Web Site (www.coin-or.org)

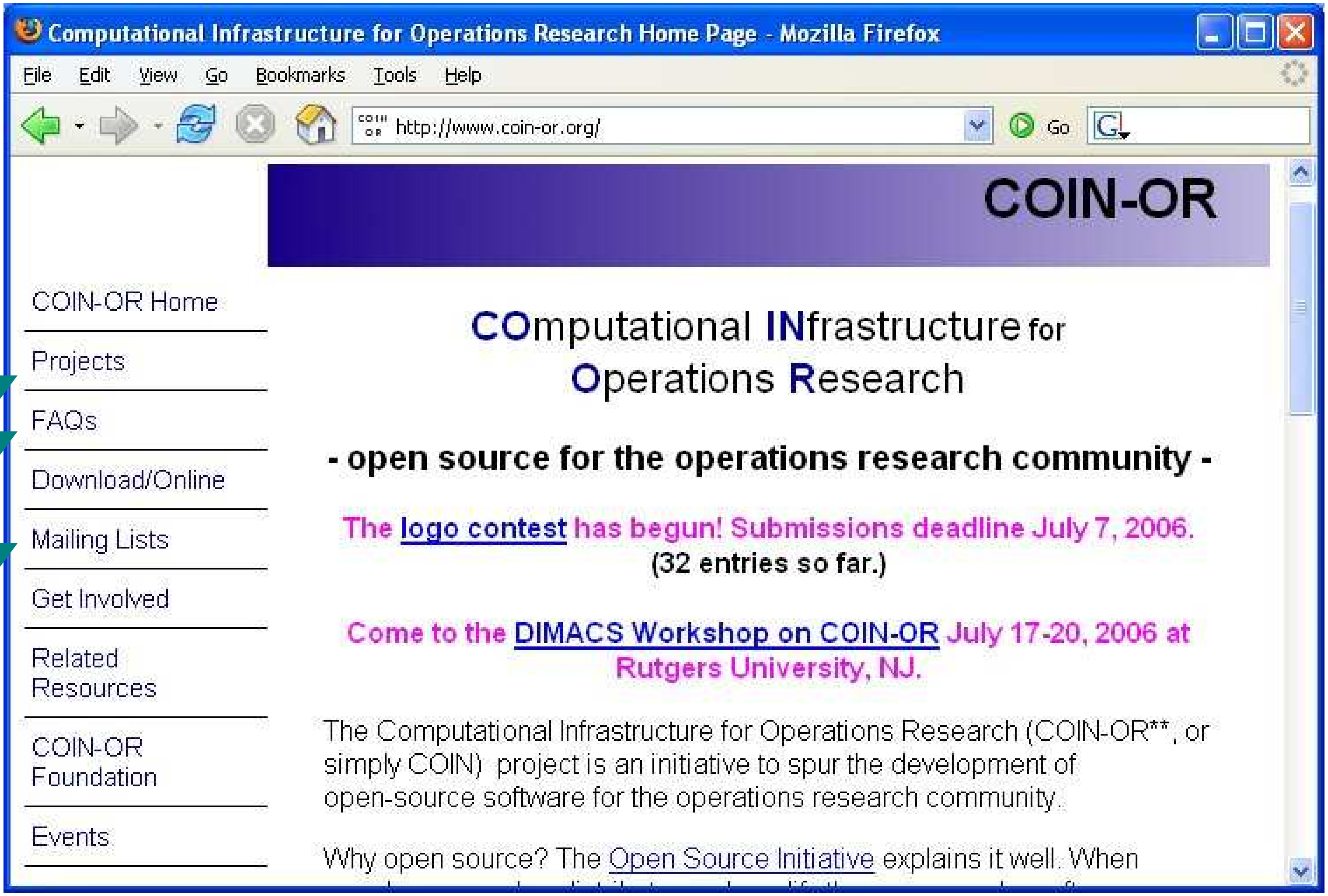
Getting around the Web Site to Build and Use COIN-OR

JP Fasano
IBM Watson

Objective

- Familiarity with web site
  - Projects
  - Faqs, documentation, help
  - Source code
  - Building, running
- Build & run a COIN-OR project

www.coin-or.org Home Page



COmputational INfrastructure for Operations Research

- open source for the operations research community -

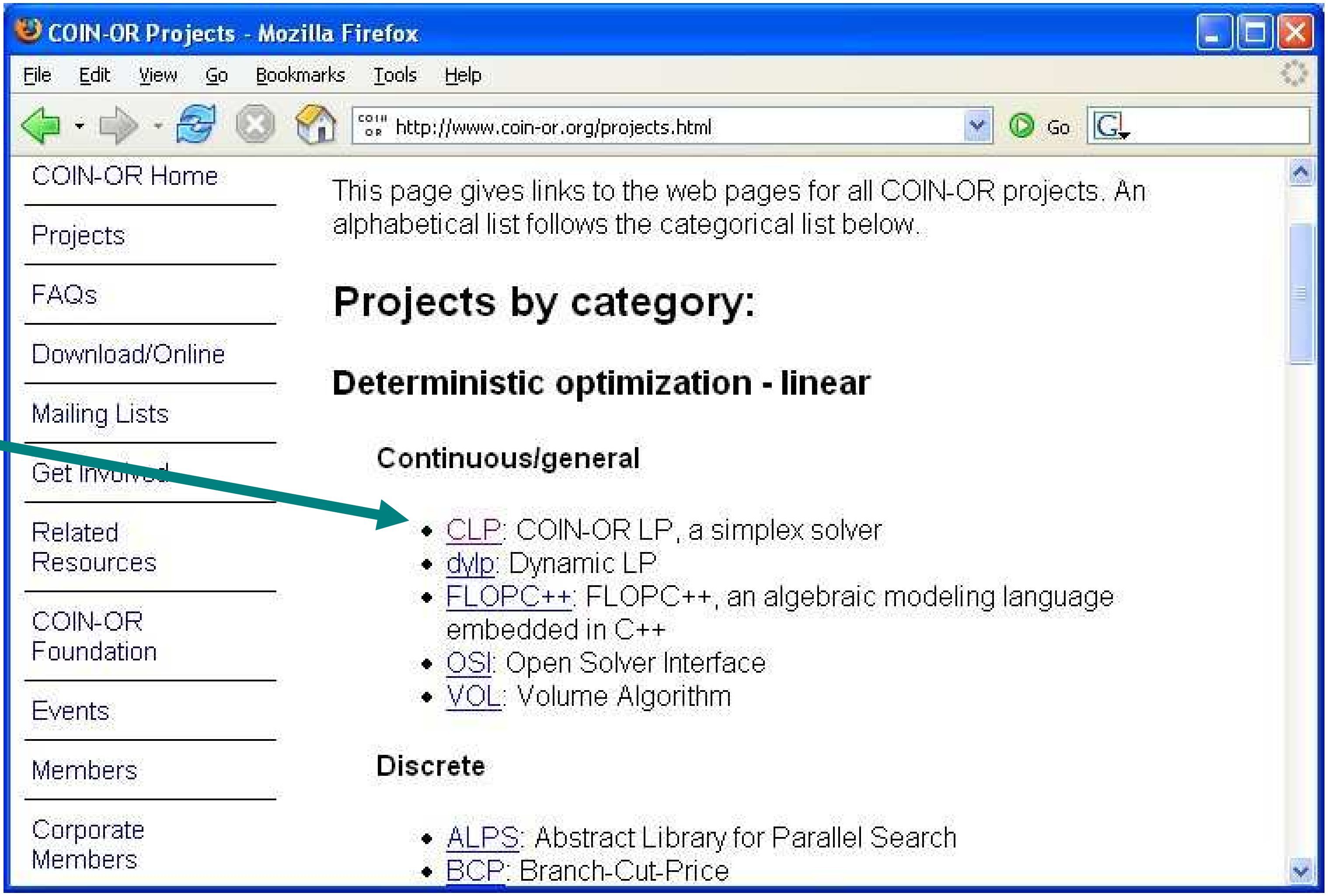
The logo contest has begun! Submissions deadline July 7, 2006. (32 entries so far.)

Come to the DIMACS Workshop on COIN-OR July 17-20, 2006 at Rutgers University, NJ.

The Computational Infrastructure for Operations Research (COIN-OR**, or simply COIN) project is an initiative to spur the development of open-source software for the operations research community.

Why open source? The Open Source Initiative explains it well. When

Projects Page



This page gives links to the web pages for all COIN-OR projects. An alphabetical list follows the categorical list below.

Projects by category:

Deterministic optimization - linear

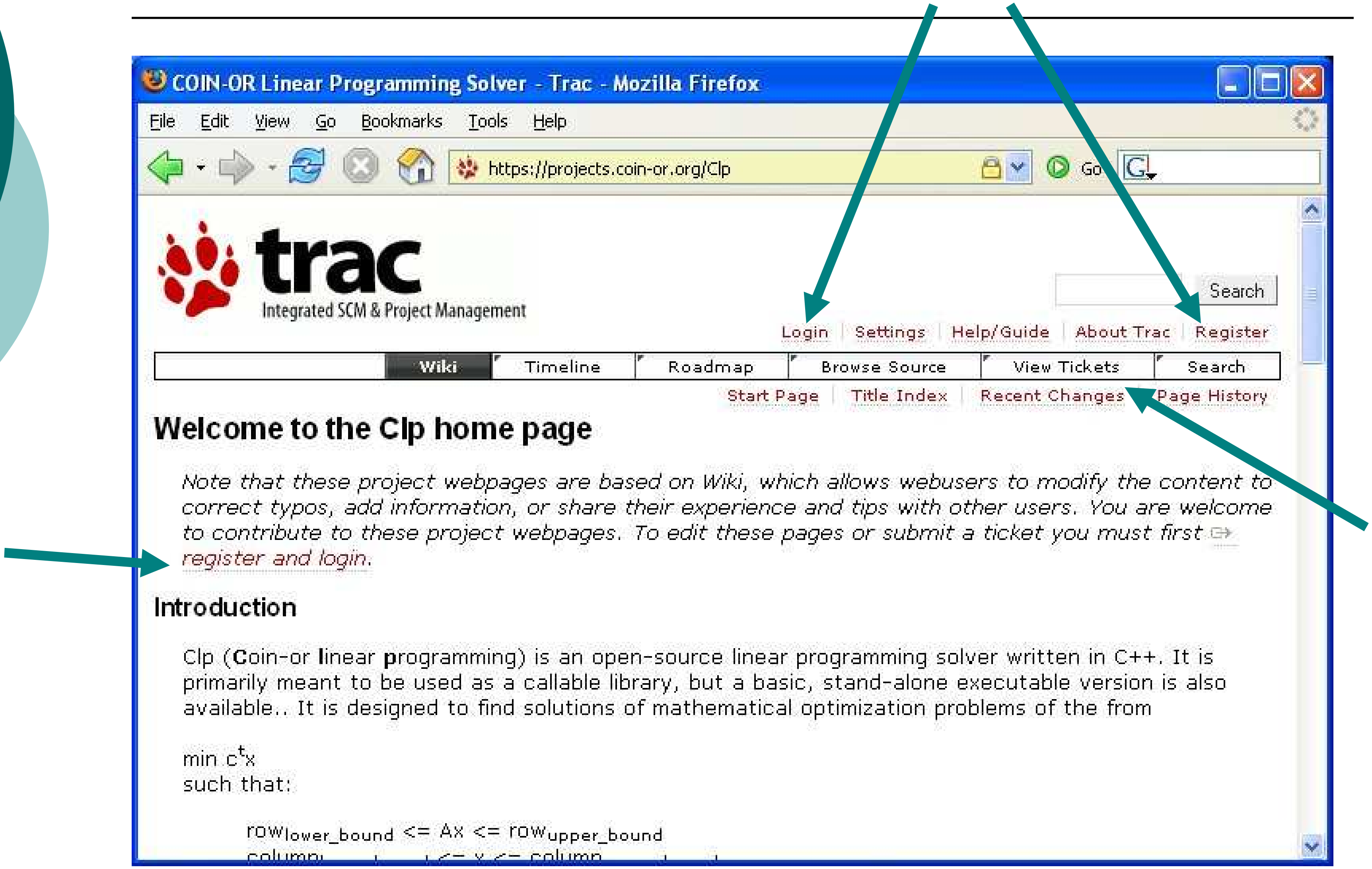
Continuous/general

- CLP: COIN-OR LP, a simplex solver
- dylp: Dynamic LP
- FLOPC++: FLOPC++, an algebraic modeling language embedded in C++
- OSI: Open Solver Interface
- VOL: Volume Algorithm

Discrete

- ALPS: Abstract Library for Parallel Search
- BCP: Branch-Cut-Price

Clp Trac Page


COIN-OR Linear Programming Solver - Trac - Mozilla Firefox
File Edit View Go Bookmarks Tools Help
https://projects.coin-or.org/Clp
Go
trac
Integrated SCM & Project Management
Search
Login | Settings | Help/Guide | About Trac | Register
Wiki
Timeline
Roadmap
Browse Source
View Tickets
Search
Start Page | Title Index | Recent Changes | Page History

Welcome to the Clp home page

Note that these project webpages are based on Wiki, which allows webusers to modify the content to correct typos, add information, or share their experience and tips with other users. You are welcome to contribute to these project webpages. To edit these pages or submit a ticket you must first register and login.

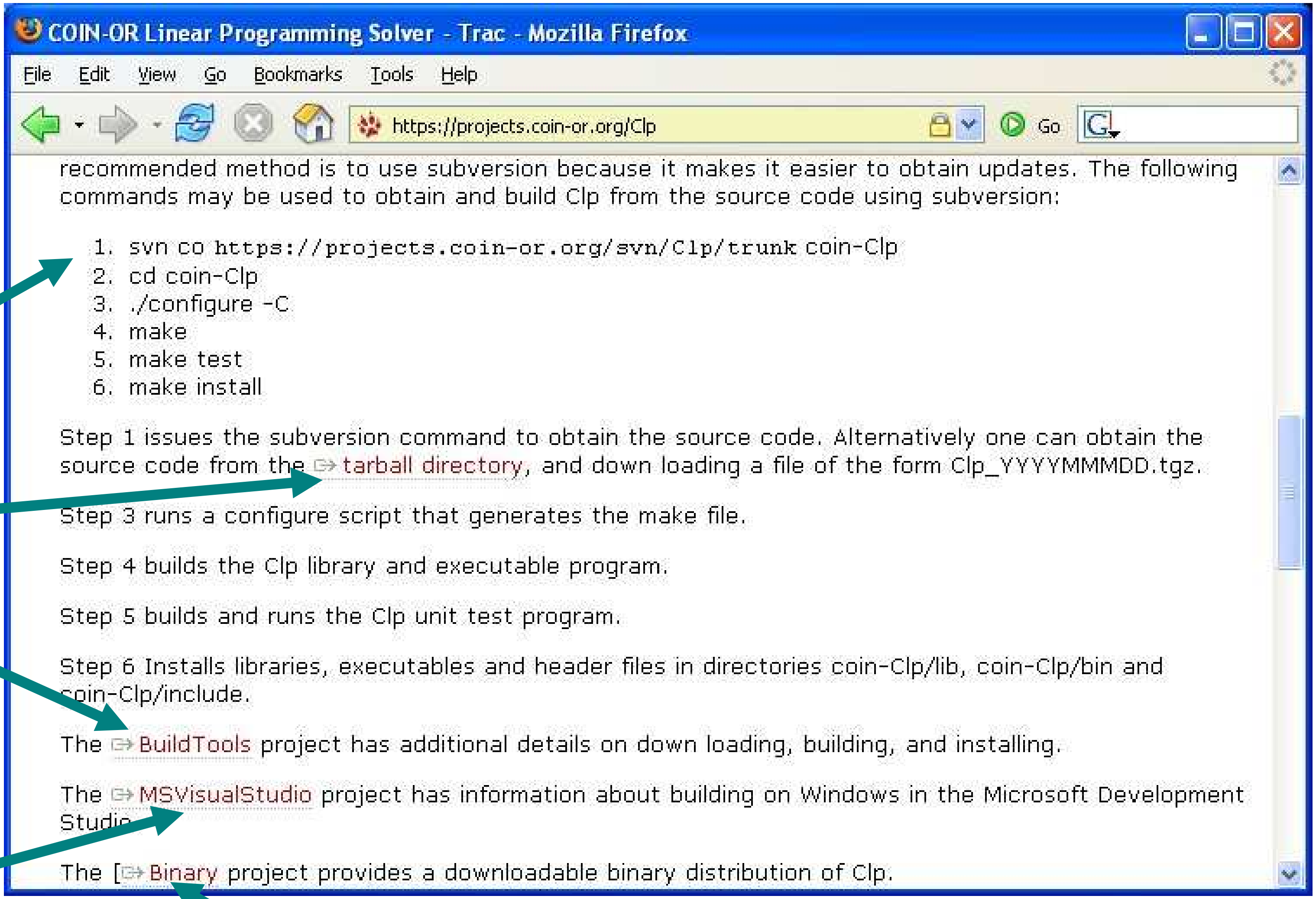
Introduction

Clp (**C**oin-or **l**inear **p**rogramming) is an open-source linear programming solver written in C++. It is primarily meant to be used as a callable library, but a basic, stand-alone executable version is also available.. It is designed to find solutions of mathematical optimization problems of the from

min $c^t x$
such that:

$row_{lower\_bound} <= Ax <= row_{upper\_bound}$
$column_{lower\_bound} <= x <= column_{upper\_bound}$

Clp Build Instructions on Trac Page


COIN-OR Linear Programming Solver - Trac - Mozilla Firefox
File
Edit
View
Go
Bookmarks
Tools
Help
https://projects.coin-or.org/Clp
Go

recommended method is to use subversion because it makes it easier to obtain updates. The following commands may be used to obtain and build Clp from the source code using subversion:

1. svn co `https://projects.coin-or.org/svn/Clp/trunk` coin-Clp
2. cd coin-Clp
3. ./configure -C
4. make
5. make test
6. make install

Step 1 issues the subversion command to obtain the source code. Alternatively one can obtain the source code from the tarball directory, and down loading a file of the form Clp_YYYYMMDD.tgz.

Step 3 runs a configure script that generates the make file.

Step 4 builds the Clp library and executable program.

Step 5 builds and runs the Clp unit test program.

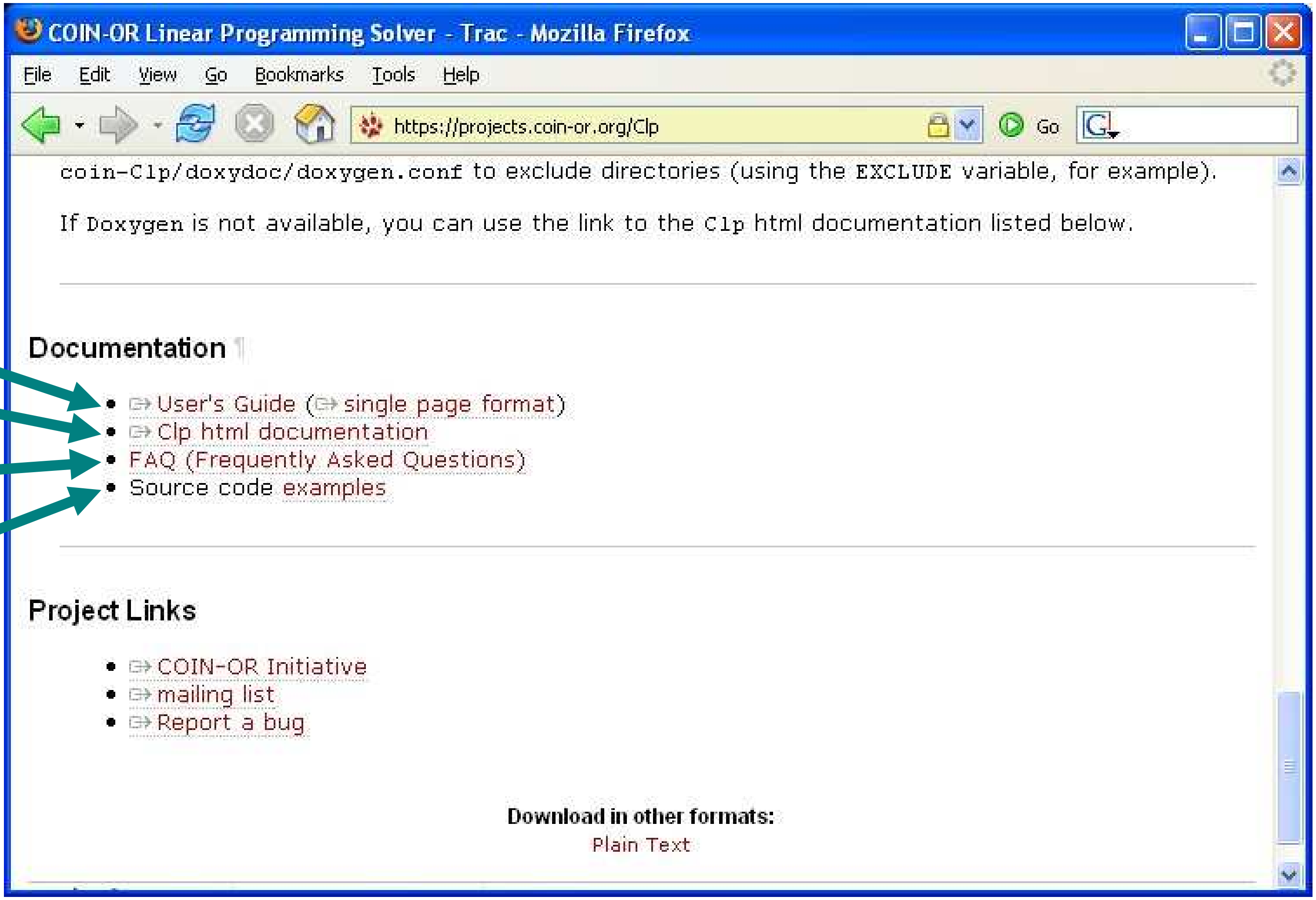
Step 6 Installs libraries, executables and header files in directories coin-Clp/lib, coin-Clp/bin and coin-Clp/include.

The BuildTools project has additional details on down loading, building, and installing.

The MSVisualStudio project has information about building on Windows in the Microsoft Development Studio.

The [Binary project provides a downloadable binary distribution of Clp.

Clp Documentation on Trac Page


COIN-OR Linear Programming Solver - Trac - Mozilla Firefox
File
Edit
View
Go
Bookmarks
Tools
Help
https://projects.coin-or.org/Clp
Go

coin-Clp/doxydoc/doxygen.conf to exclude directories (using the EXCLUDE variable, for example).

If Doxygen is not available, you can use the link to the Clp html documentation listed below.

Documentation ¶

- User's Guide (single page format)
- Clp html documentation
- FAQ (Frequently Asked Questions)
- Source code examples

Project Links

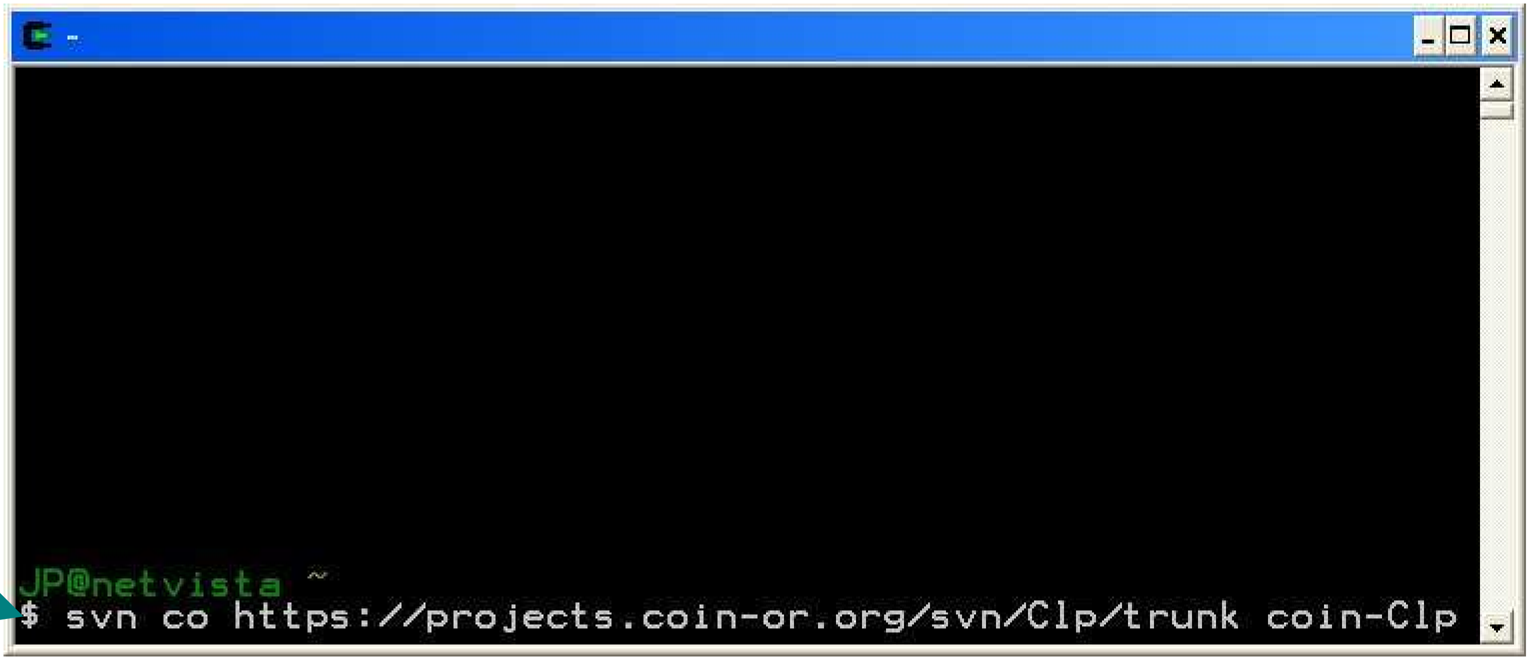
- COIN-OR Initiative
- mailing list
- Report a bug

Download in other formats:
Plain Text

Build Clp

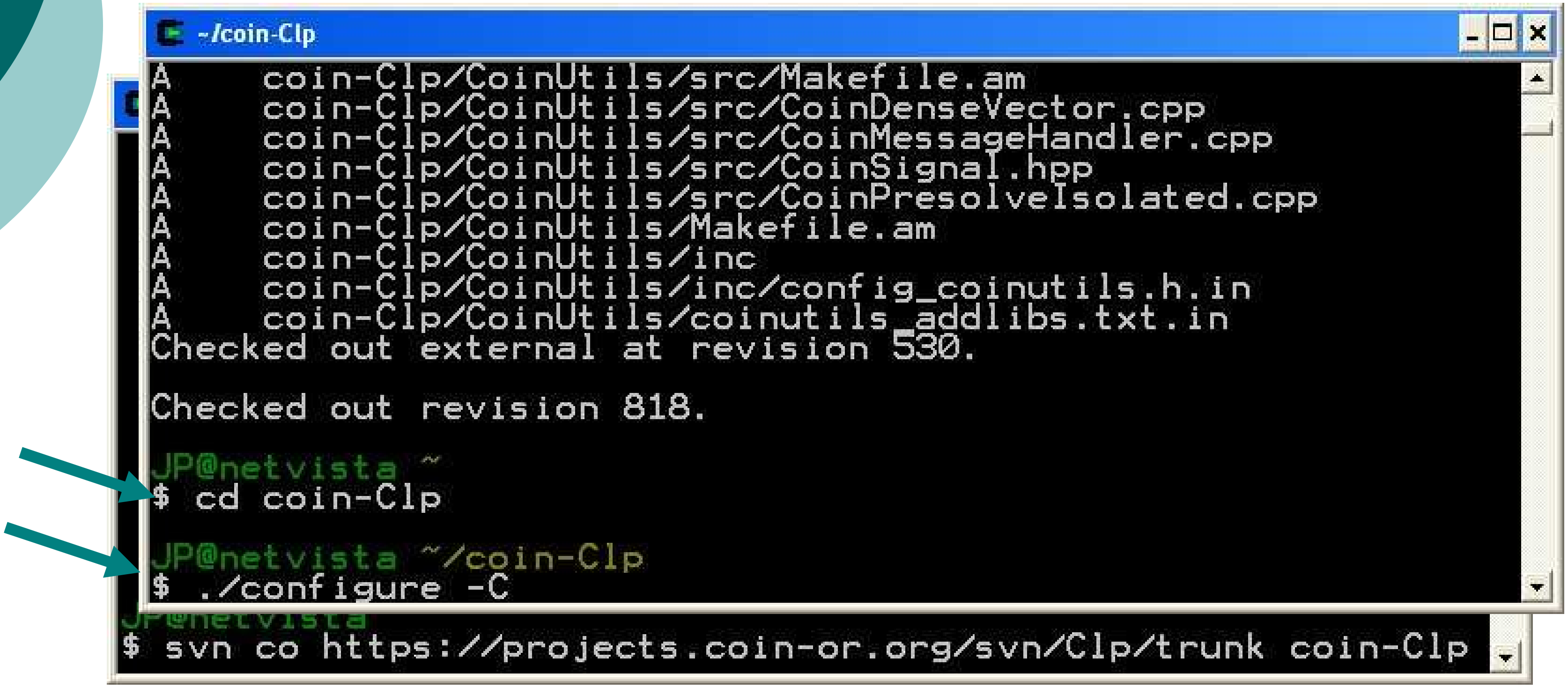
Unix

Build Clp on Unix



```
JP@netvista ~
$ svn co https://projects.coin-or.org/svn/Clp/trunk coin-Clp
```

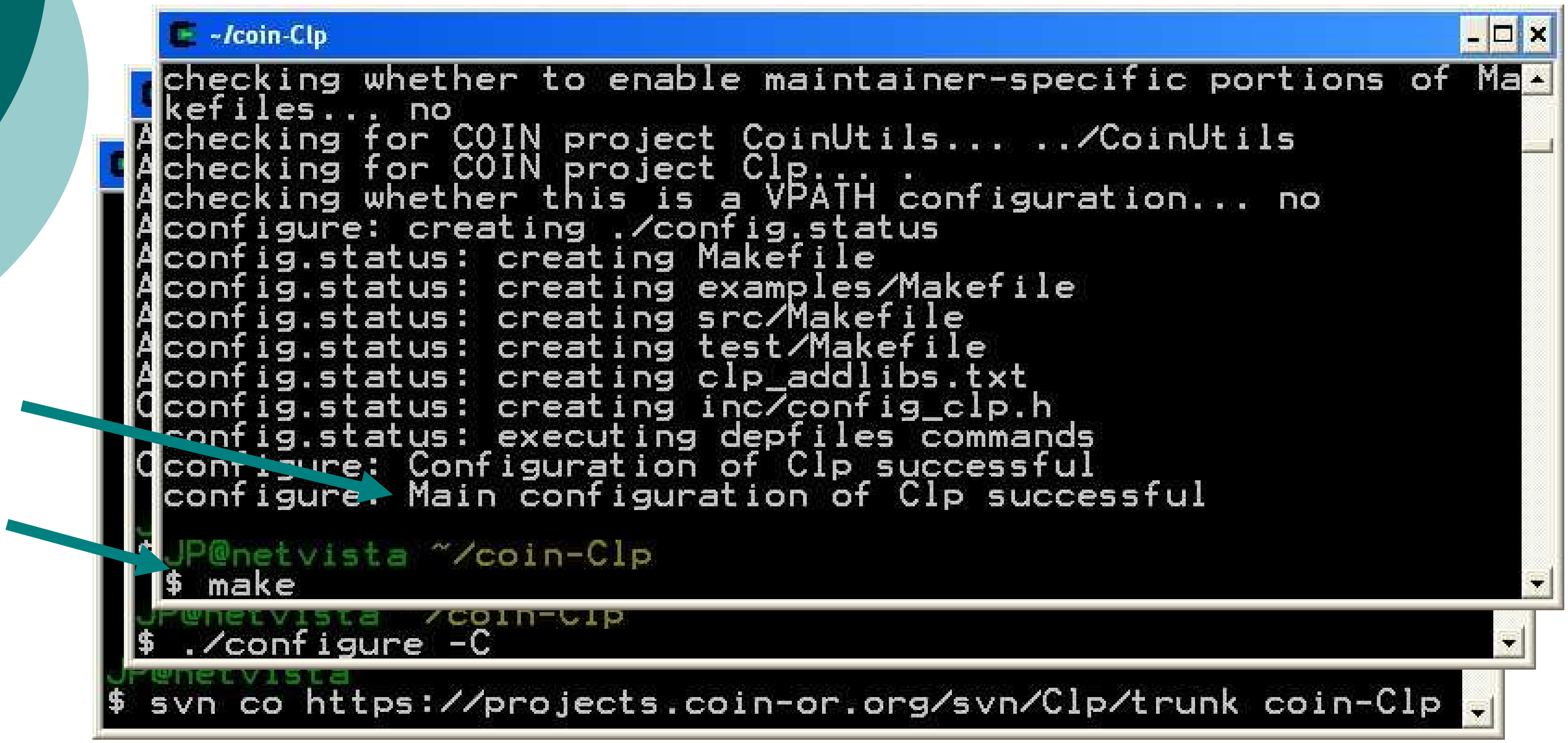
Build Clp on Unix



```
A      coin-Clp/CoinUtils/src/Makefile.am
A      coin-Clp/CoinUtils/src/CoinDenseVector.cpp
A      coin-Clp/CoinUtils/src/CoinMessageHandler.cpp
A      coin-Clp/CoinUtils/src/CoinSignal.hpp
A      coin-Clp/CoinUtils/src/CoinPresolveIsolated.cpp
A      coin-Clp/CoinUtils/Makefile.am
A      coin-Clp/CoinUtils/inc
A      coin-Clp/CoinUtils/inc/config_coinutils.h.in
A      coin-Clp/CoinUtils/coinutils_addlibs.txt.in
Checked out external at revision 530.

Checked out revision 818.

JP@netvista ~
$ cd coin-Clp

JP@netvista ~/coin-Clp
$ ./configure -C
```

```
JP@netvista
$ svn co https://projects.coin-or.org/svn/Clp/trunk coin-Clp
```

Build Clp on Unix

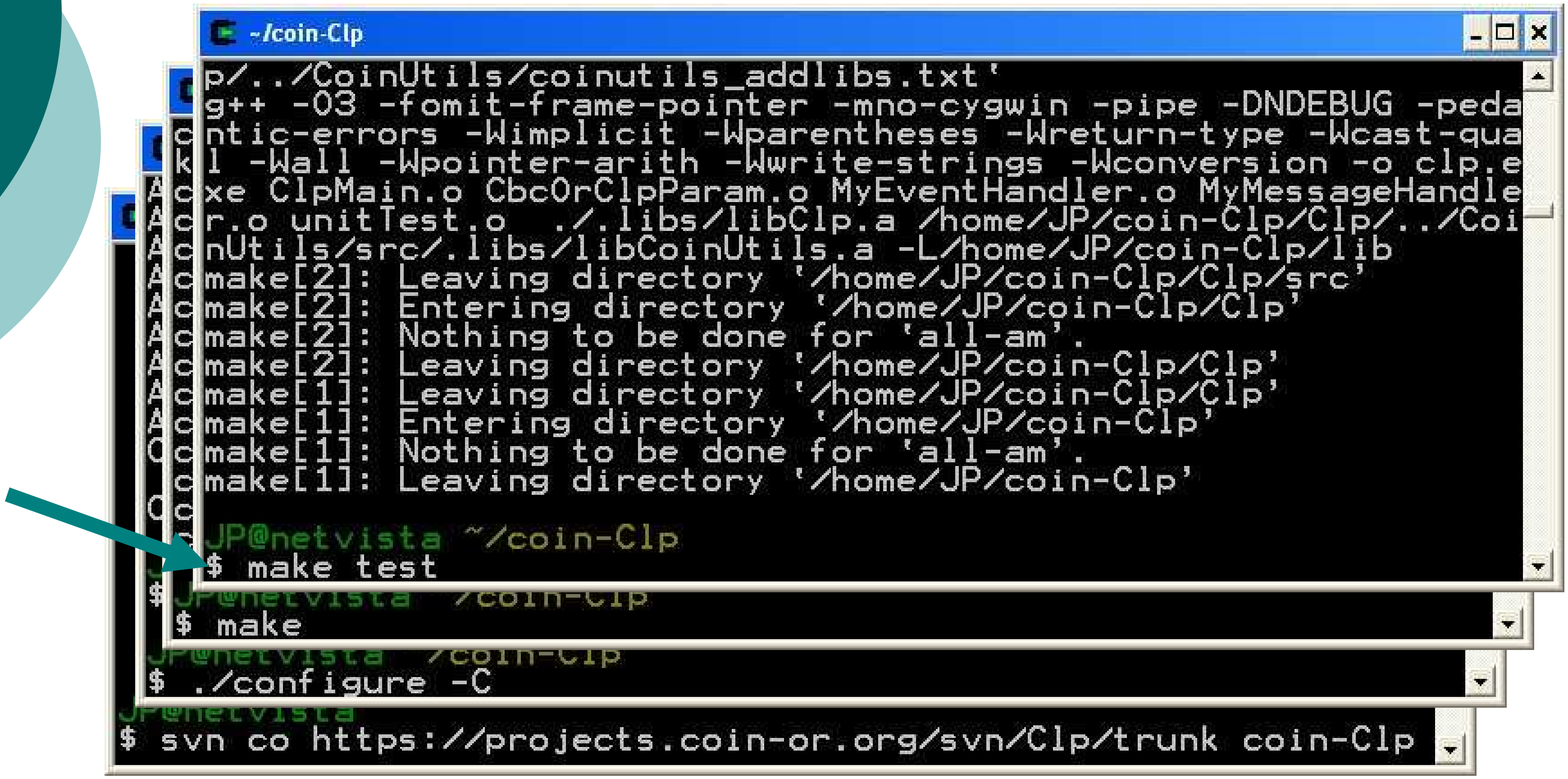


```
checking whether to enable maintainer-specific portions of Makefiles... no
checking for COIN project CoinUtils... ../CoinUtils
checking for COIN project Clp... .
checking whether this is a VPATH configuration... no
configure: creating ./config.status
config.status: creating Makefile
config.status: creating examples/Makefile
config.status: creating src/Makefile
config.status: creating test/Makefile
config.status: creating clp_addlibs.txt
config.status: creating inc/config_clp.h
config.status: executing depfiles commands
configure: Configuration of Clp successful
configure: Main configuration of Clp successful

JP@netvista ~/coin-Clp
$ make
```

```
JP@netvista ~/coin-Clp
$ ./configure -C
```

```
JP@netvista
$ svn co https://projects.coin-or.org/svn/Clp/trunk coin-Clp
```

Build Clp on Unix



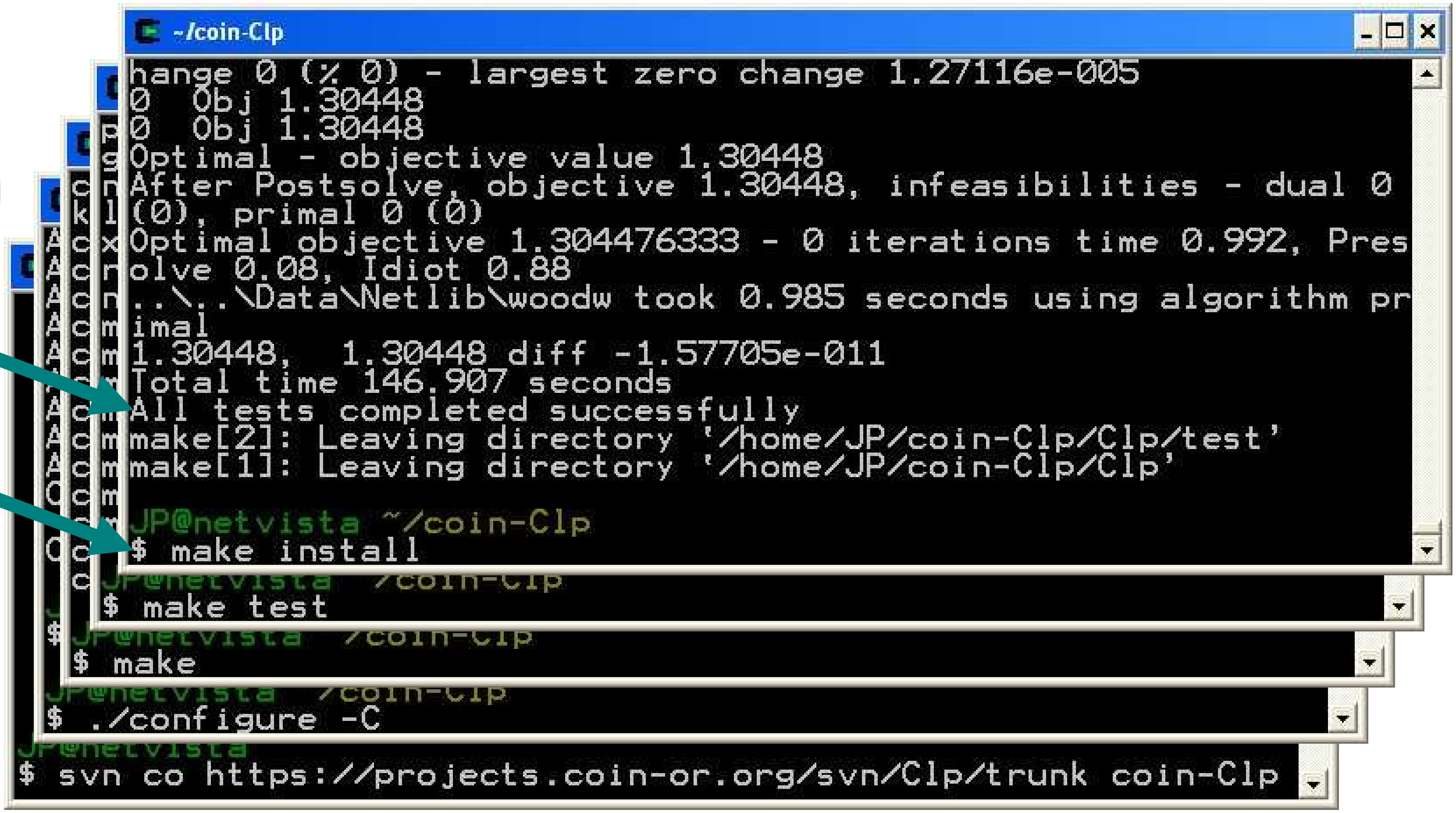
```
p/../CoinUtils/coinutils_addlibs.txt'
g++ -O3 -fomit-frame-pointer -mno-cygwin -pipe -DNDEBUG -peda
ntic-errors -Wimplicit -Wparentheses -Wreturn-type -Wcast-qua
l -Wall -Wpointer-arith -Wwrite-strings -Wconversion -o clp.e
xe ClpMain.o CbcOrClpParam.o MyEventHandler.o MyMessageHandle
r.o unitTest.o  ./.libs/libClp.a /home/JP/coin-Clp/Clp/../Coi
nUtils/src/.libs/libCoinUtils.a -L/home/JP/coin-Clp/lib
make[2]: Leaving directory '/home/JP/coin-Clp/Clp/src'
make[2]: Entering directory '/home/JP/coin-Clp/Clp'
make[2]: Nothing to be done for 'all-am'.
make[2]: Leaving directory '/home/JP/coin-Clp/Clp'
make[1]: Leaving directory '/home/JP/coin-Clp/Clp'
make[1]: Entering directory '/home/JP/coin-Clp'
make[1]: Nothing to be done for 'all-am'.
make[1]: Leaving directory '/home/JP/coin-Clp'

JP@netvista ~/coin-Clp
$ make test
```

```
JP@netvista ~/coin-Clp
$ make
```

```
JP@netvista ~/coin-Clp
$ ./configure -C
```

```
JP@netvista
$ svn co https://projects.coin-or.org/svn/Clp/trunk coin-Clp
```

Build Clp on Unix



```
hange 0 (% 0) - largest zero change 1.27116e-005
0  Obj 1.30448
0  Obj 1.30448
Optimal - objective value 1.30448
After Postsolve, objective 1.30448, infeasibilities - dual 0
(0), primal 0 (0)
Optimal objective 1.304476333 - 0 iterations time 0.992, Pres
olve 0.08, Idiot 0.88
..\..\Data\Netlib\woodw took 0.985 seconds using algorithm pr
imal
1.30448,  1.30448 diff -1.57705e-011
Total time 146.907 seconds
All tests completed successfully
make[2]: Leaving directory '/home/JP/coin-Clp/Clp/test'
make[1]: Leaving directory '/home/JP/coin-Clp/Clp'

JP@netvista ~/coin-Clp
$ make install
```

```
JP@netvista ~/coin-Clp
$ make test
```

```
JP@netvista ~/coin-Clp
$ make
```

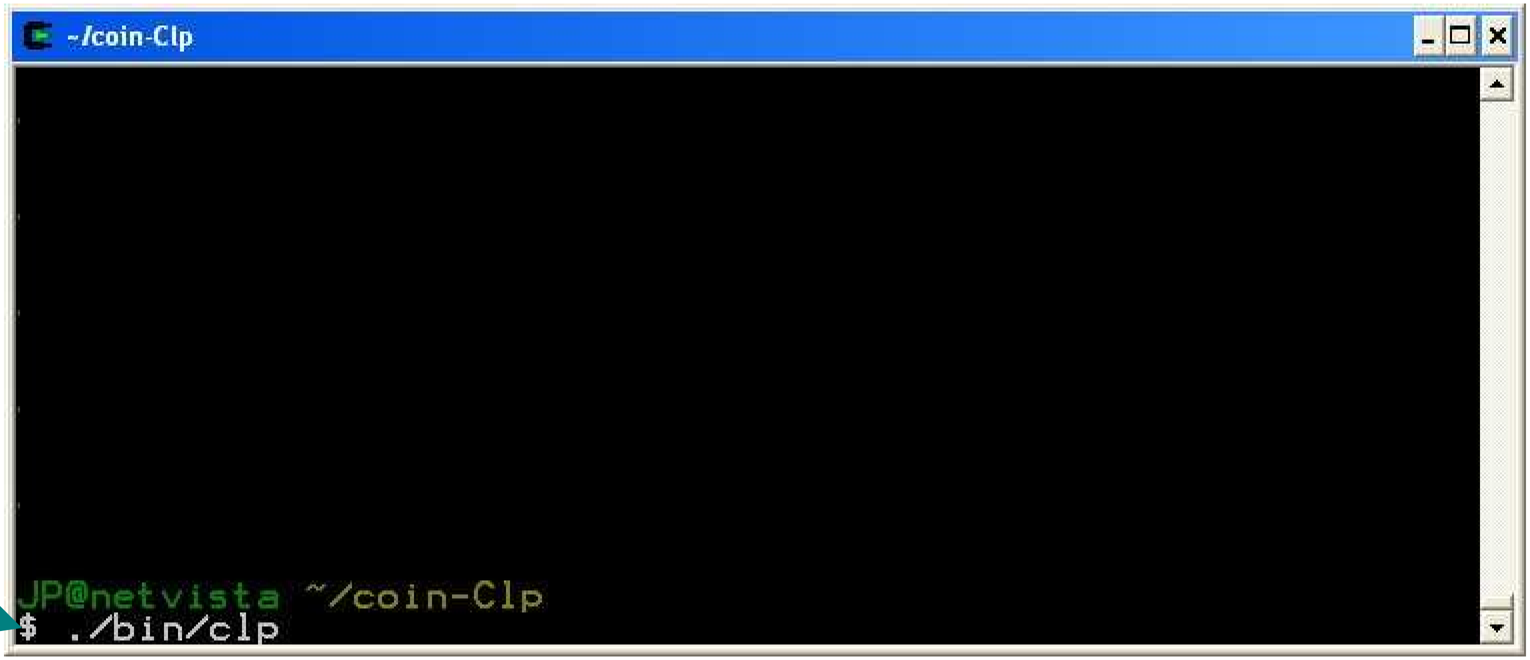
```
JP@netvista ~/coin-Clp
$ ./configure -C
```

```
JP@netvista
$ svn co https://projects.coin-or.org/svn/Clp/trunk coin-Clp
```

Run Clp executable

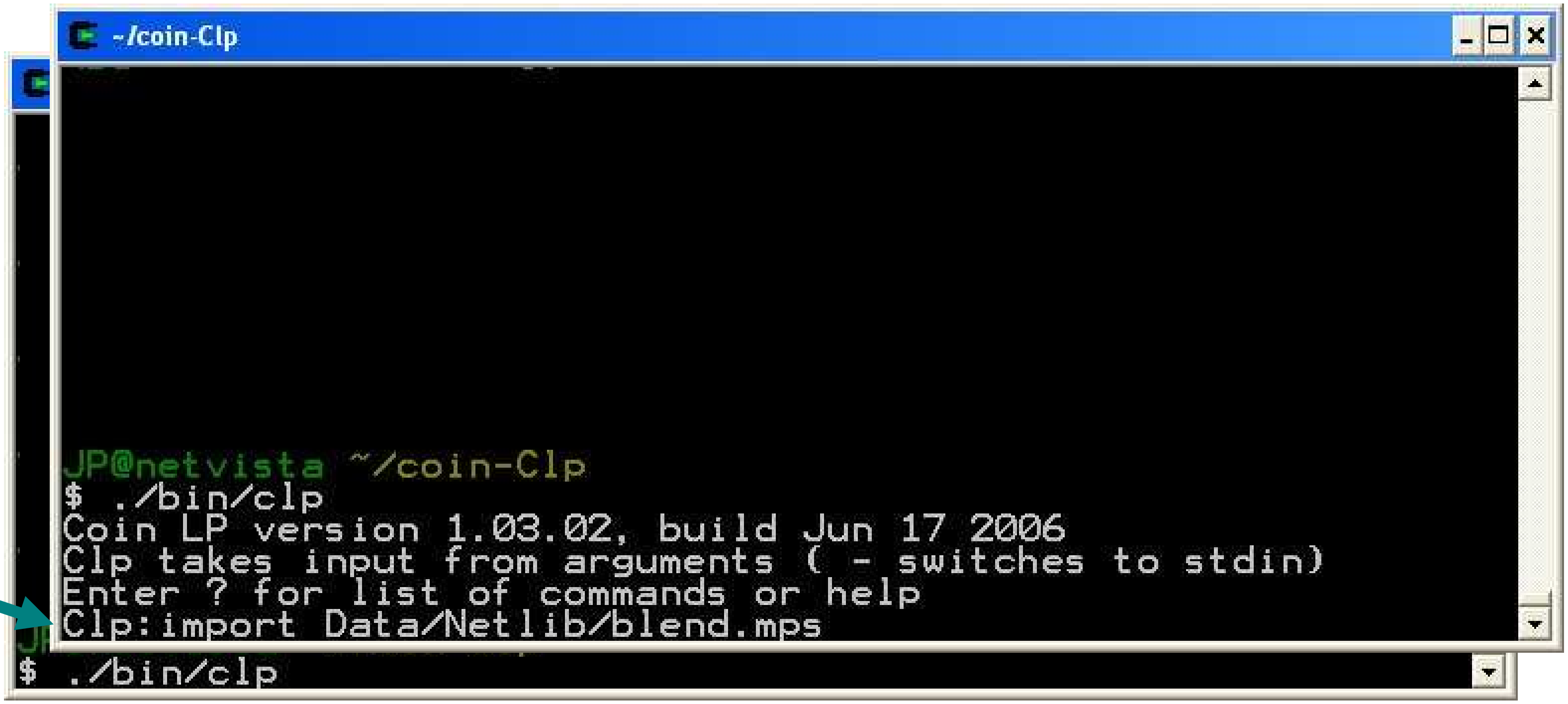
Experiment with Clp options

Experimenting with clp executable



```
JP@netvista ~/coin-Clp
$ ./bin/clp
```

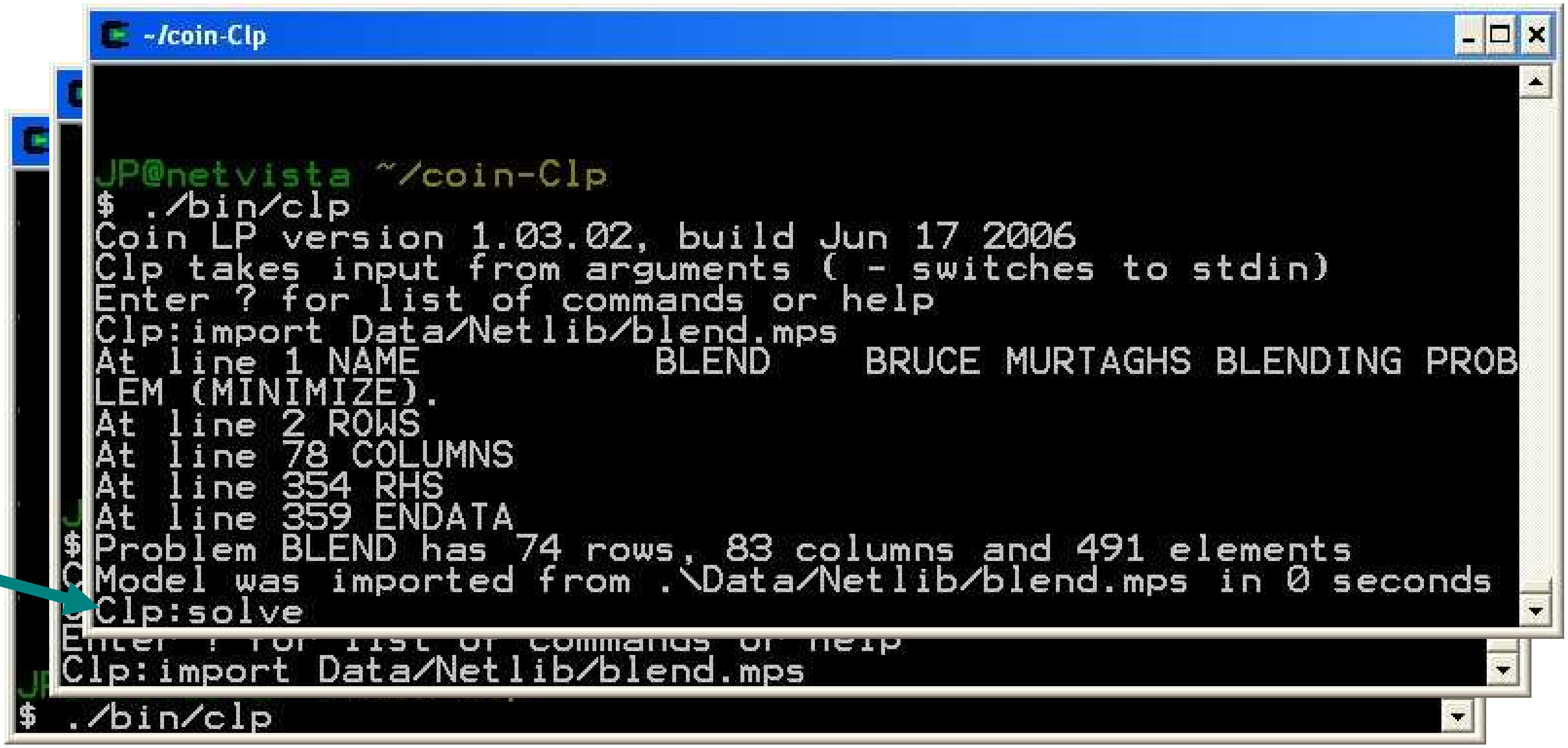
Experimenting with clp executable



```
JP@netvista ~/coin-Clp
$ ./bin/clp
Coin LP version 1.03.02, build Jun 17 2006
Clp takes input from arguments ( - switches to stdin)
Enter ? for list of commands or help
Clp:import Data/Netlib/blend.mps
```

```
$ ./bin/clp
```

Experimenting with clp executable

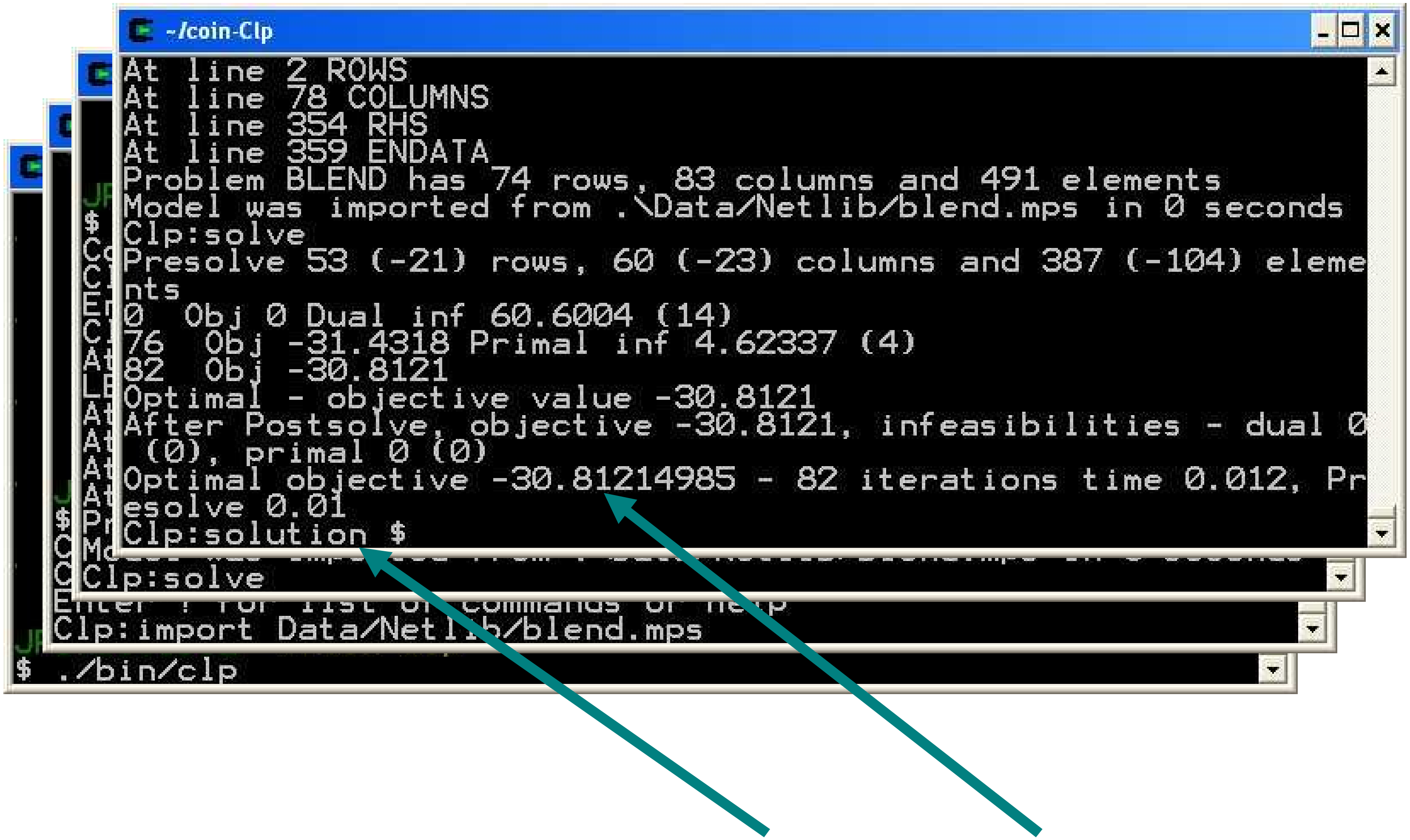


```
JP@netvista ~/coin-Clp
$ ./bin/clp
Coin LP version 1.03.02, build Jun 17 2006
Clp takes input from arguments ( - switches to stdin)
Enter ? for list of commands or help
Clp:import Data/Netlib/blend.mps
At line 1 NAME            BLEND    BRUCE MURTAGHS BLENDING PROB
LEM (MINIMIZE).
At line 2 ROWS
At line 78 COLUMNS
At line 354 RHS
At line 359 ENDATA
Problem BLEND has 74 rows, 83 columns and 491 elements
Model was imported from .\Data/Netlib/blend.mps in 0 seconds
Clp:solve
```

```
Enter ? for list of commands or help
Clp:import Data/Netlib/blend.mps
```

```
$ ./bin/clp
```

Experimenting with clp executable



```
$ ./bin/clp
Clp:import Data/Netlib/blend.mps
Clp:solve
```

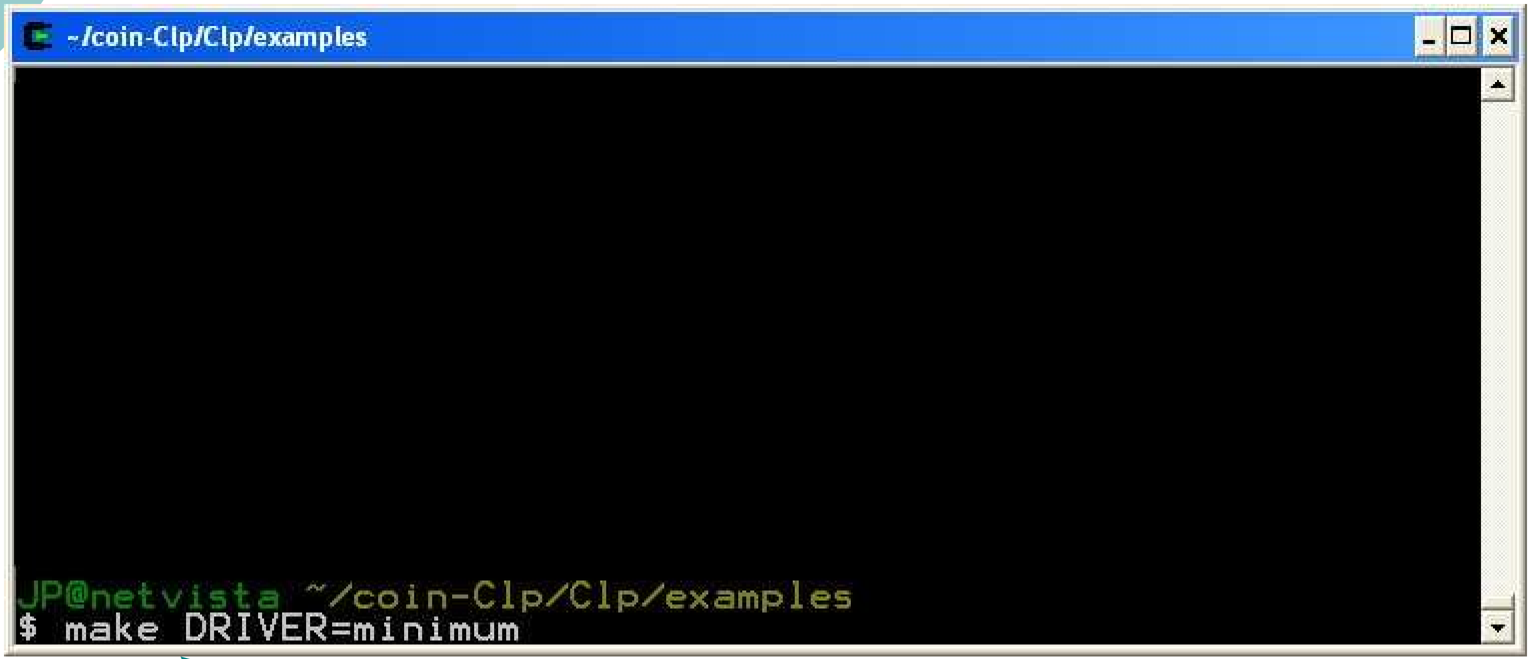
```
At line 2 ROWS
At line 78 COLUMNS
At line 354 RHS
At line 359 ENDATA
Problem BLEND has 74 rows, 83 columns and 491 elements
Model was imported from .\Data/Netlib/blend.mps in 0 seconds
Clp:solve
Presolve 53 (-21) rows, 60 (-23) columns and 387 (-104) eleme
nts
0  Obj 0 Dual inf 60.6004 (14)
76  Obj -31.4318 Primal inf 4.62337 (4)
82  Obj -30.8121
Optimal - objective value -30.8121
After Postsolve, objective -30.8121, infeasibilities - dual 0
 (0), primal 0 (0)
Optimal objective -30.81214985 - 82 iterations time 0.012, Pr
esolve 0.01
Clp:solution $
```

Building Examples

coin-Clp/Clp/examples/minimum.cpp

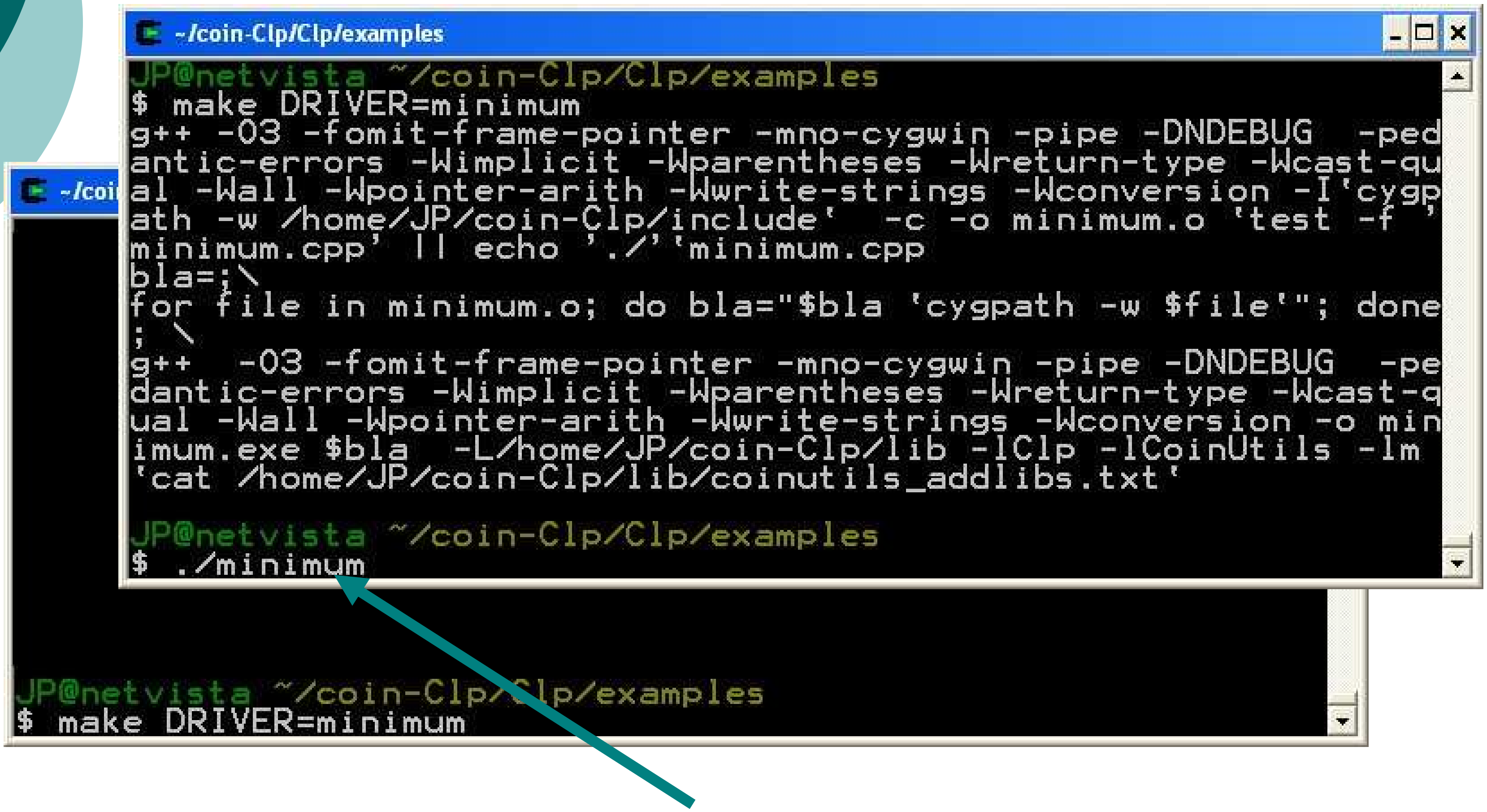
Unix

Build and run coin-Clp/Clp/examples/minimum.cpp



```
JP@netvista ~/coin-Clp/Clp/examples
$ make DRIVER=minimum
```

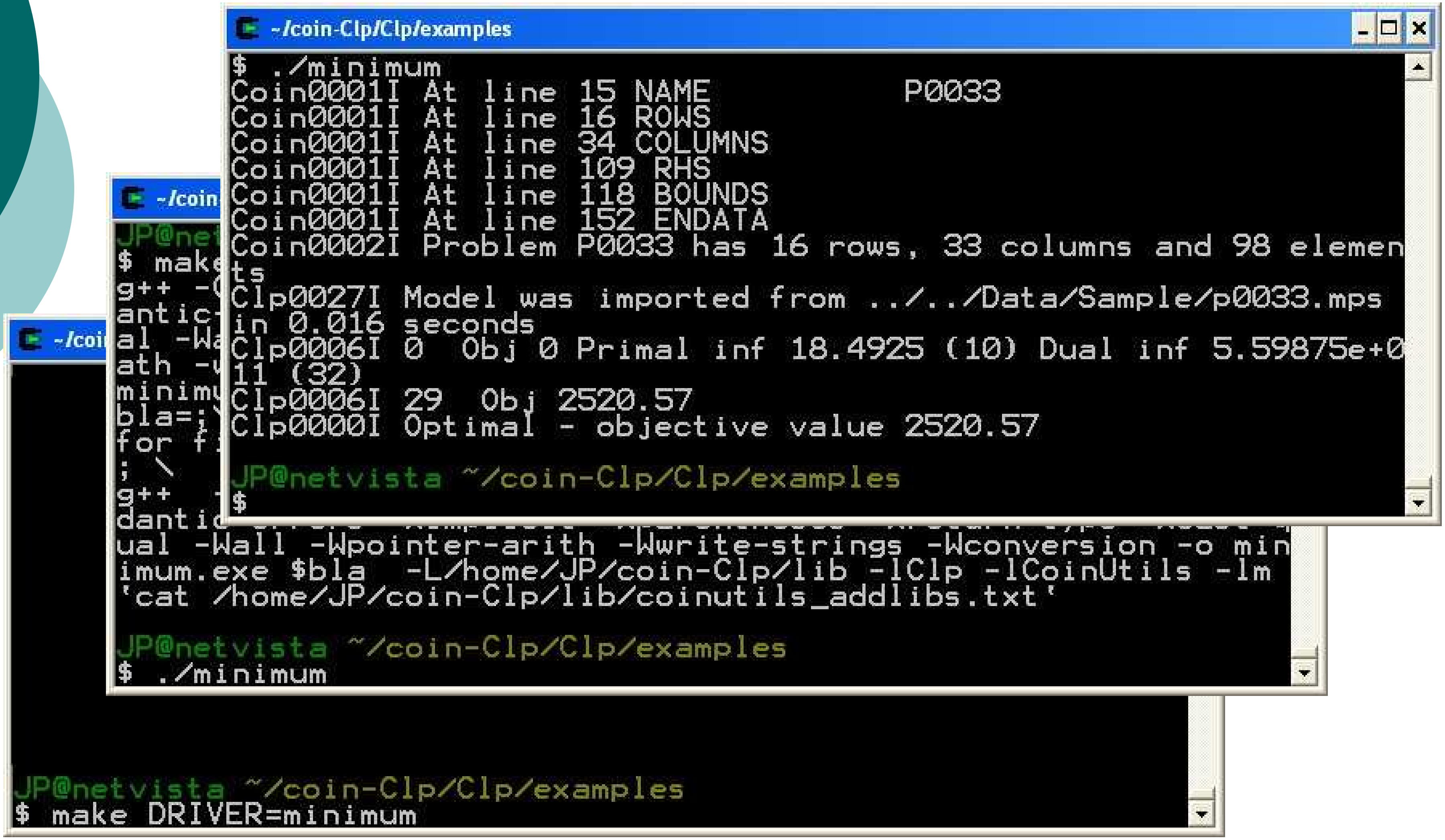
Build and run coin-Clp/Clp/examples/minimum.cpp



```
JP@netvista ~/coin-Clp/Clp/examples
$ make DRIVER=minimum
g++ -O3 -fomit-frame-pointer -mno-cygwin -pipe -DNDEBUG  -ped
antic-errors -Wimplicit -Wparentheses -Wreturn-type -Wcast-qu
al -Wall -Wpointer-arith -Wwrite-strings -Wconversion -I`cygp
ath -w /home/JP/coin-Clp/include`  -c -o minimum.o `test -f '
minimum.cpp' || echo './'`minimum.cpp
bla=;\
for file in minimum.o; do bla="$bla `cygpath -w $file`"; done
; \
g++  -O3 -fomit-frame-pointer -mno-cygwin -pipe -DNDEBUG  -pe
dantic-errors -Wimplicit -Wparentheses -Wreturn-type -Wcast-q
ual -Wall -Wpointer-arith -Wwrite-strings -Wconversion -o min
imum.exe $bla  -L/home/JP/coin-Clp/lib -lClp -lCoinUtils -lm
`cat /home/JP/coin-Clp/lib/coinutils_addlibs.txt`

JP@netvista ~/coin-Clp/Clp/examples
$ ./minimum
```

```
JP@netvista ~/coin-Clp/Clp/examples
$ make DRIVER=minimum
```

Build and run coin-Clp/Clp/examples/minimum.cpp



```
$ ./minimum
Coin0001I At line 15 NAME          P0033
Coin0001I At line 16 ROWS
Coin0001I At line 34 COLUMNS
Coin0001I At line 109 RHS
Coin0001I At line 118 BOUNDS
Coin0001I At line 152 ENDATA
Coin0002I Problem P0033 has 16 rows, 33 columns and 98 elemen
ts
Clp0027I Model was imported from ../../Data/Sample/p0033.mps
in 0.016 seconds
Clp0006I 0  Obj 0 Primal inf 18.4925 (10) Dual inf 5.59875e+0
11 (32)
Clp0006I 29  Obj 2520.57
Clp0000I Optimal - objective value 2520.57

JP@netvista ~/coin-Clp/Clp/examples
$
```

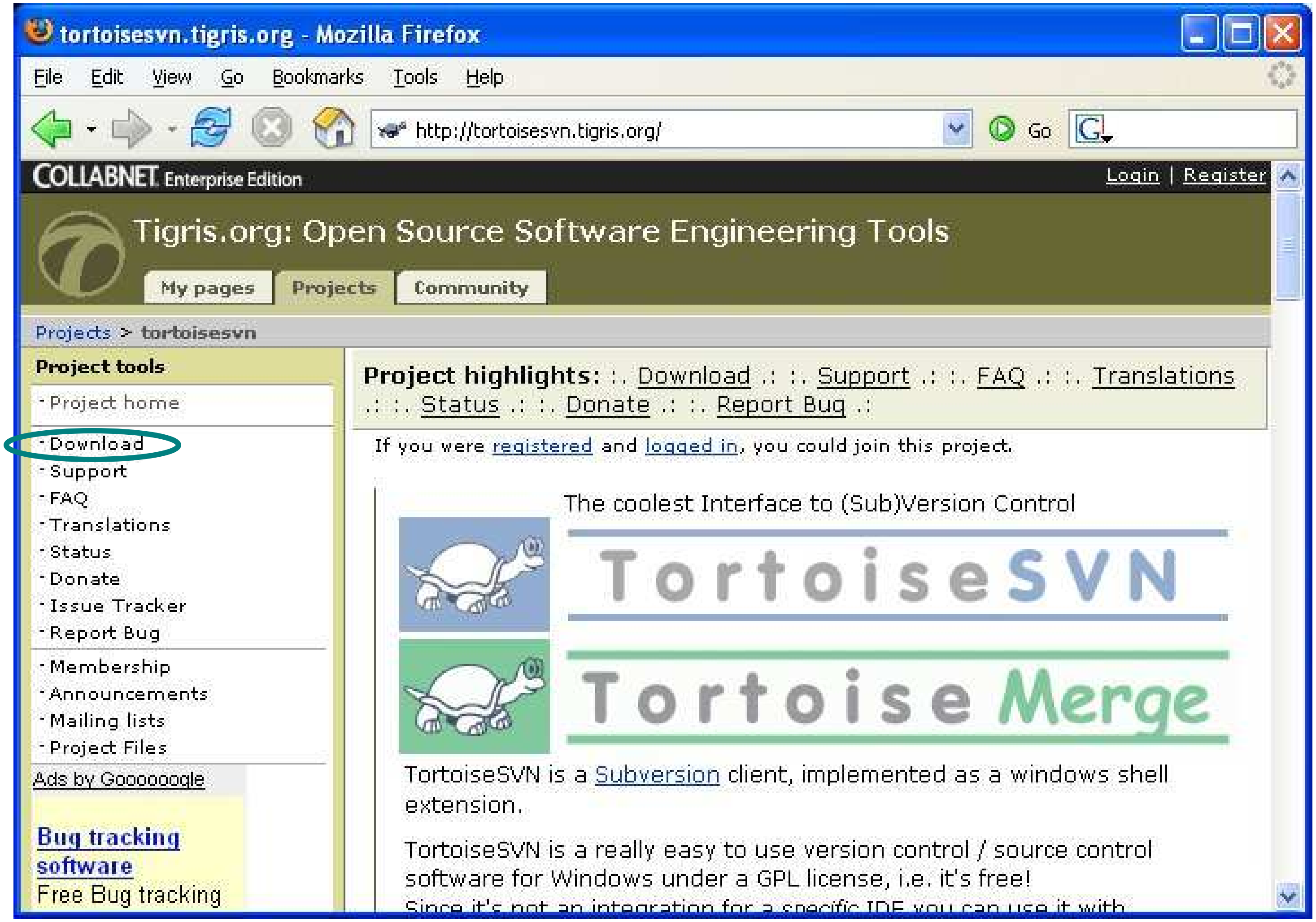
```
JP@net
$ make
g++ -(
antic-
al -Wa
ath -w
minimu
bla=;
for fi
; \
g++ -
dantic
ual -Wall -Wpointer-arith -Wwrite-strings -Wconversion -o min
imum.exe $bla  -L/home/JP/coin-Clp/lib -lClp -lCoinUtils -lm
'cat /home/JP/coin-Clp/lib/coinutils_addlibs.txt'

JP@netvista ~/coin-Clp/Clp/examples
$ ./minimum
```

```
JP@netvista ~/coin-Clp/Clp/examples
$ make DRIVER=minimum
```

Windows: Obtaining Source

Using TortoiseSVN Client

A Subversion Windows Client


tortoisesvn.tigris.org - Mozilla Firefox
File Edit View Go Bookmarks Tools Help
http://tortoisesvn.tigris.org/
Go
COLLABNET Enterprise Edition
Login | Register
Tigris.org: Open Source Software Engineering Tools
My pages
Projects
Community
Projects > tortoisesvn

Project tools

- Project home
- Download
- Support
- FAQ
- Translations
- Status
- Donate
- Issue Tracker
- Report Bug
- Membership
- Announcements
- Mailing lists
- Project Files

Ads by Goooooogle

Bug tracking software
Free Bug tracking

Project highlights: :. Download .: :. Support .: :. FAQ .: :. Translations .: :. Status .: :. Donate .: :. Report Bug .:

If you were registered and logged in, you could join this project.

The coolest Interface to (Sub)Version Control

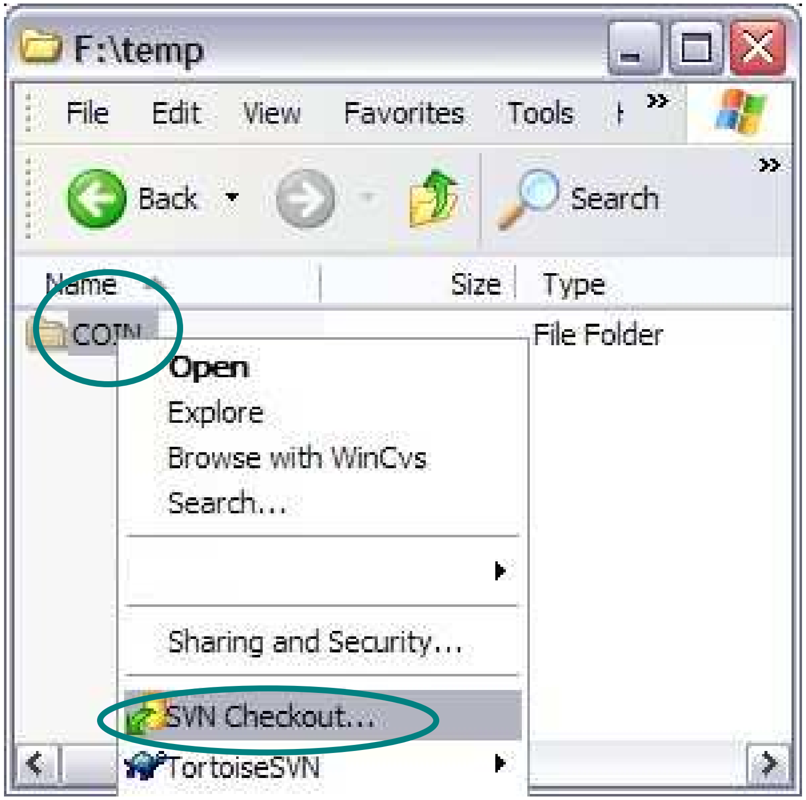
TortoiseSVN

TortoiseMerge

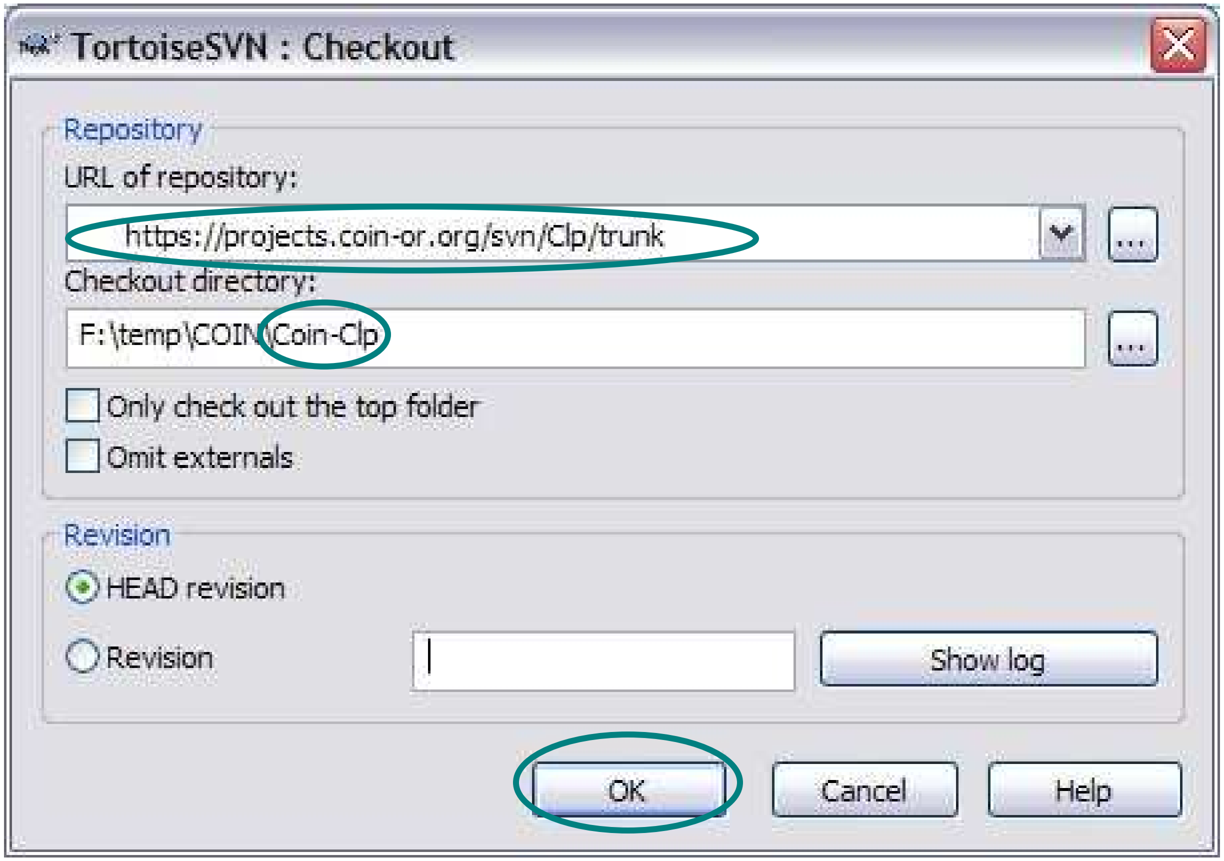
TortoiseSVN is a Subversion client, implemented as a windows shell extension.

TortoiseSVN is a really easy to use version control / source control software for Windows under a GPL license, i.e. it's free!
Since it's not an integration for a specific IDE you can use it with

TortiseSVN: Checkout



TortiseSVN: Checkout



TortoiseSVN : Checkout

Repository

URL of repository:

https://projects.coin-or.org/svn/Clp/trunk

Checkout directory:

F:\temp\COIN\Coin-Clp

□ Only check out the top folder

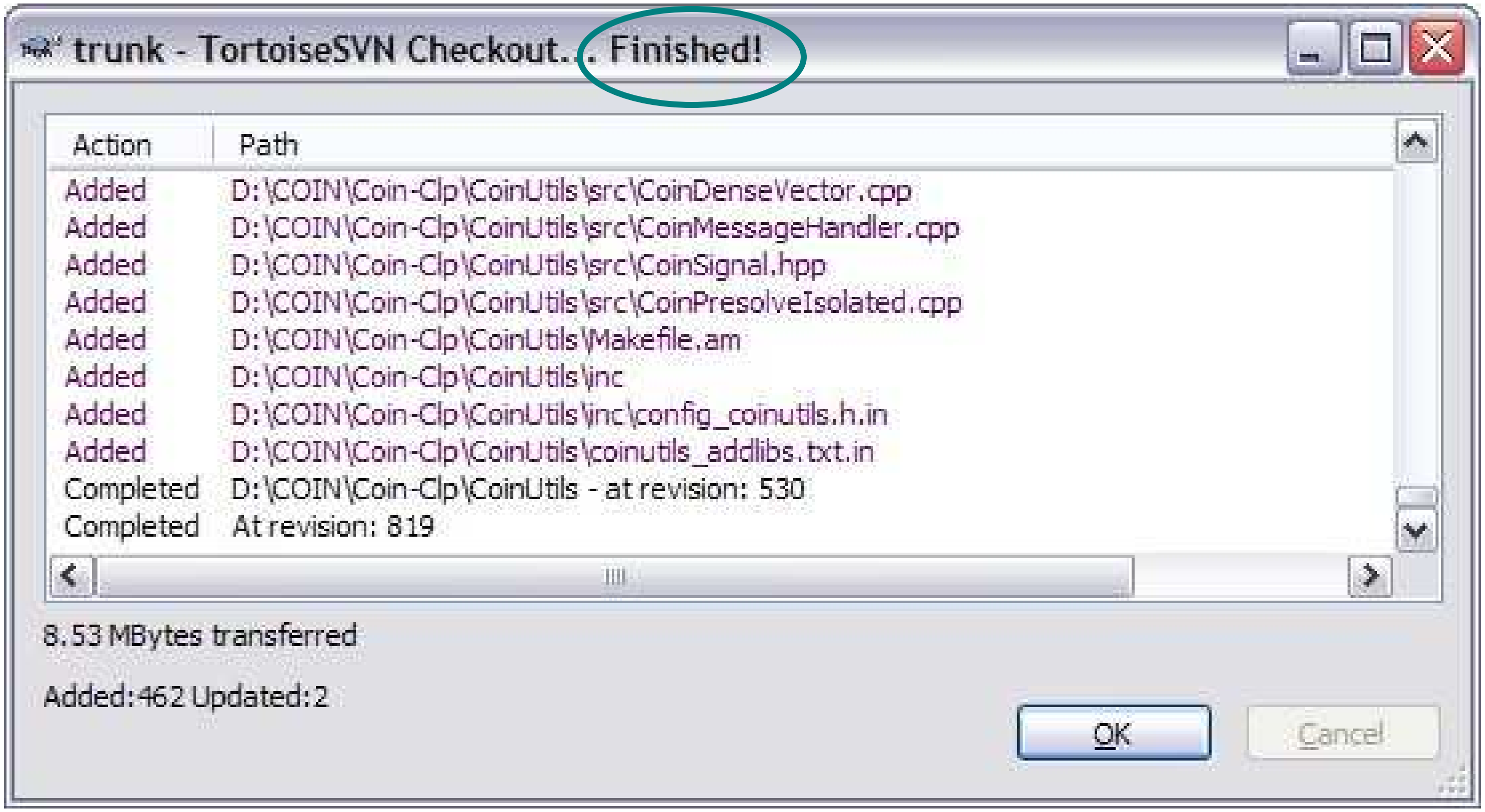
□ Omit externals

Revision

● HEAD revision

○ Revision

TortiseSVN: Checkout



trunk - TortoiseSVN Checkout... Finished!

Action	Path
Added	D:\COIN\Coin-Clp\CoinUtils\src\CoinDenseVector.cpp
Added	D:\COIN\Coin-Clp\CoinUtils\src\CoinMessageHandler.cpp
Added	D:\COIN\Coin-Clp\CoinUtils\src\CoinSignal.hpp
Added	D:\COIN\Coin-Clp\CoinUtils\src\CoinPresolveIsolated.cpp
Added	D:\COIN\Coin-Clp\CoinUtils\Makefile.am
Added	D:\COIN\Coin-Clp\CoinUtils\inc
Added	D:\COIN\Coin-Clp\CoinUtils\inc\config_coinutils.h.in
Added	D:\COIN\Coin-Clp\CoinUtils\coinutils_addlibs.txt.in
Completed	D:\COIN\Coin-Clp\CoinUtils - at revision: 530
Completed	At revision: 819

8.53 MBytes transferred

Added:462 Updated:2

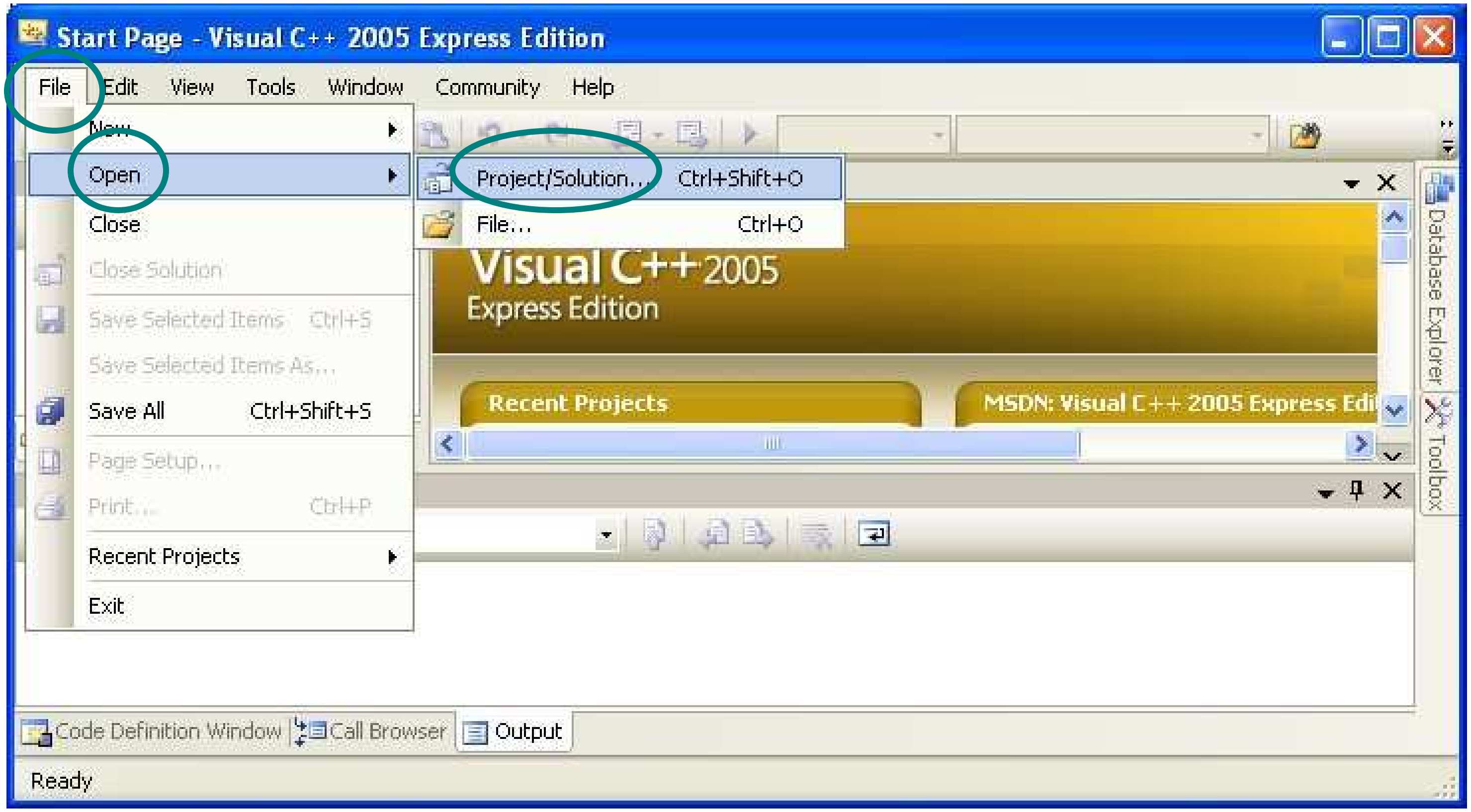
Build Clp

Windows

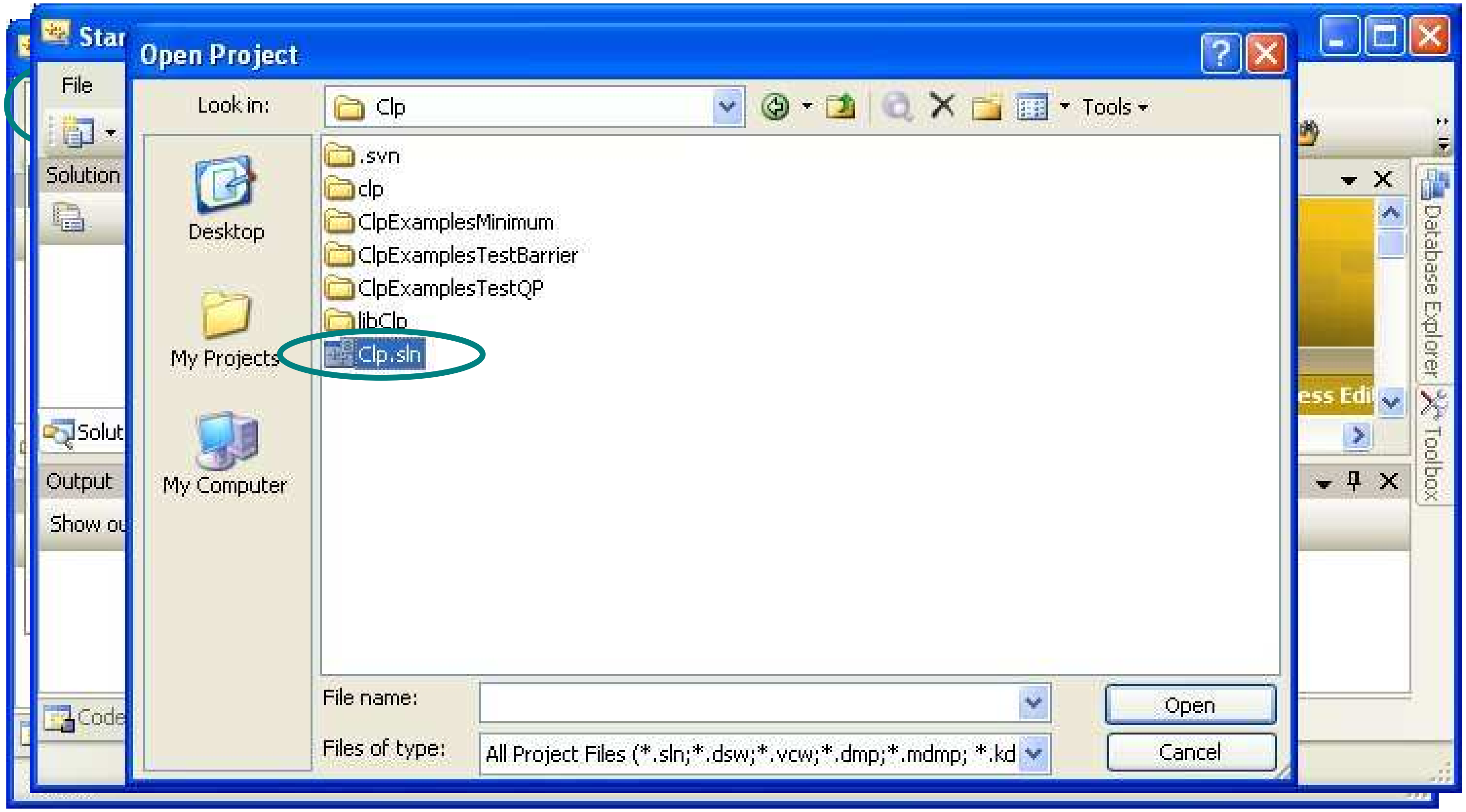
Microsoft Visual Studio 2005

- Visual C++ 2005 Express Edition
- "Free, lightweight, easy-to-use, and easy-to-learn tools for the hobbyist, novice, and student developer."
- http://msdn.microsoft.com/vstudio/express
- http://msdn.microsoft.com/vstudio/express/visualc
- Must register to activate

Build Clp with Visual C++ 2005 Express Edition



Build Clp with Visual C++ 2005 Express Edition



Open Project

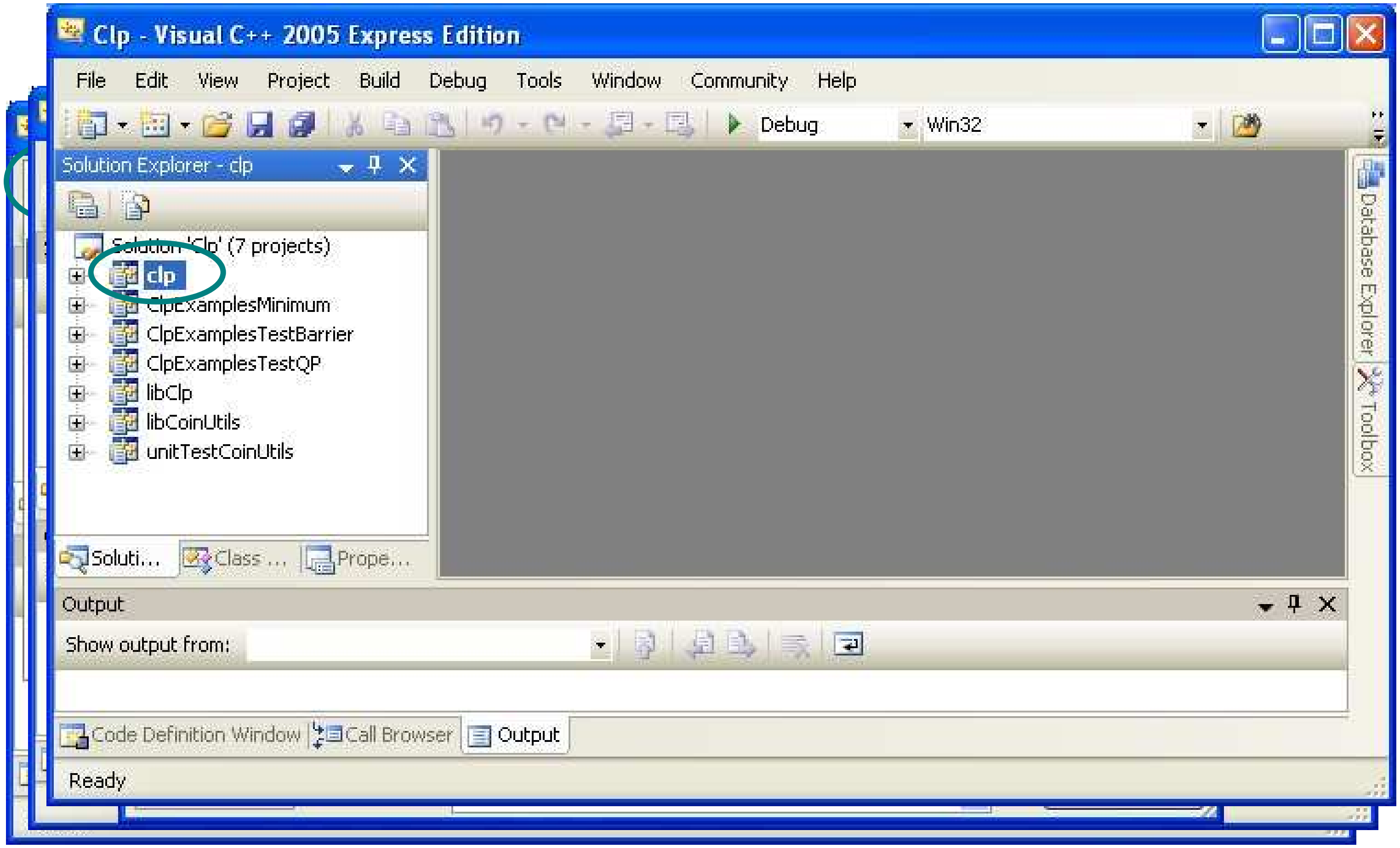
Look in: Clp

- .svn
- clp
- ClpExamplesMinimum
- ClpExamplesTestBarrier
- ClpExamplesTestQP
- libClp
- Clp.sln

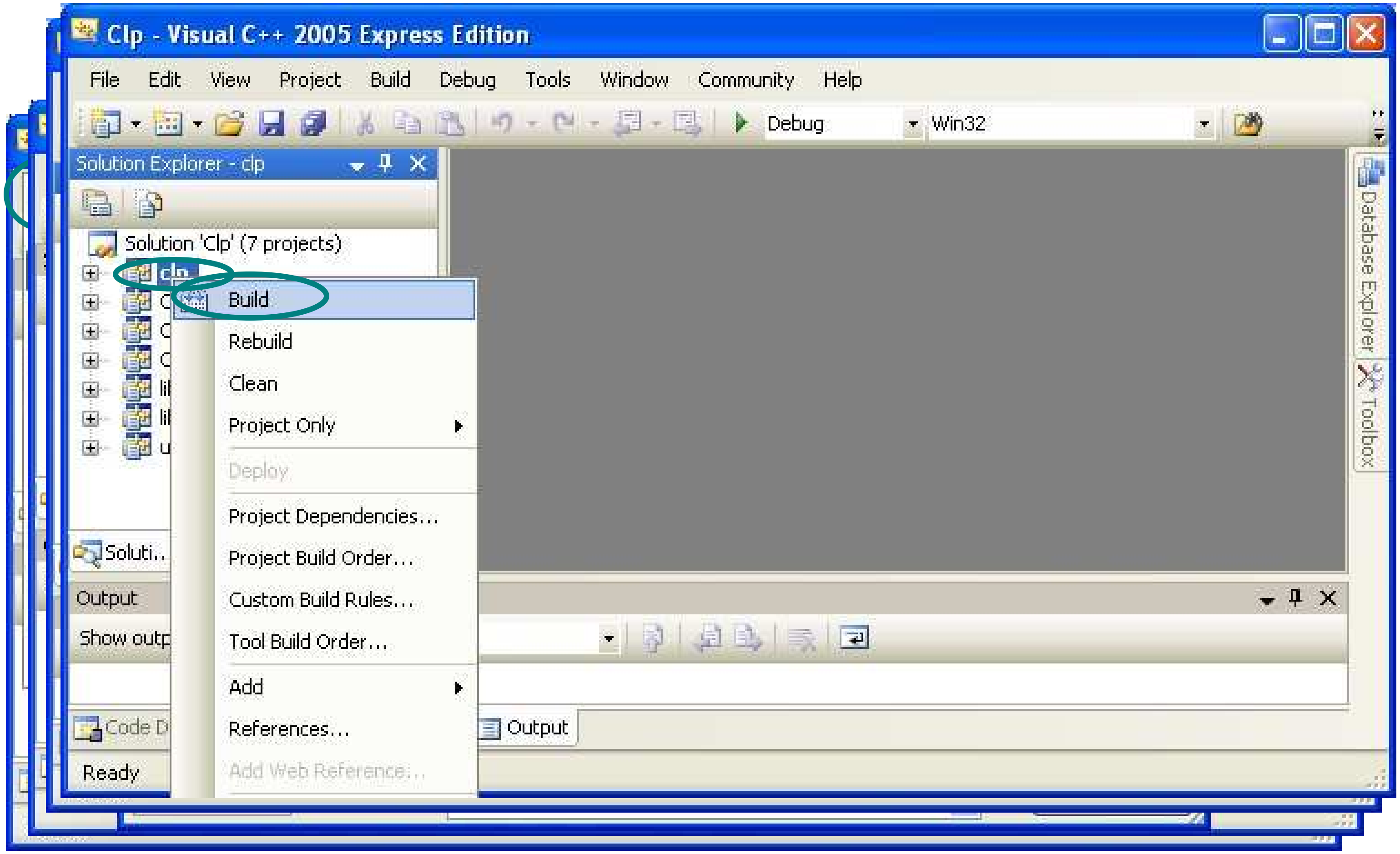
File name:

Files of type: All Project Files (*.sln;*.dsw;*.vcw;*.dmp;*.mdmp; *.kd

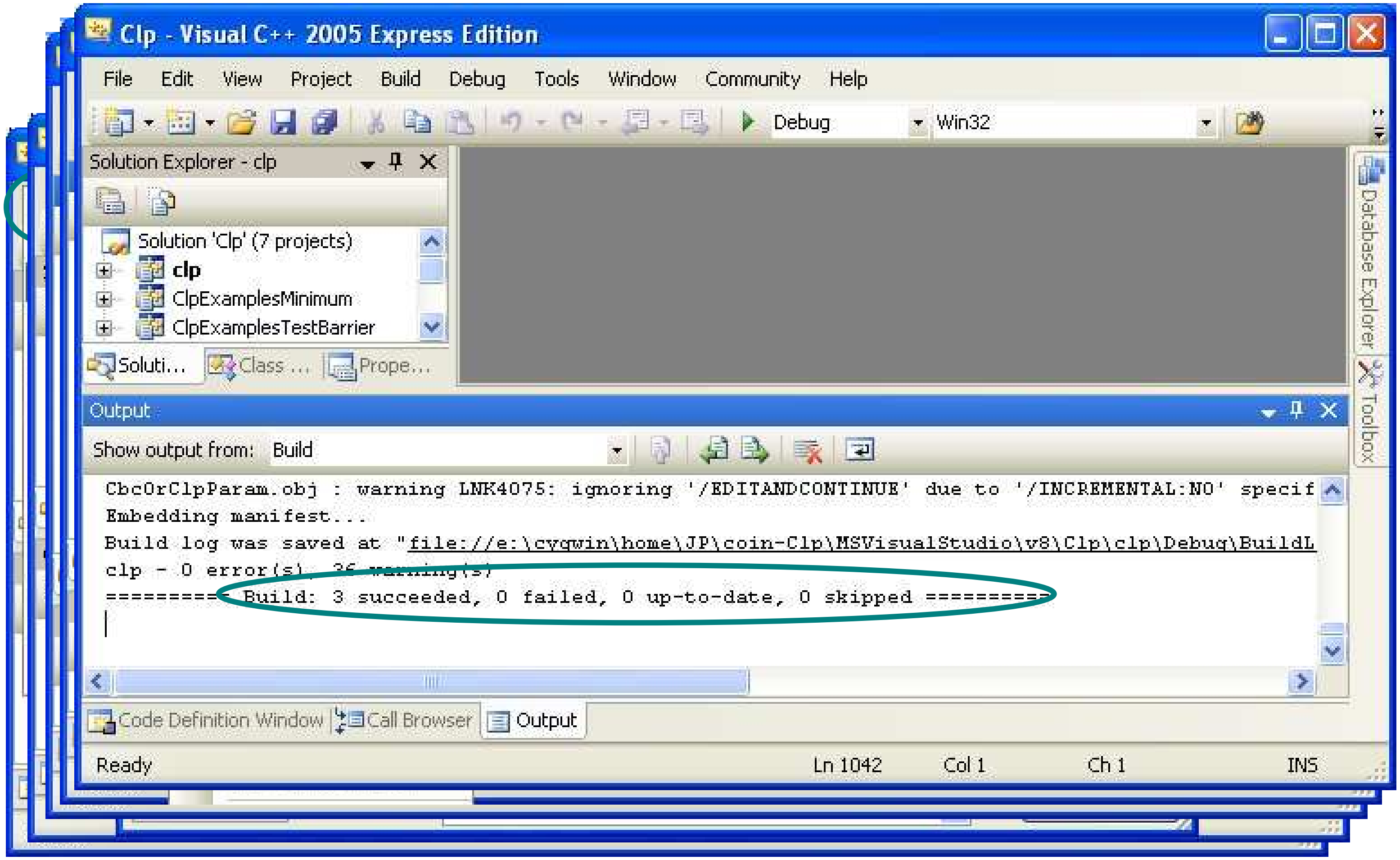
Build Clp with Visual C++ 2005 Express Edition



Build Clp with Visual C++ 2005 Express Edition

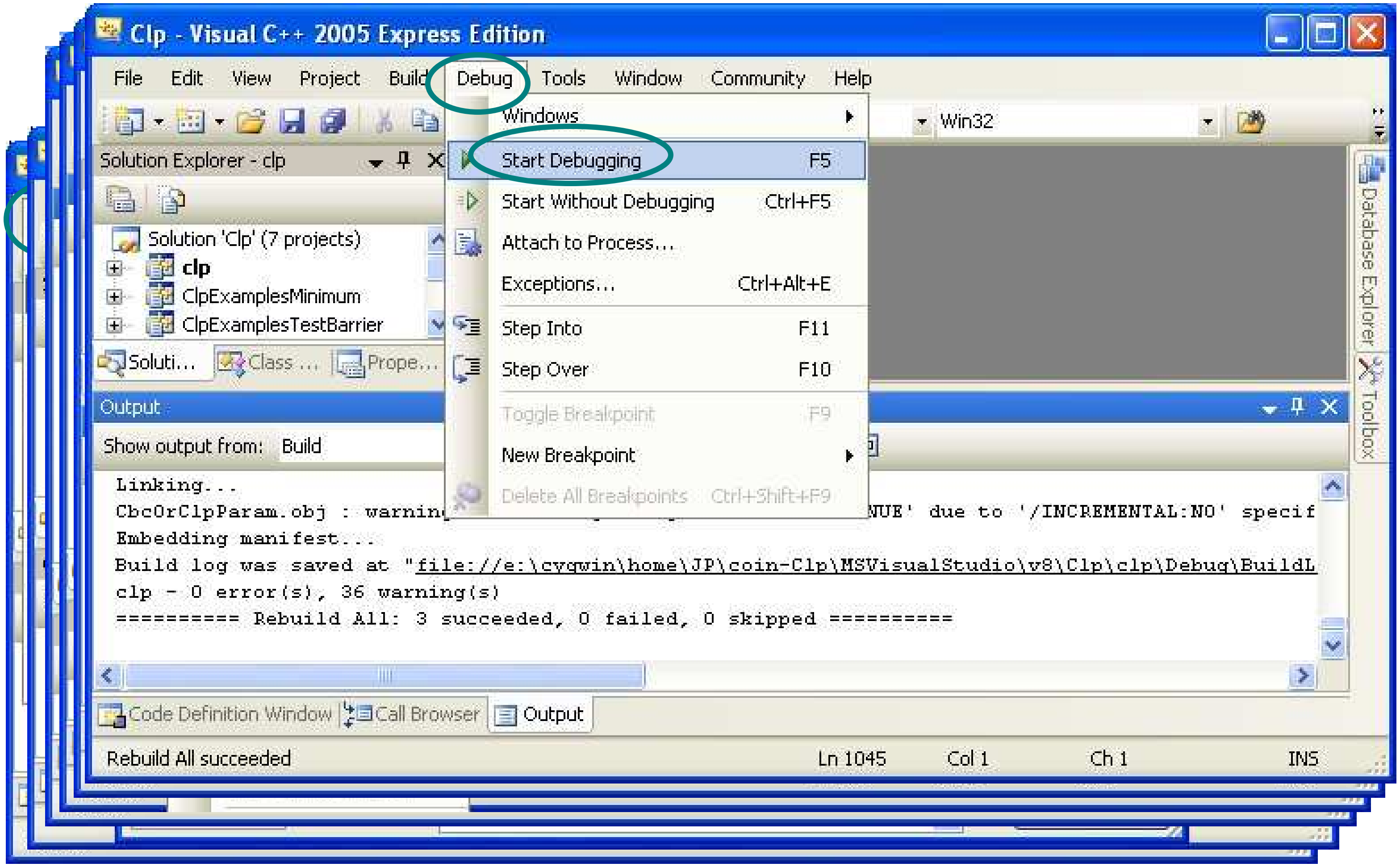


Build Clp with Visual C++ 2005 Express Edition



```
CbcOrClpParam.obj : warning LNK4075: ignoring '/EDITANDCONTINUE' due to '/INCREMENTAL:NO' specif
Embedding manifest...
Build log was saved at "file://e:\cygwin\home\JP\coin-Clp\MSVisualStudio\v8\Clp\clp\Debug\BuildL
clp - 0 error(s), 36 warning(s)
========== Build: 3 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========
```

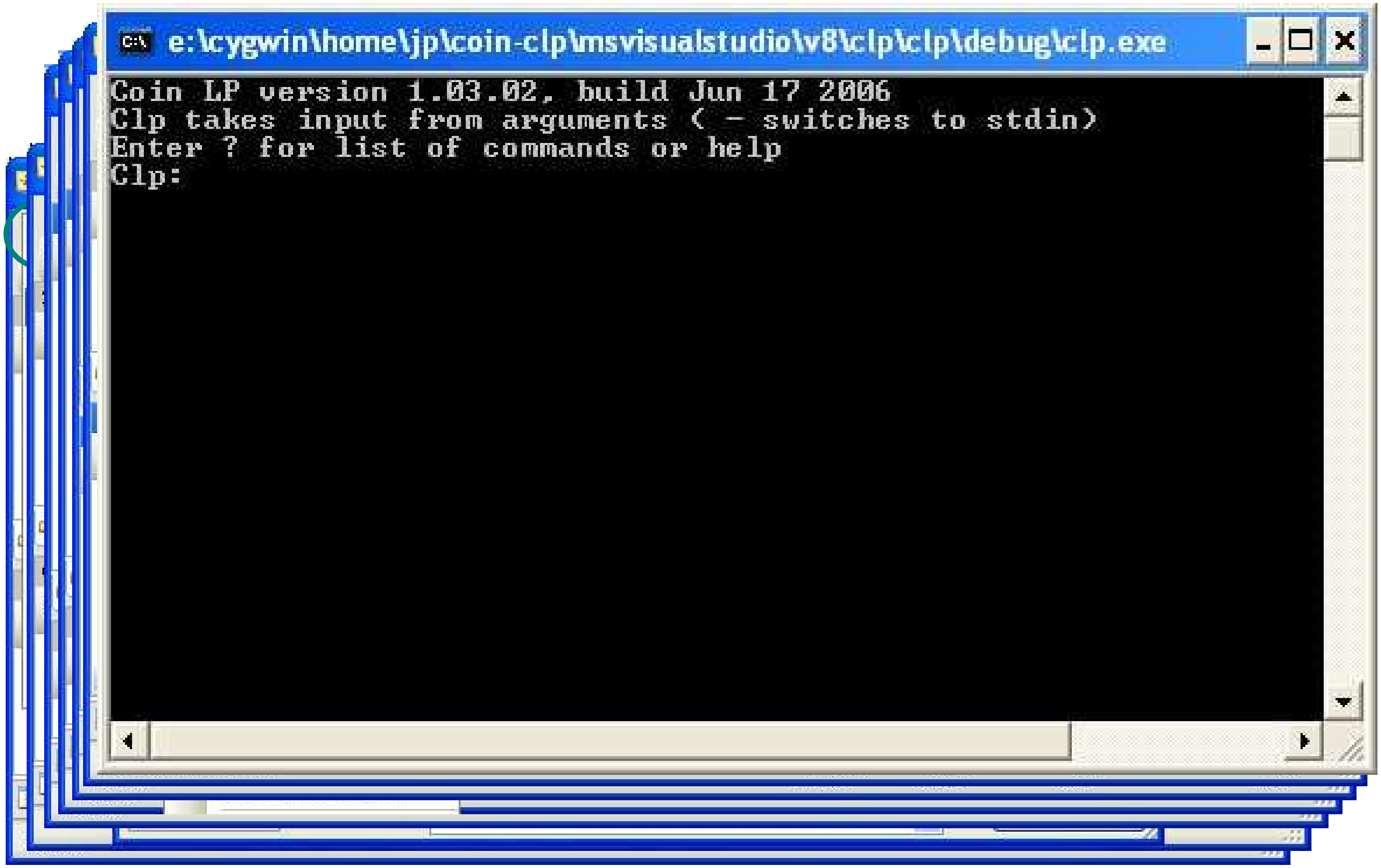
Build Clp with Visual C++ 2005 Express Edition



```
Linking...
CbcOrClpParam.obj : warnin                                   NUE' due to '/INCREMENTAL:NO' specif
Embedding manifest...
Build log was saved at "file://e:\cygwin\home\JP\coin-Clp\MSVisualStudio\v8\Clp\clp\Debug\BuildL
clp - 0 error(s), 36 warning(s)
========== Rebuild All: 3 succeeded, 0 failed, 0 skipped ==========
```

Rebuild All succeeded   Ln 1045   Col 1   Ch 1   INS

Build Clp with Visual C++ 2005 Express Edition



e:\cygwin\home\jp\coin-clp\msvisualstudio\v8\clp\clp\debug\clp.exe

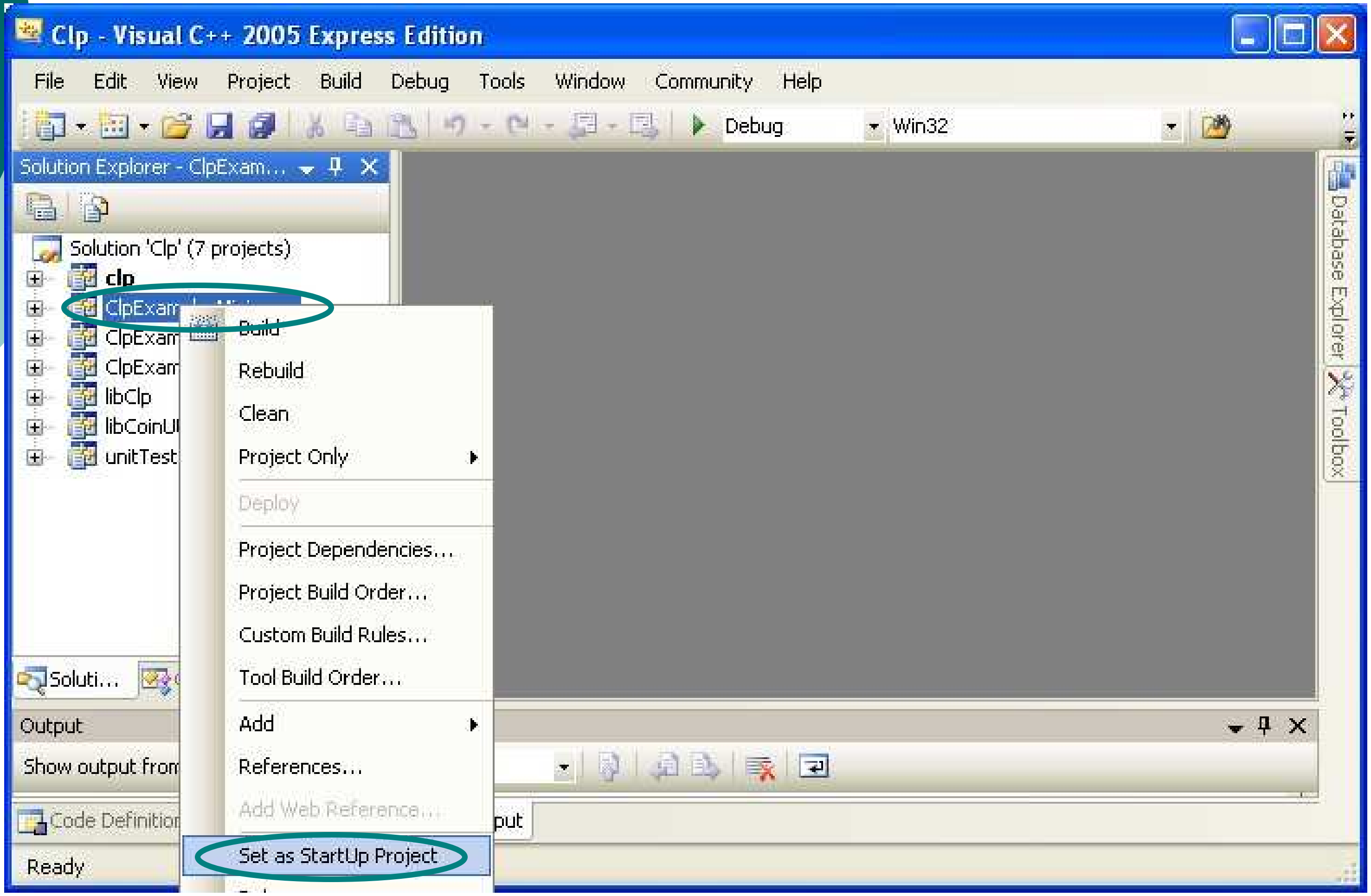
```
Coin LP version 1.03.02, build Jun 17 2006
Clp takes input from arguments ( - switches to stdin)
Enter ? for list of commands or help
Clp:
```

Building Examples

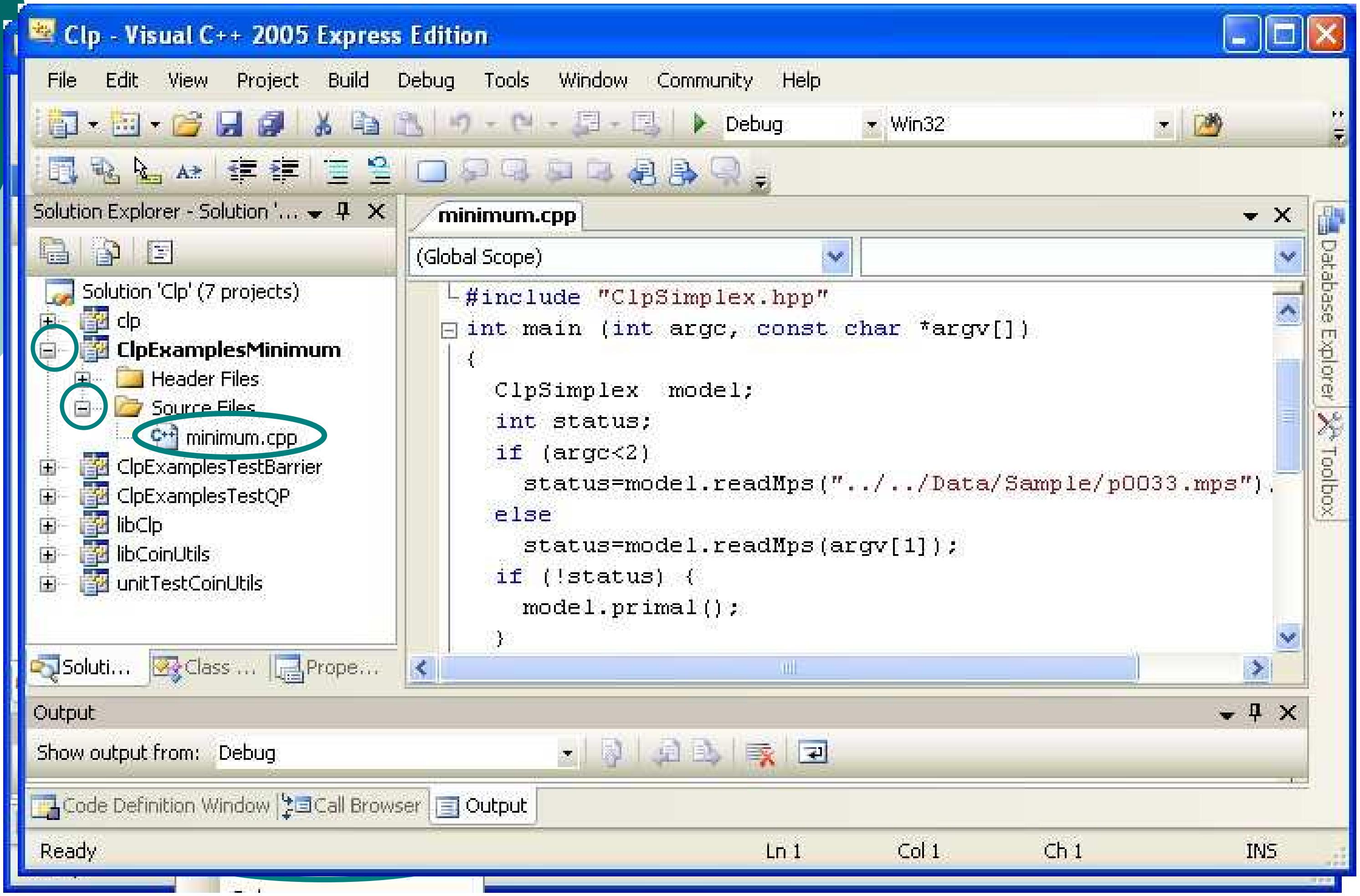
coin-Clp/Clp/examples/minimum.cpp

Windows

Build and run coin-Clp/Clp/examples/minimum.cpp



Build and run coin-Clp/Clp/examples/minimum.cpp

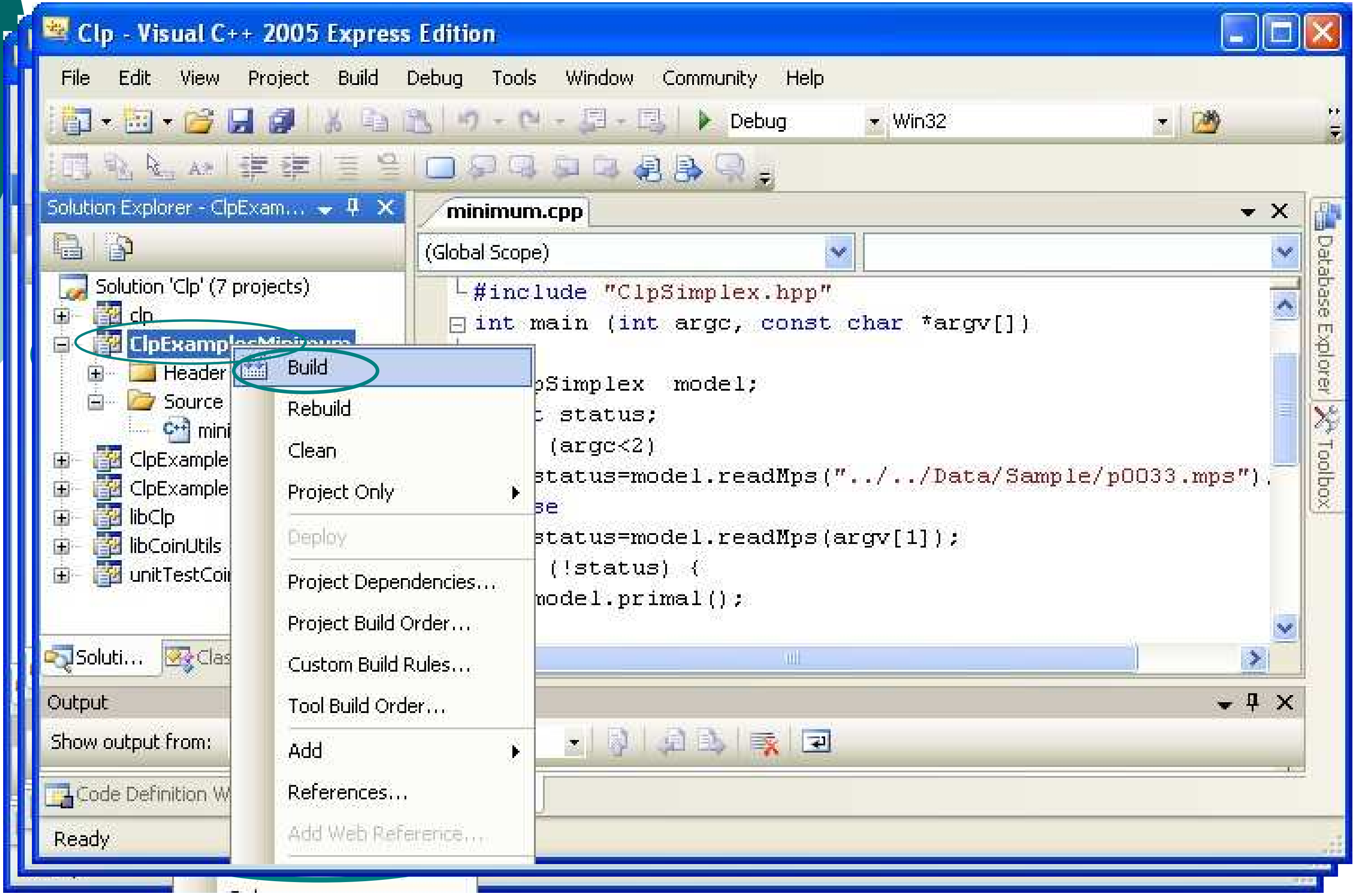


Debug   Win32

```
#include "ClpSimplex.hpp"
int main (int argc, const char *argv[])
{
  ClpSimplex  model;
  int status;
  if (argc<2)
    status=model.readMps("../../Data/Sample/p0033.mps");
  else
    status=model.readMps(argv[1]);
  if (!status) {
    model.primal();
  }
```

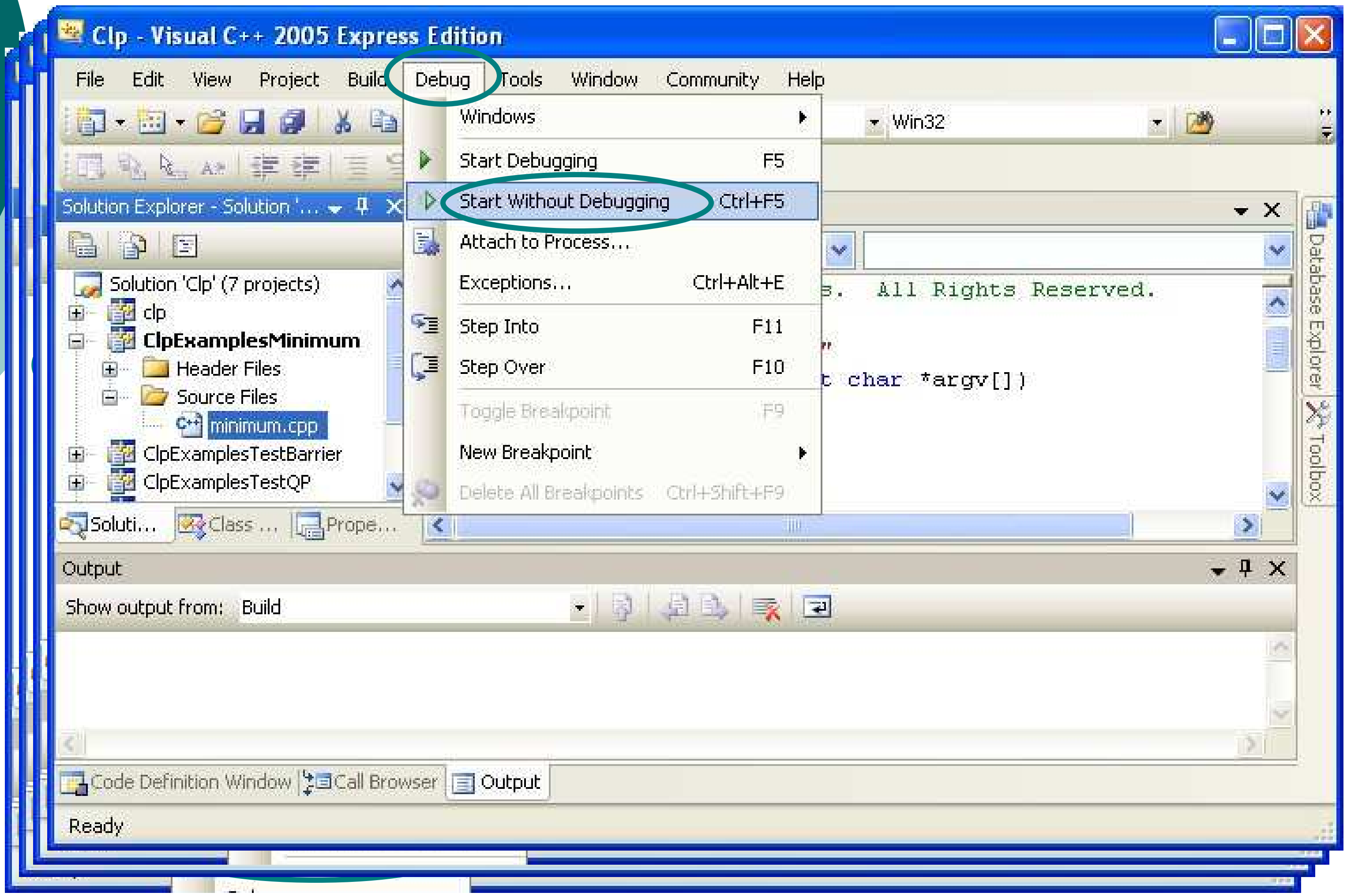
Show output from: Debug

Build and run coin-Clp/Clp/examples/minimum.cpp

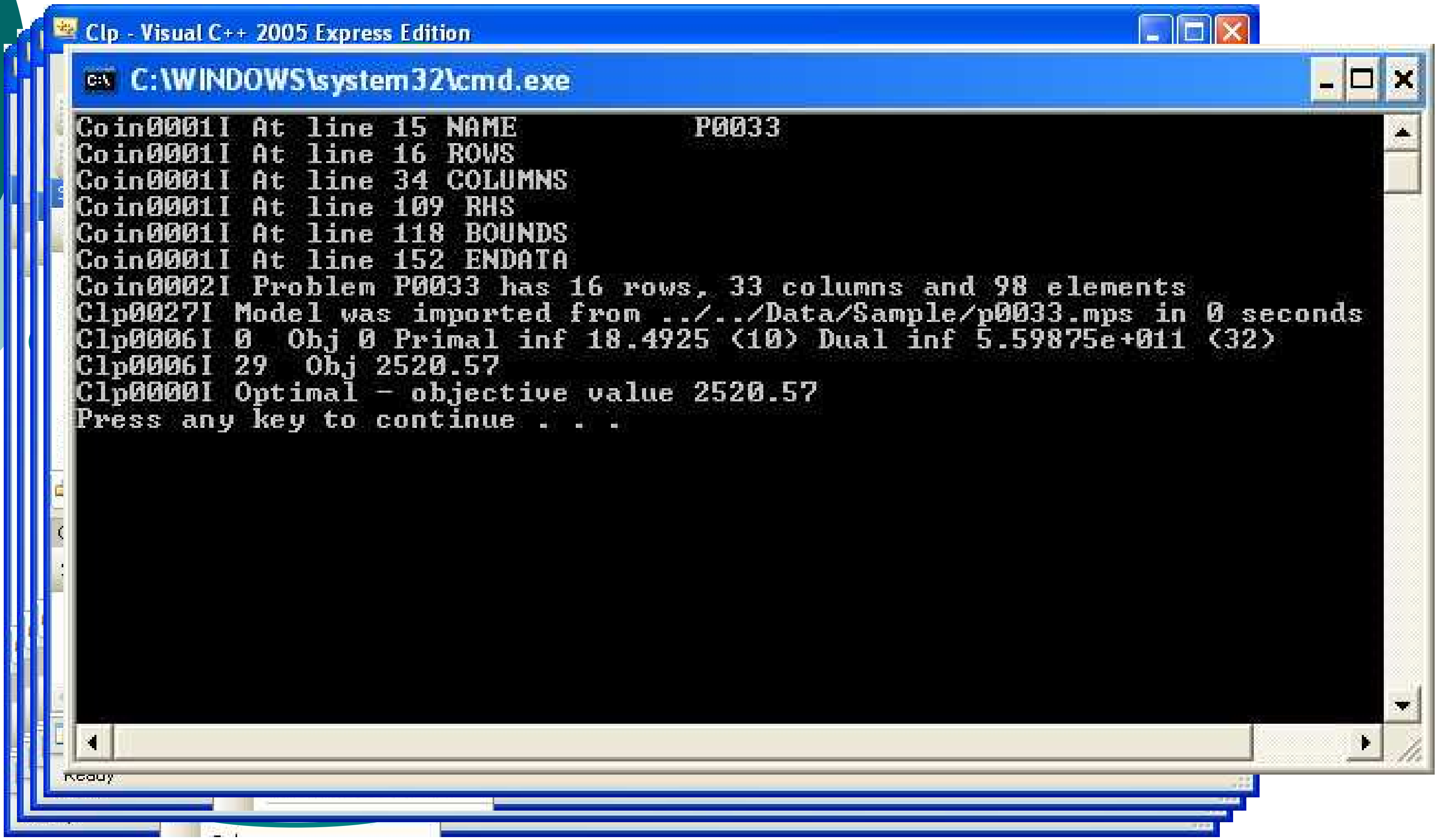


```
#include "ClpSimplex.hpp"
int main (int argc, const char *argv[])

pSimplex  model;
t status;
 (argc<2)
status=model.readMps("../../Data/Sample/p0033.mps").
se
status=model.readMps(argv[1]);
 (!status) {
model.primal();
```

Build and run coin-Clp/Clp/examples/minimum.cpp



Build and run coin-Clp/Clp/examples/minimum.cpp


Clp - Visual C++ 2005 Express Edition
C:\WINDOWS\system32\cmd.exe

```
Coin0001I At line 15 NAME          P0033
Coin0001I At line 16 ROWS
Coin0001I At line 34 COLUMNS
Coin0001I At line 109 RHS
Coin0001I At line 118 BOUNDS
Coin0001I At line 152 ENDATA
Coin0002I Problem P0033 has 16 rows, 33 columns and 98 elements
Clp0027I Model was imported from ../../Data/Sample/p0033.mps in 0 seconds
Clp0006I 0  Obj 0 Primal inf 18.4925 (10) Dual inf 5.59875e+011 (32)
Clp0006I 29  Obj 2520.57
Clp0000I Optimal - objective value 2520.57
Press any key to continue . . .
```

Windows: Alternatives to using Visual Studio IDE

- On Windows the Unix build process can be used with Cygwin or MinGW.
  - www.cygwin.com
  - www.mingw.org
- The gcc or Microsoft cl compiler can be used.

Summary: www.coin-or.org

- www.coin-or.org
  - List of Projects
    - Project Trac Pages
      - Download
        - Source: Subversion or tarballs
        - Binaries
      - Build code
        - Unix
        - Microsoft Visual Studio
      - Documentation
      - Tickets: Bugs/Enhancements/Features
      - Wiki pages user community can update
  - Mailing lists

Remaining Time:

- www.coin-or.org
- From list of projects, select project to build
- Go to projects trac page
  - Download source
  - Build source