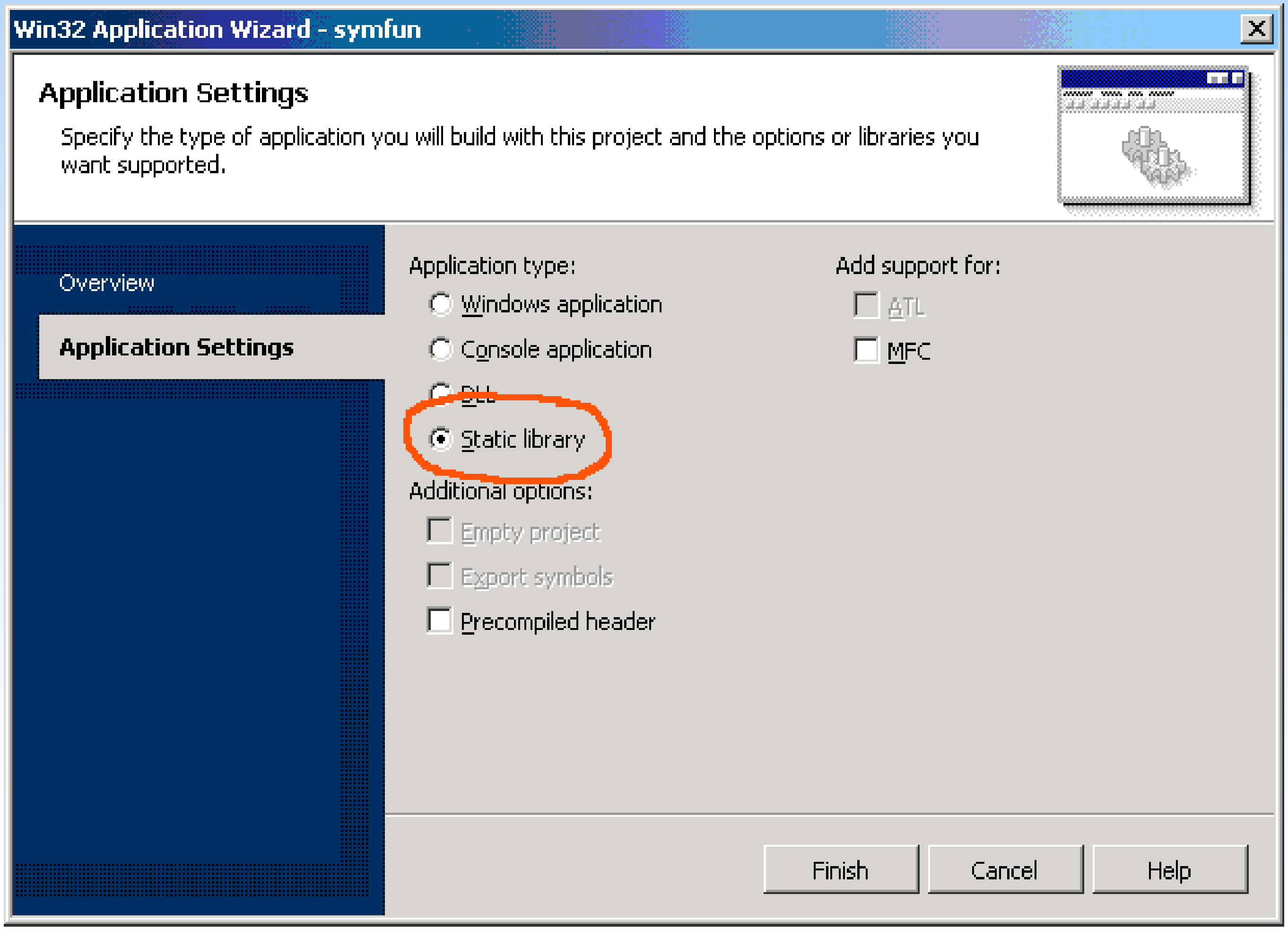
link

Main.exe

MyLib.lib

How to build a .lib files?

Create a new project, choose Win32, specify Static library as application type. A link to specific instructions is on the class announcement page…



Win32 Application Wizard - symfun

Application Settings

Specify the type of application you will build with this project and the options or libraries you want supported.

Overview

Application Settings

Application type:

- ○ Windows application
- ○ Console application
- ○ DLL
- ● Static library

Add support for:

- □ ATL
- □ MFC

Additional options:

- □ Empty project
- □ Export symbols
- □ Precompiled header

We'll talk about Dynamic-Link (DLL) libraries later…