

Getting started with eclipse

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<http://www.eclipse.org/>

Why use eclipse?

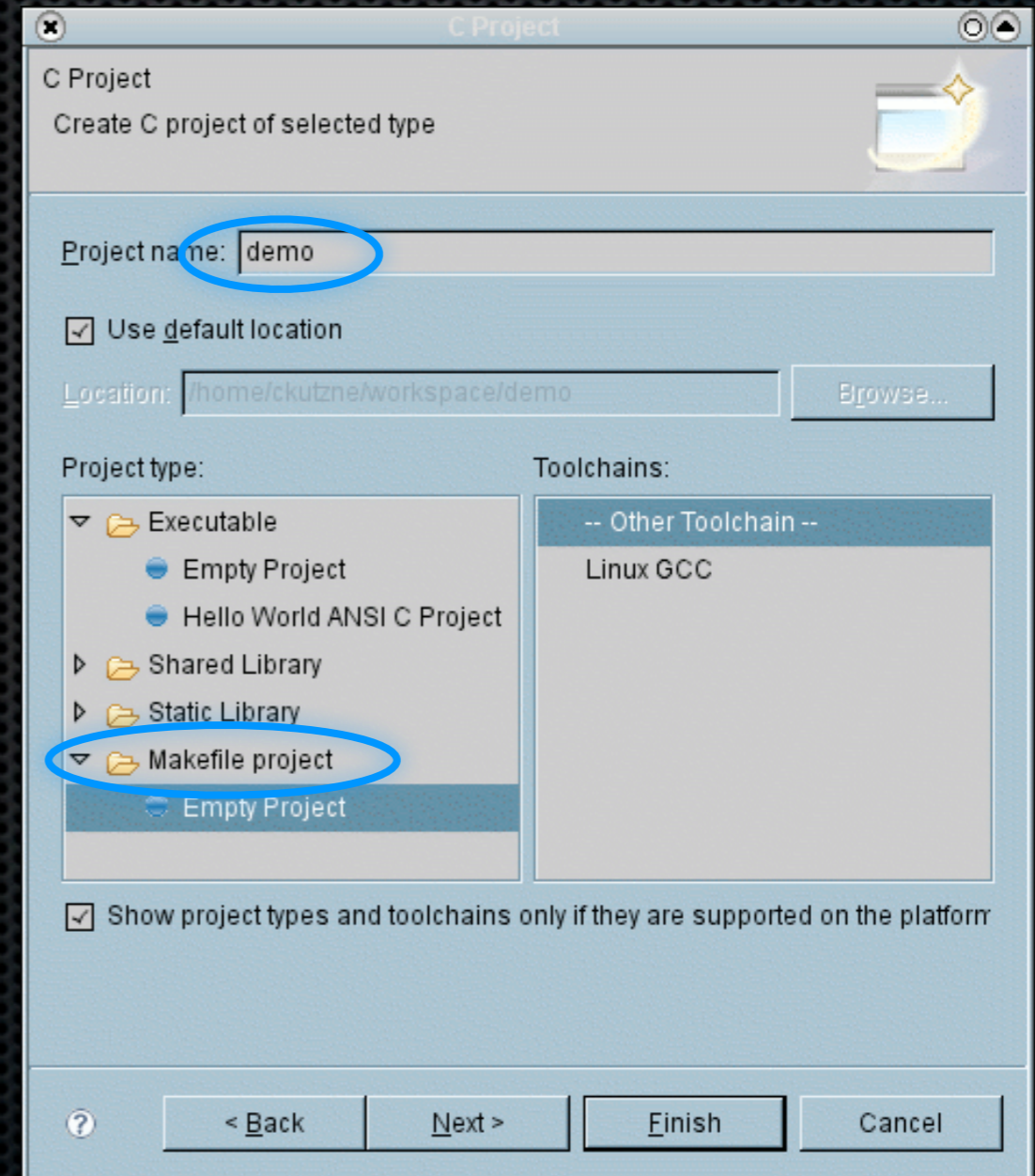
- ✦ IDE: edit, navigate, compile, debug, ...
- ✦ multi-language: Java, C/C++, Python, Perl, Fortran, ...
- ✦ multi-platform: Linux, Windows, Mac OS X, Solaris, ...
- ✦ actively developed by IBM, Intel, Borland, Oracle, ...
- ✦ tons of plugins available
- ✦ open source

How to create a project

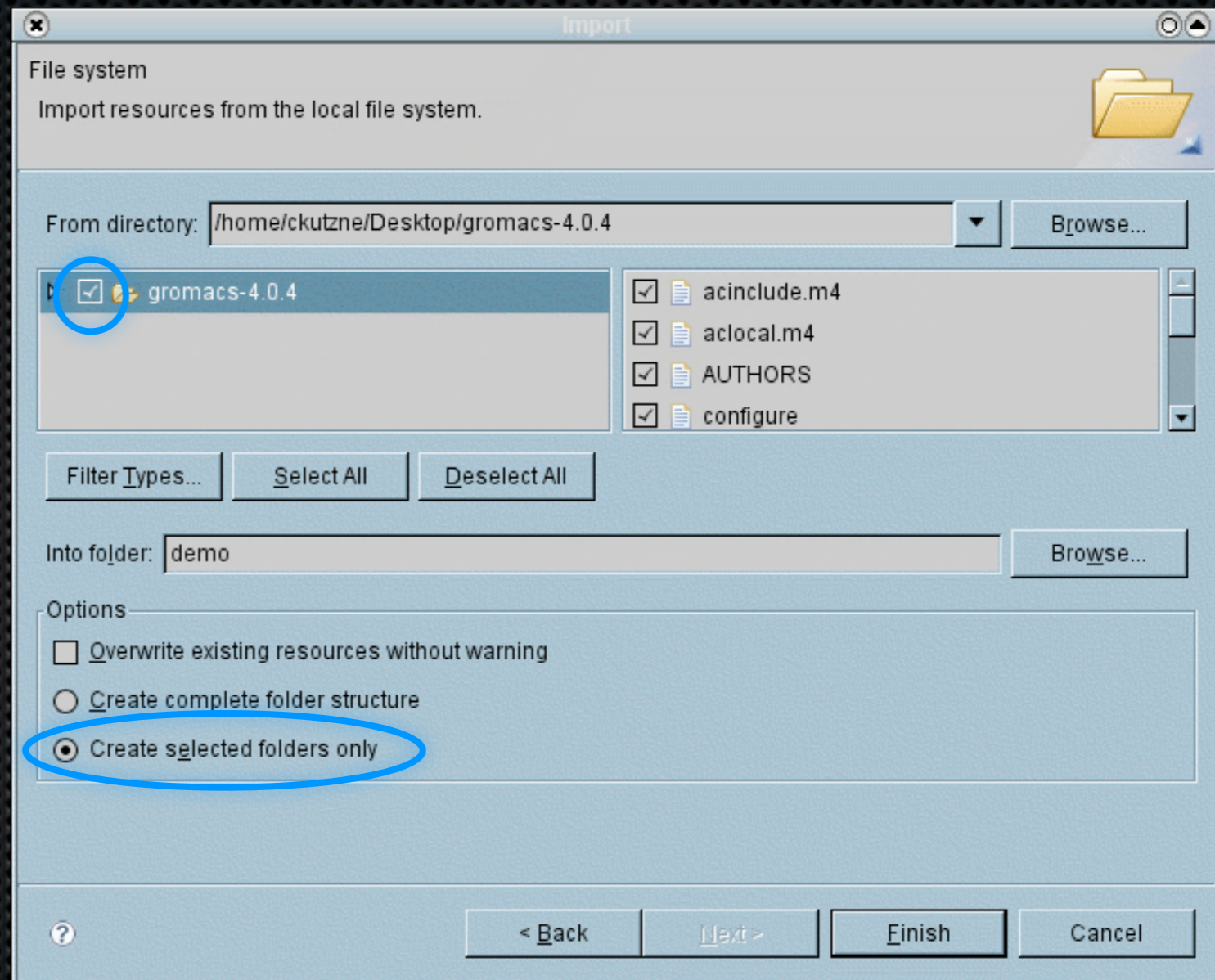
- (1) copy from a folder, e.g. /source/gromacs/*
- (2) check out from a version control system,
 1. CVS
 2. SVN
- (3) create from scratch

(1) Project from folder

- ✦ e.g. unzip
gromacs-4.0.4.tar.gz to
/home/you/gromacs-4.0.4
- ✦ /usr/local/bin/eclipse
- ✦ eclipse stores projects in
/home/you/workspace
- ✦ file > new > project > C
will create an empty project



- ✦ right-click on the demo project and select Import
- ✦ import > file system > from directory > browse

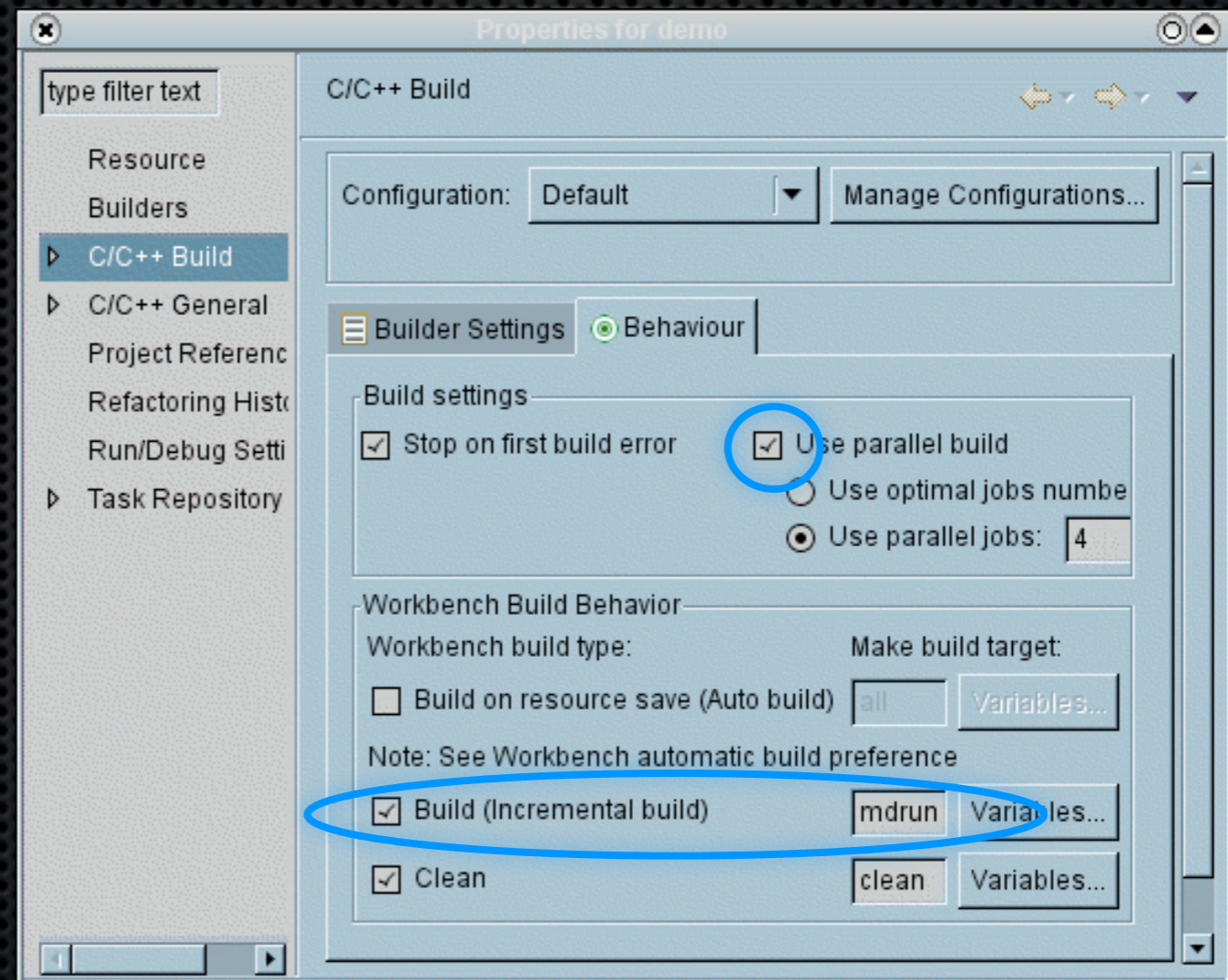


- ✦ construct the gromacs makefiles, therefore in `/home/you/workspace/demo` do

```
export PATH=/usr/local/lam/714-gcc412-without-fortran/bin:$PATH
export LDFLAGS=-L/usr/local/fftw/312-gcc412/lib
export CPPFLAGS=-I/usr/local/fftw/312-gcc412/include
export CFLAGS="-g -O0"
./configure --enable-mpi
```

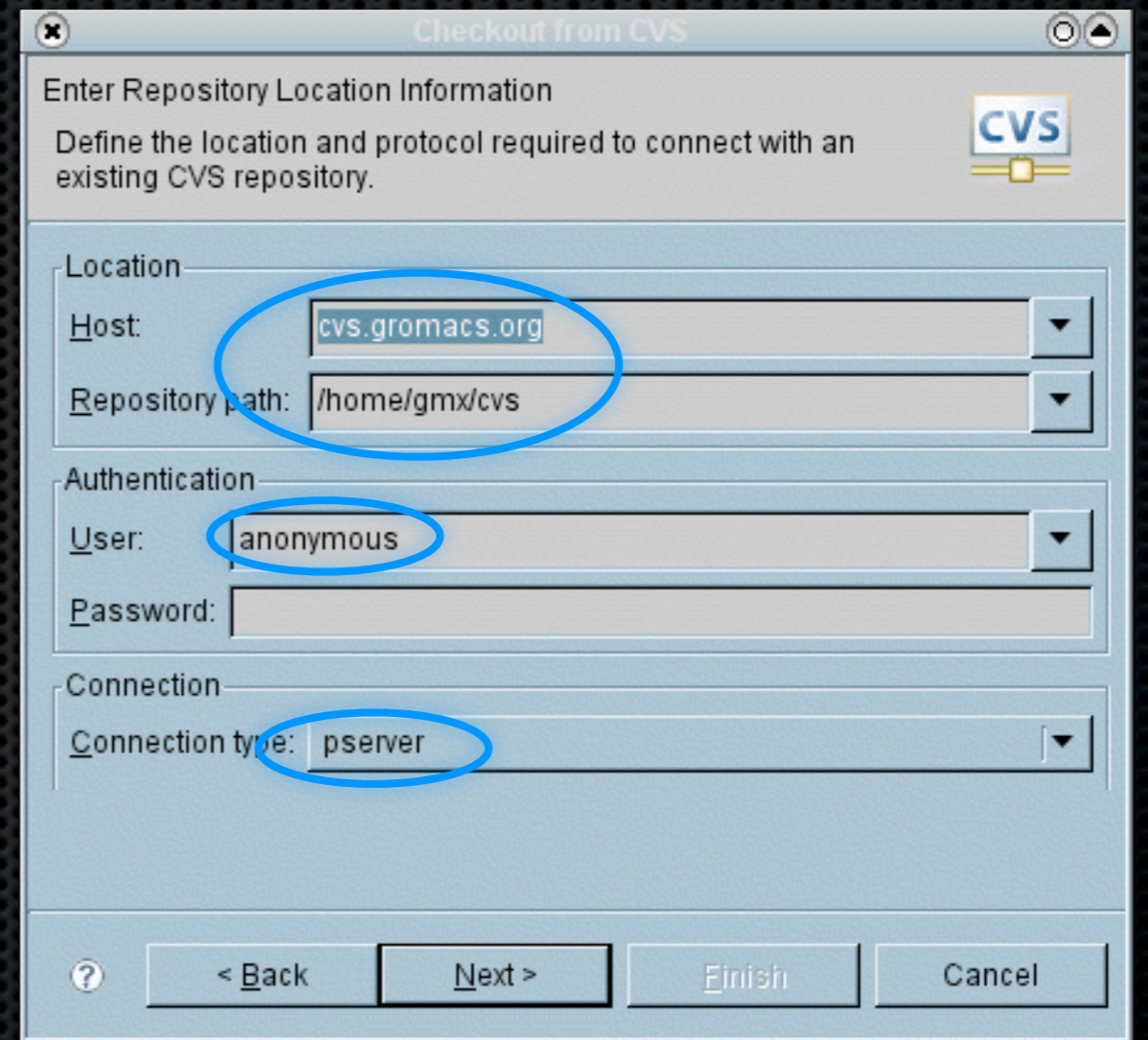
- ✦ in project > properties > C/C++ build choose compile settings

- ✦ compile with CTRL-B

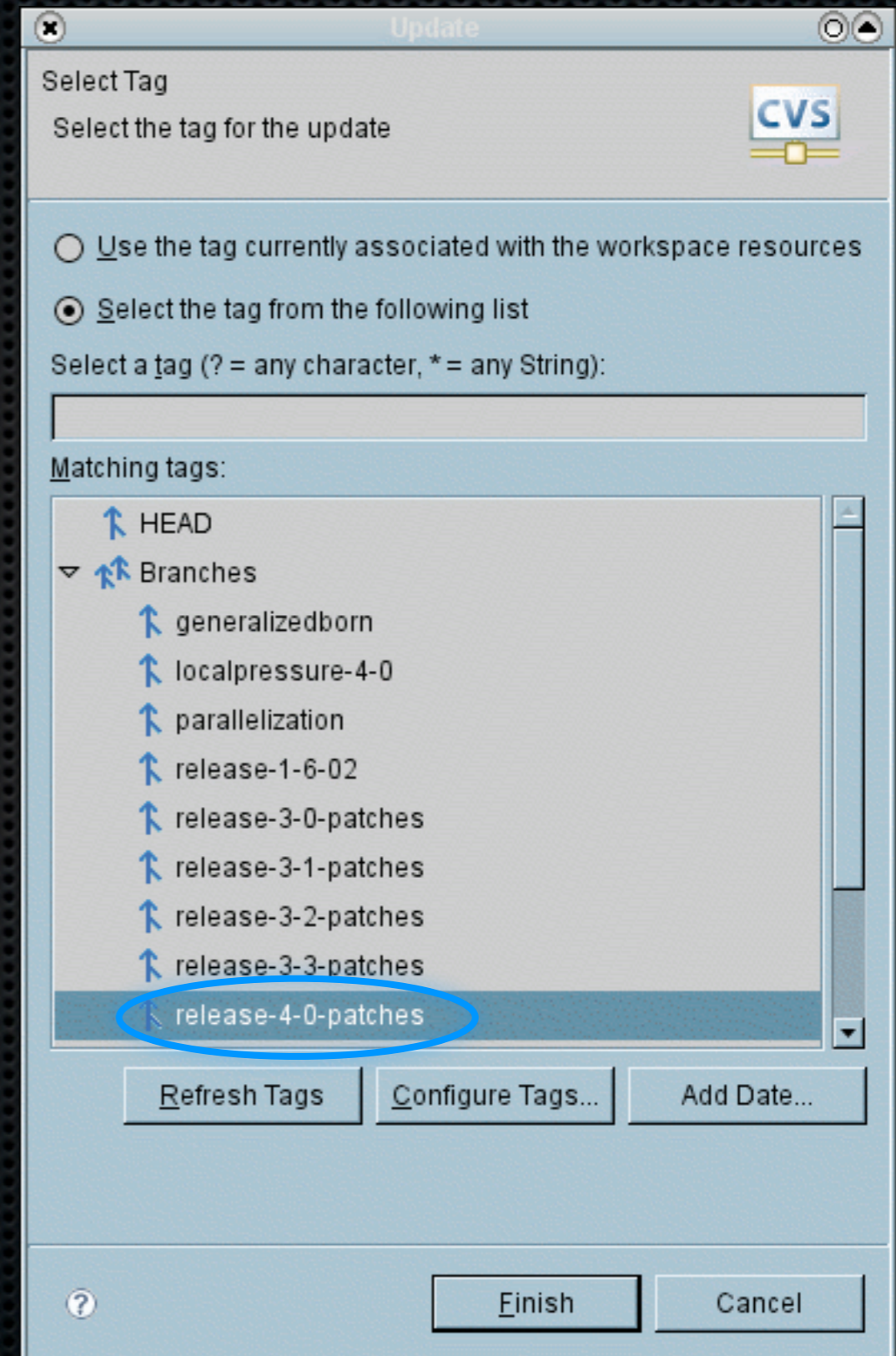


(2) Project from CVS

- ✦ file > new > project > CVS
- ✦ create repository location for later usage
- ✦ select module gmx, this will check out the HEAD branch
- ✦ File > New > Other > C > Convert to a C/C++ Make Project
- ✦ Navigation available after compile



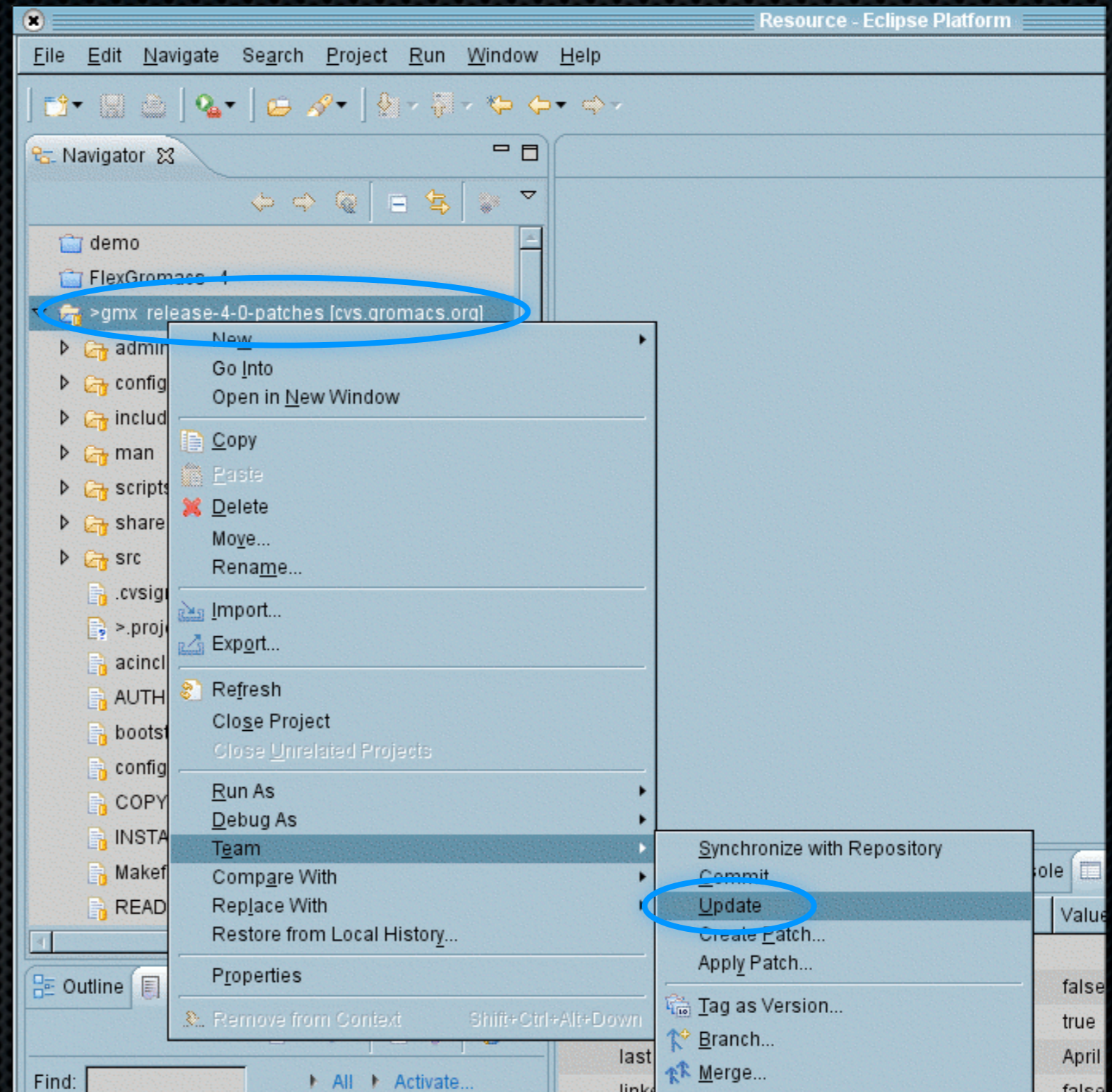
- you can switch anytime to another branch:
right-click on the project > Team > Switch to another Branch



- check your changes with
right-click project > team > synchronize with repository

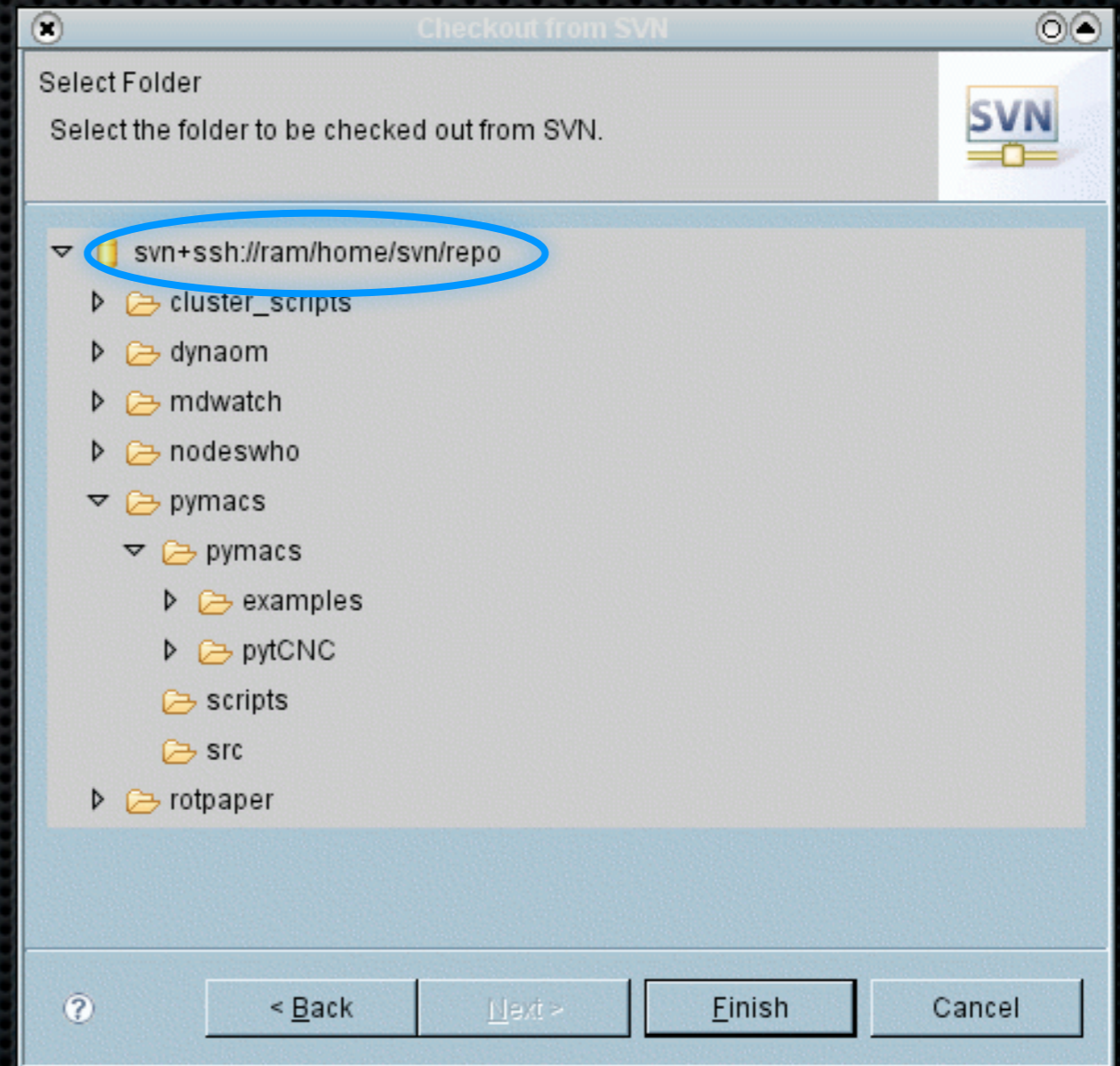
```
Local File (1.22.2.2) Remote File (1.22.2.2)
985 { _filenm fnm[] = {
986 { efENX, "-f", NULL, ffREAD },
987 { efENX, "-f2", NULL, ffOPTRD },
988 { efTPX, "-s", NULL, ffOPTRD },
989 { efXVG, "-o", "energy", ffWRITE },
990 { efXVG, "-viol", "violaver", ffOPTWR },
991 { efXVG, "-pairs", "pairs", ffOPTWR },
992 { efXVG, "-ora", "change", ffOPTWR },
993 { efXVG, "-ort", "orientt", ffOPTWR },
994 { efXVG, "-oda", "orideva", ffOPTWR },
995 { efXVG, "-odr", "oridevr", ffOPTWR },
996 { efXVG, "-odt", "oridevt", ffOPTWR },
997 { efXVG, "-oten", "oriten", ffOPTWR },
998 { efXVG, "-some", "stuff", ffOPTWR },
999 { efXVG, "-corr", "enecorr", ffOPTWR },
1000 { efXVG, "-vis", "visco", ffOPTWR },
1001 { efXVG, "-ravg", "runavgdf", ffOPTWR }
1002 };
1003 #define NFILE asize(fnm)
1004 int npargs;
1005 t_pargs *ppa;
1006
1007 Copyright(stderr,argv[0]);
1008 npargs = asize(pa);
1009 ppa = add_acf_pargs(&npargs,pa);
1010 parse common args(&argc,argv,PCA CAN VIEW | PCA CAN BEGIN
Remote File (1.22.2.2)
986 { efENX, "-f", NULL, ffREAD },
987 { efENX, "-f2", NULL, ffOPTRD },
988 { efTPX, "-s", NULL, ffOPTRD },
989 { efXVG, "-o", "energy", ffWRITE },
990 { efXVG, "-viol", "violaver", ffOPTWR },
991 { efXVG, "-pairs", "pairs", ffOPTWR },
992 { efXVG, "-ora", "orienta", ffOPTWR },
993 { efXVG, "-ort", "orientt", ffOPTWR },
994 { efXVG, "-oda", "orideva", ffOPTWR },
995 { efXVG, "-odr", "oridevr", ffOPTWR },
996 { efXVG, "-odt", "oridevt", ffOPTWR },
997 { efXVG, "-oten", "oriten", ffOPTWR },
998 { efXVG, "-corr", "enecorr", ffOPTWR },
999 { efXVG, "-vis", "visco", ffOPTWR },
1000 { efXVG, "-ravg", "runavgdf", ffOPTWR }
1001 };
1002 #define NFILE asize(fnm)
1003 int npargs;
1004 t_pargs *ppa;
1005
1006 Copyright(stderr,argv[0]);
1007 npargs = asize(pa);
1008 ppa = add_acf_pargs(&npargs,pa);
1009 parse_common_args(&argc,argv,PCA_CAN_VIEW | PCA_CAN_
1010 NFILE,fnm,npargs,ppa,asize(desc),desc,0,NU
1011
```

- ✦ incorporate newest features / bugfixes by updating
- ✦ those will be merged with your changes



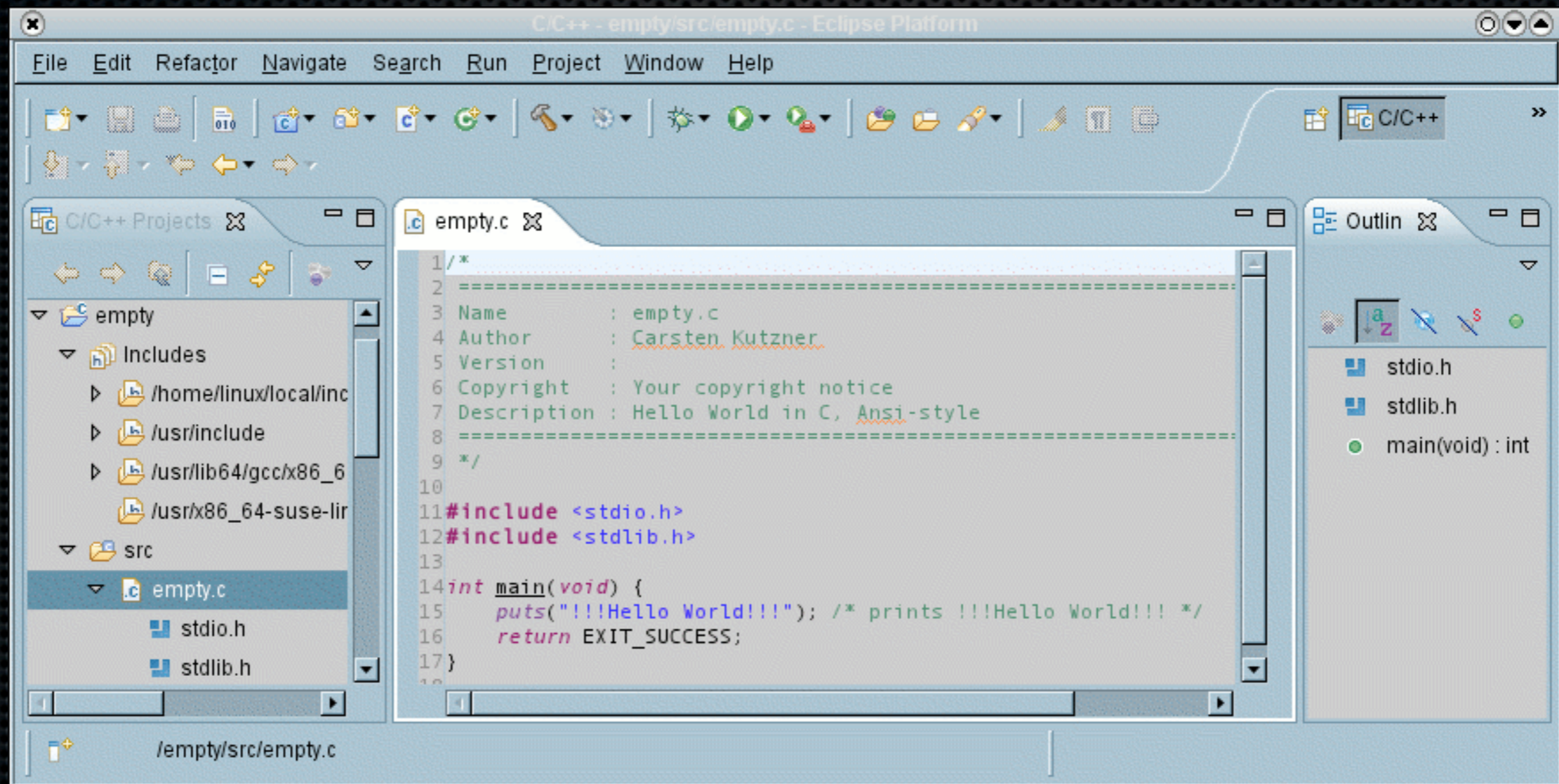
(2) Project from SVN

- ✦ similar to CVS checkout
- ✦ file > new > project > SVN
- ✦ give repository URL
- ✦ group SVN server is on ram



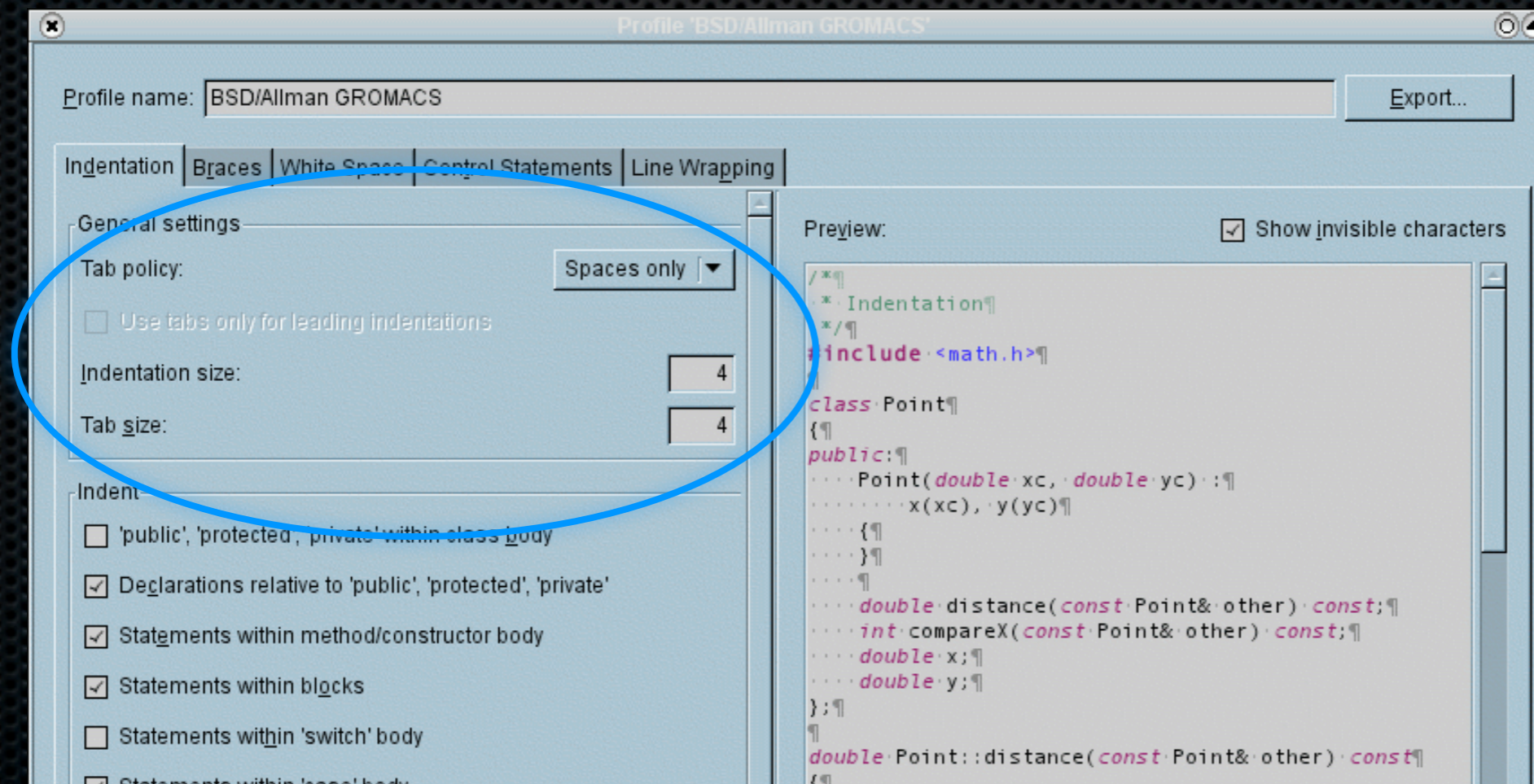
(3) Project from scratch

- file > new > project > C > Hello World ANSI C project

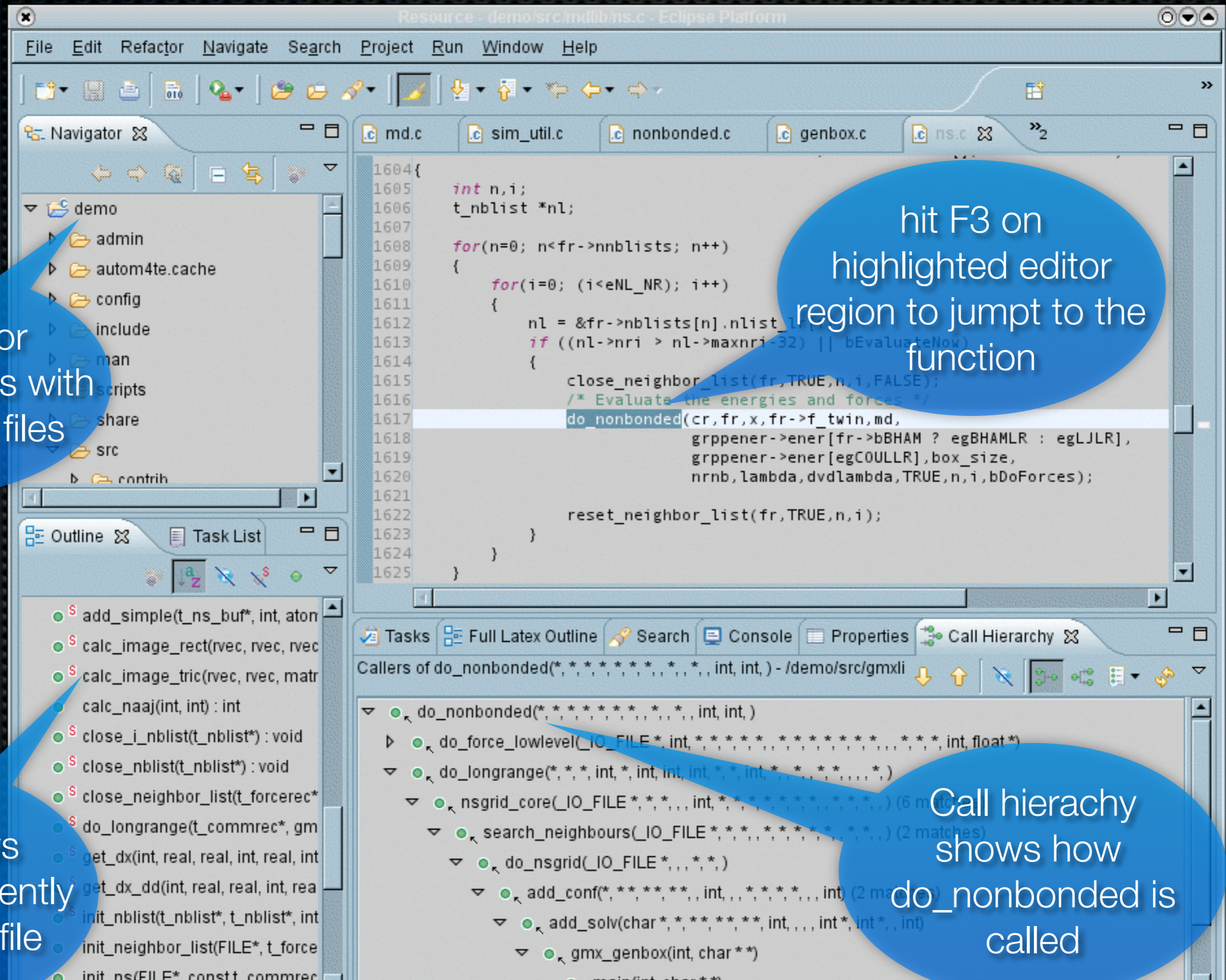


Code style

- used for auto-formatting, CTRL-I
Set in project > properties > C/C++ general > code style
- for gromacs spaces only, indentation 4, every { and } on a separate line



The eclipse interface



The navigator contains projects with their folders & files

hit F3 on highlighted editor region to jump to the function

Outline shows functions of currently edited source file

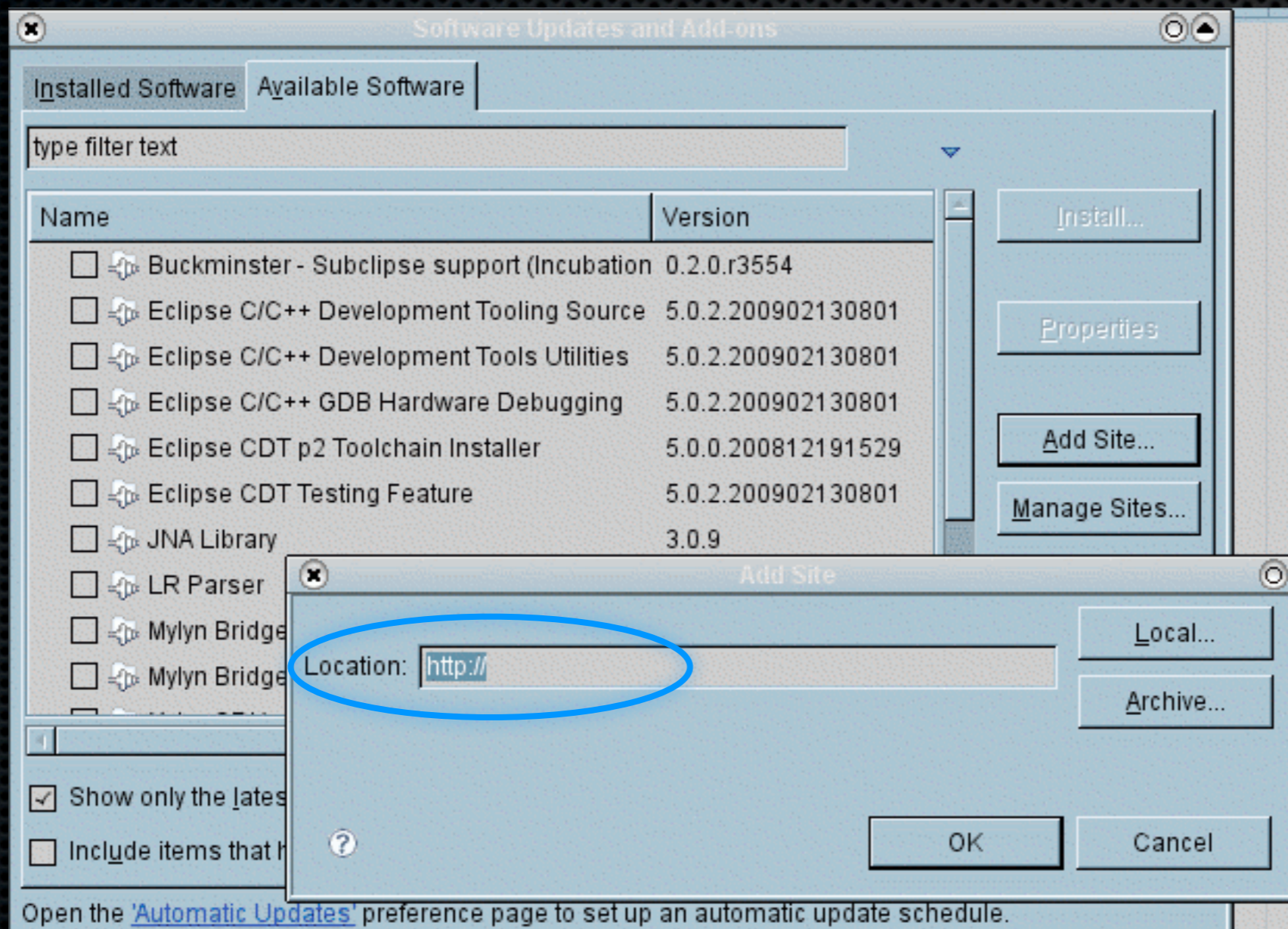
Call hierachy shows how do_nonbonded is called

Frequently Used Commands

- ✦ jump to definition – F3
- ✦ Find/Replace – Ctrl-F
- ✦ Search files – Ctrl-H
- ✦ Correct Indentation – Ctrl-I
- ✦ Comment/Uncomment – Ctrl-/
- ✦ Refactor – Shift-Alt-R
- ✦ Call Hierarchy – Ctrl-Alt-H
- ✦ Auto-completion – Ctrl-Space

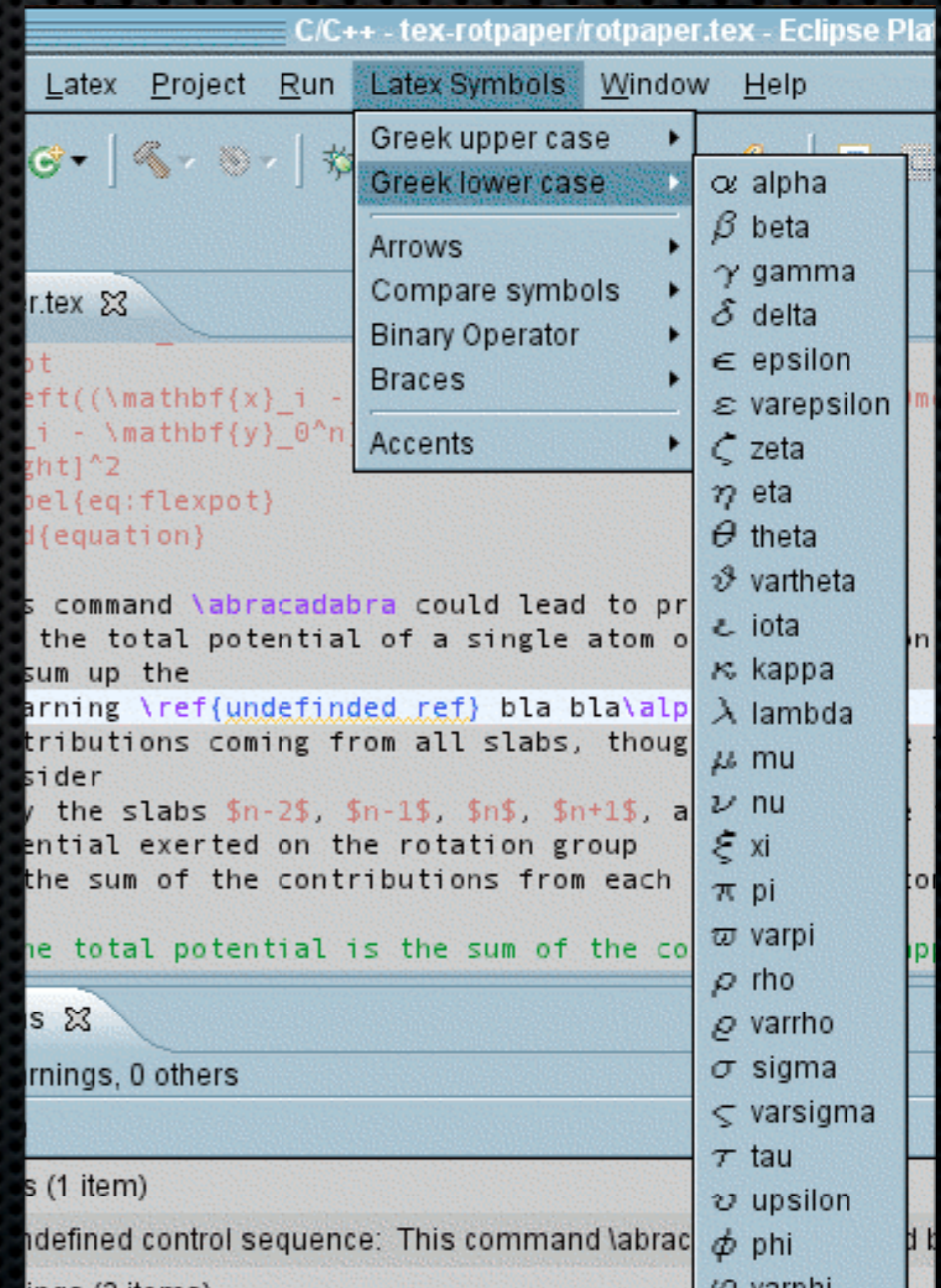
Extending eclipse

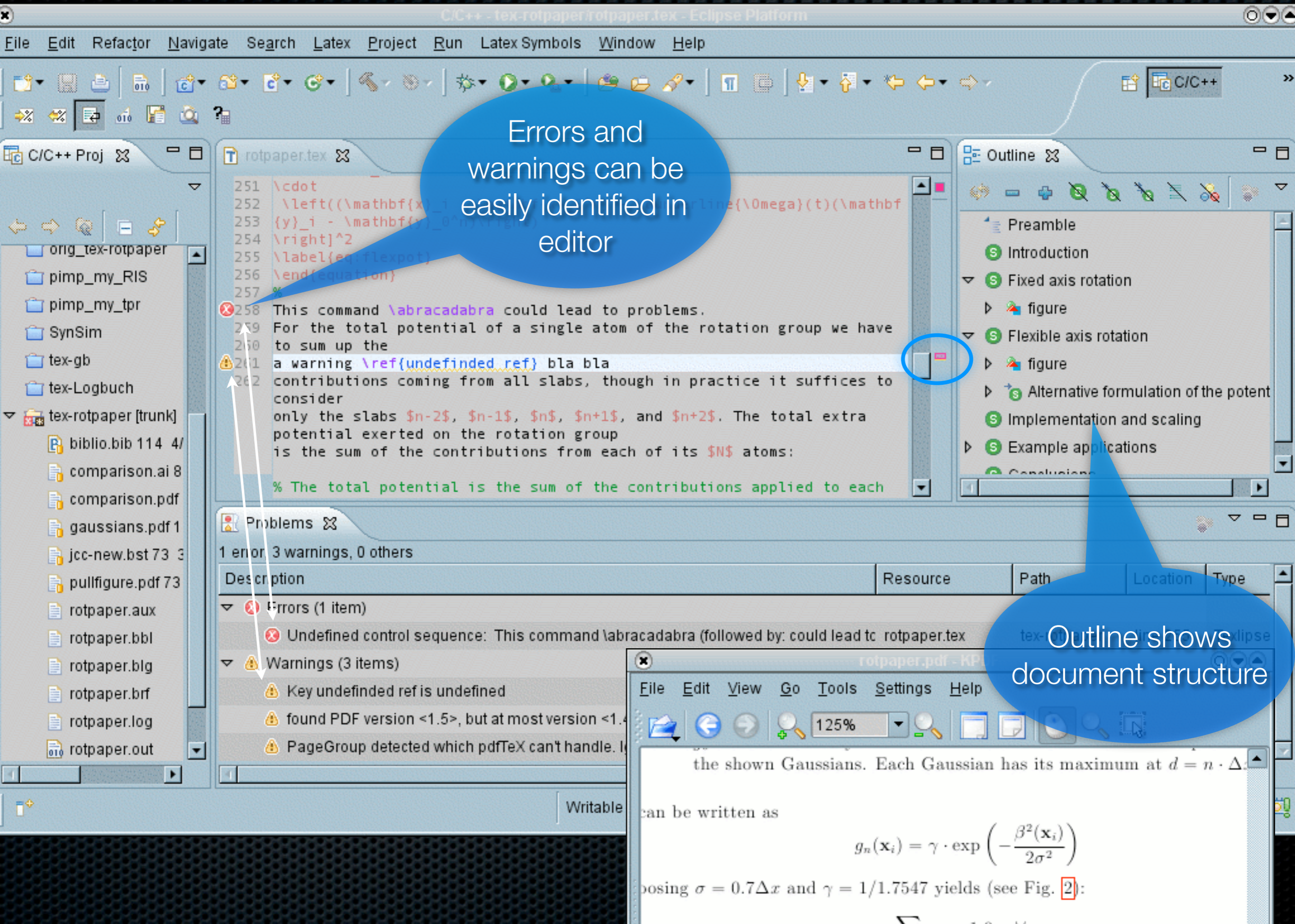
- Add software location in Help > Software updates



Typsetting LaTeX in eclipse

- ✦ texlipse.sourceforge.net
- ✦ Ctrl-B typesets
- ✦ Ctrl-4 opens e.g. PDF viewer
- ✦ Shift-Ctrl-6 Spell-checks
- ✦ can be combined with other features, to e.g. achieve version control of tex project





Errors and warnings can be easily identified in editor

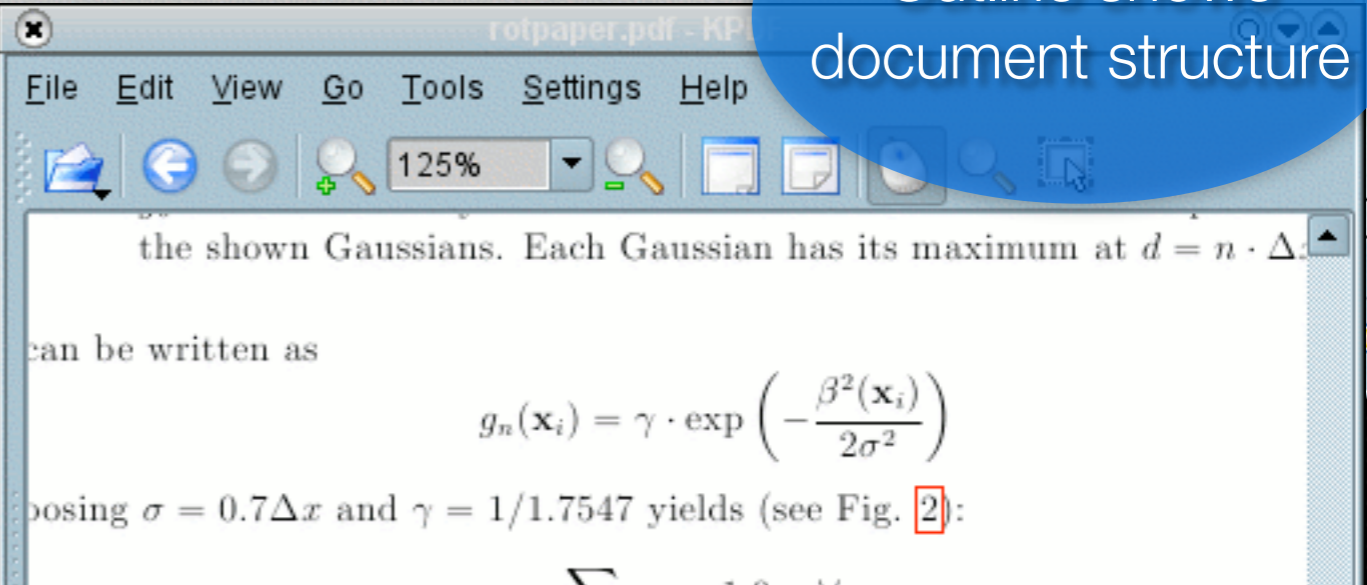
Outline shows document structure

```
251 \cdot
252 \left((\mathbf{x}_i - \mathbf{x}_0) \cdot \mathbf{e}_i\right) \cdot \mathbf{e}_i \cdot \mathbf{e}_i \cdot \mathbf{e}_i
253 \left(\mathbf{x}_i - \mathbf{x}_0\right) \cdot \mathbf{e}_i \cdot \mathbf{e}_i \cdot \mathbf{e}_i \cdot \mathbf{e}_i
254 \right)^2
255 \label{eq:flexpot}
256 \end{equation}
257 %
258 This command \labracadabra could lead to problems.
259 For the total potential of a single atom of the rotation group we have
260 to sum up the
261 a warning \ref{undefined ref} bla bla
262 contributions coming from all slabs, though in practice it suffices to
consider
only the slabs $n-2$, $n-1$, $n$, $n+1$, and $n+2$. The total extra
potential exerted on the rotation group
is the sum of the contributions from each of its $N$ atoms:
% The total potential is the sum of the contributions applied to each
```

Problems

1 error, 3 warnings, 0 others

Description	Resource	Path	Location	Type
Errors (1 item)				
Undefined control sequence: This command \labracadabra (followed by: could lead to	rotpaper.tex			Error
Warnings (3 items)				
Key undefined ref is undefined				Warning
found PDF version <1.5>, but at most version <1.4>				Warning
PageGroup detected which pdfTeX can't handle. I				Warning



Debugging in eclipse

- Run > Debug Configurations > select binary

The screenshot shows the Eclipse IDE interface during a debug session. The top menu bar includes File, Edit, Refactor, Navigate, Search, Run, Project, Window, and Help. The toolbar contains various icons for file operations and debugging. The 'Debug' window is active, showing a tree view of the debug configuration: 'gmx Preference Configuration [C/C++ Local Application]' > 'gdb/mi (4/8/09 10:28 AM) (Suspended)' > 'Thread [0] (Suspended)' > '1 main() /home/ckutzne/workspace/gmx/src/kernel/mdrun.c:388'. The 'Variables' window is open, displaying a table of variables and their values:

Name	Value
argc	2
argv	0x00007ffff36fd
cr	0x000000000000
sim_nodeid	0
nnodes	0
npmenodes	0
threadid	0

The source code window shows the following code snippet:

```
377     "HIDDENFrequency of writing the remaining runtime" }
378 };
379 gmx_edsam_t ed;
380 unsigned long Flags, PCA_Flags;
381 ivec dxyz;
382 int dd_node_order;
383 bool HaveCheckpoint;
384 FILE *fplog,*fptest;
385 int sim_part;
386 char suffix[STRLEN];
387
388 cr = init_par(&argc,&argv);
389
390 if (MASTER(cr))
391     Copyright(stderr,argv[0]);
392
```