Source Code Not Required:
Using the COIN-OR Binaries

COIN-OR TLC Binary Committee:

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Outline

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Motivation

I just want to solve a <expletive deleted> optimization problem and I don't give a <expletive deleted> about source code!!!!!!!

Why make me suffer?

What do I do?

Note: Other COIN-OR members present – please feel free to disagree.

COIN-OR User Objectives

1. Just solve a linear, integer, or nonlinear program.

2. Link to a library, e.g. write a application that contains a solver.

3. Research/Teaching – take existing source code and modify to test ideas. Don't reinvent the wheel.

4. Project developer – work on creating, maintaining, fixing a project.

COIN-OR DOWNLOAD SYSTEM

Three ways to download COIN-OR software.

1. Get the project binaries (executables and libraries) as a zip or tgz file and unzip.

2. Get the source code archive as a zip.

3. Use svn – more on this later.

COIN-OR DOWNLOAD SYSTEM

User Objectives versus Download Method

	Binary	Source Archive	svn
Solve a problem	X		
Link to a library	X		
Modify code		X	?
Project management			X

Disclaimer: much of this talk reflects the opinion of the presenter and is not any kind of official COIN-OR policy.

COIN-OR DOWNLOAD SYSTEM

The COIN-OR Version Control System

StableVersion: created when project manager wishes to declare a new version of the project.

1. A stable version should pass the unit test
2. A stable version is roughly fixed, but may evolve
3. Bug fixes may be applied to stable versions
4. A stable version is identified by a two-digit numbering system, e.g. Clp has stable version 1.3

Think of the stable version as the most reliable up-to-date version of the project complete with bug fixes. Stable versions probably used mostly by project managers who build their project on other COIN-OR projects.

COIN-OR DOWNLOAD SYSTEM

Point Release: A "fixed stable version."

1. The point release is the intended version of the project for source archive, binaries (executable and libraries), and svn.
2. A point release is **fixed.** Not even bug fixes are applied to a point release.
3. A point release has a three digit number, e.g. 3.1.2.
4. If a bug is patched, it is fixed in stable, and a new release is created, eg. 3.1.3.

Note – by using releases the project manager can track the exact version of the code.

COIN-OR DOWNLOAD SYSTEM

Download Method versus Version Type
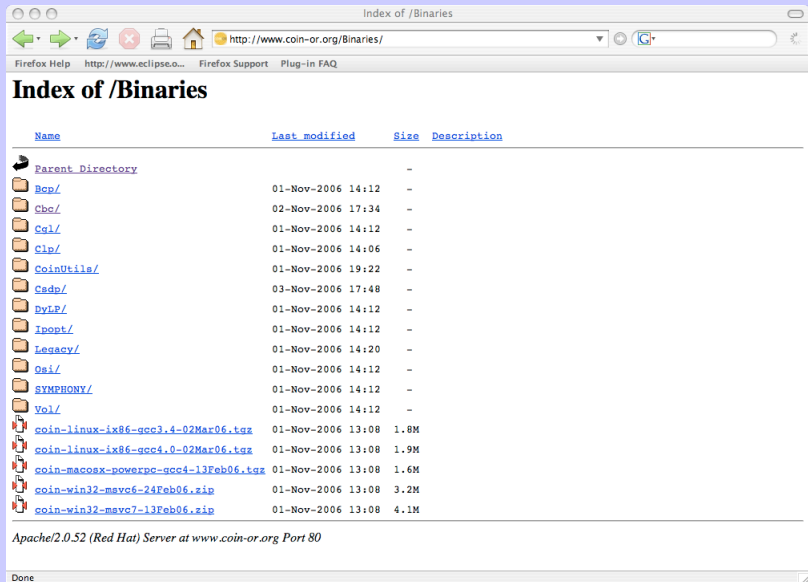
	Stable	Release
Binary		X
Source Archive		X
svn	X	?

A project manager uses svn to download the trunk version of the code.

COIN-OR DOWNLOAD SYSTEM

`https://www.coin-or.org/download/binary/`

Index of /Binaries

http://www.coin-or.org/Binaries/

Firefox Help   http://www.eclipse.o...   Firefox Support   Plug-in FAQ

Index of /Binaries

Name	Last modified	Size	Description
Parent Directory		–	
Bcp/	01-Nov-2006 14:12	–	
Cbc/	02-Nov-2006 17:34	–	
Cgl/	01-Nov-2006 14:12	–	
Clp/	01-Nov-2006 14:06	–	
CoinUtils/	01-Nov-2006 19:22	–	
Csdp/	03-Nov-2006 17:48	–	
DyLP/	01-Nov-2006 14:12	–	
Ipopt/	01-Nov-2006 14:12	–	
Legacy/	01-Nov-2006 14:20	–	
Osi/	01-Nov-2006 14:12	–	
SYMPHONY/	01-Nov-2006 14:12	–	
Vol/	01-Nov-2006 14:12	–	
coin-linux-ix86-gcc3.4-02Mar06.tgz	01-Nov-2006 13:08	1.8M	
coin-linux-ix86-gcc4.0-02Mar06.tgz	01-Nov-2006 13:08	1.9M	
coin-macosx-powerpc-gcc4-13Feb06.tgz	01-Nov-2006 13:08	1.6M	
coin-win32-msvc6-24Feb06.zip	01-Nov-2006 13:08	3.2M	
coin-win32-msvc7-13Feb06.zip	01-Nov-2006 13:08	4.1M	

Apache/2.0.52 (Red Hat) Server at www.coin-or.org Port 80

Done

COIN-OR DOWNLOAD SYSTEM - BINARIES

Convention for naming:

- ▶ Project Name
- ▶ Three digit Release
- ▶ Platform – usually operating system and compiler

```
Clp-1.3.3-linux-ix86-gcc4.0.tgz  (A linux platform binary)
Cbc-1.0.0-win32-msvc7.zip (W Windows platform)
```
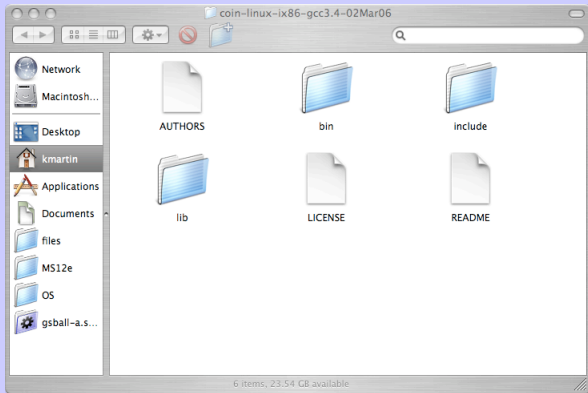
Platforms: Windows, Linux, and Mac OS X (Power PC).

COIN-OR DOWNLOAD SYSTEM

`www.coin-or.org/Binaries`

COIN-OR DOWNLOAD SYSTEM - BINARIES

The binary download contains the following directories.

bin Contains the executable files, e.g. Clp.exe

lib The libraries used by the executable files. Right now Linux and Mac are dynamic libs and static libs for Windows.

include Not needed if you are just using the executables, needed if you are going to write code to use the libraries.

COIN-OR DOWNLOAD SYSTEM

Using the executables: Just solve a linear program!

clp path/file.mps

More complicated executable

OSSolverService -config testremote.config

The executable reads the configure file testremote.config and
executes based on the parameters

COIN-OR DOWNLOAD SYSTEM

The file **testremote.config:**

```
-osil ../data/parincLinear.osil
-solver cbc
-browser  /Applications/Firefox.app/Contents/MacOS/firefox
-osol ../data/demo.osol
-serviceLocation http://***/cbc/CBCSolverService.jws
-serviceMethod solve
```

The file **testremote.config:**

```
-osil ../data/parincLinear.osil
-solver lindo
-browser  /Applications/Firefox.app/Contents/MacOS/firefox
-osol ../data/demo.osol
-serviceMethod solve
-osrl /Users/kmartin/temp/test2.osrl
```

COIN-OR DOWNLOAD SYSTEM

Using the pre-compiled libraries: Writing a main program that links to the libraries in the binary distribution.

Step 1: Include any necessary header files in the include directory.

```
#include "OsiClpSolverInterface.hpp"
```

Step 2: Define a pointer to a base class.

```
OsiSolverInterface *si;
si = new OsiClpSolverInterface;
```

Step 3: Read in the data.

```
si->readMps( argV[ 1]);
```

COIN-OR DOWNLOAD SYSTEM

Using the pre-compiled libraries: Writing a main program that links to the libraries in the binary distribution.

Step 4: Solve the problem

```
si->initialSolve();
```

Step 5: Get the solution.

```
double *psolution;
psolution = si->getColSolution();
```
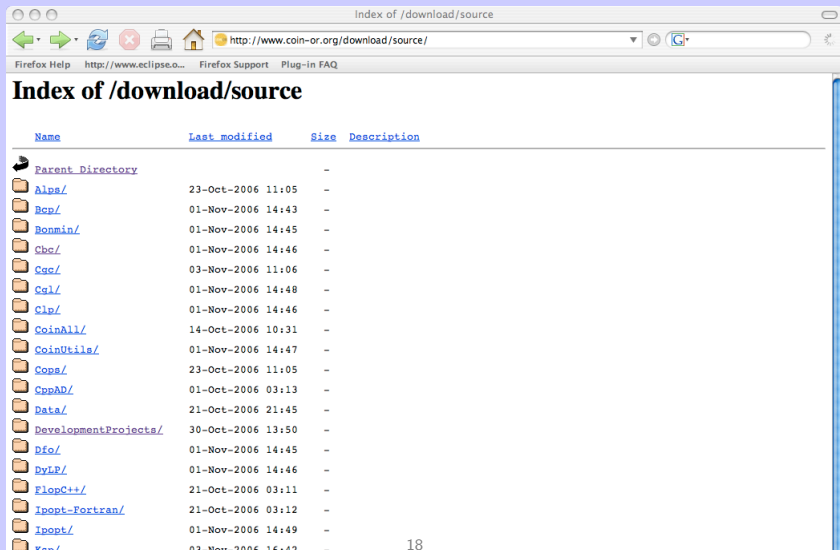
Step 6: Print the answer

```
std::cout << "Variable " << i << " = " << psolution[i] ;
```

COIN-OR DOWNLOAD SYSTEM

Source download.

`www.coin-or.org/download/source`

COIN-OR DOWNLOAD SYSTEM

Source download.
`www.coin-or.org/download/source`

COIN-OR DOWNLOAD SYSTEM

Use a version control system. COIN-OR uses **svn.** Download the code:

```
svn co https://projects.coin-or.org/svn/Clp/stable/1.3 coin-Clp
```

Run the configure script;

```
./configure
make
make test
make install
```

This is mainly for project managers.

Windows Users

Some options for Windows Users who wish to compile code:

- Visual Studio – project files for VS6, VS7, and VS8 for Clp and Cbc. See

  https://projects.coin-or.org/MSVisualStudio

  If you wish to link to a DLL see

  `https://projects.coin-or.org/CoinMP`

- Cygwin - for the truly adventuresome.

- MinGW – very easy download, easy to use

Linux Users

Leo's rpm work

Getting Help

Binary Downloads:
https://www.coin-or.org/download/binary/
Source Code Downloads:
https://www.coin-or.org/download/binary/
Subversion Help:
https://www.coin-or.org/faqs.html#ObtainSrcCode
BuildTools:
https://projects.coin-or.org/BuildTools
Discussion Lists:
http://www.coin-or.org/mail.html