

*nix Crash Course

Presented by:

Virginia Tech Linux / Unix Users Group
VTLUUG

Ubuntu LiveCD

- No information on your hard-drive will be modified.
- Gives you a working Linux system without having to install anything

The *nix Crash Course

- General Overview
- The Basics
- Command Line Usage and Tools
- Programming in *nix
- Installation

Flow of the Presentation

- Go through vital information
- Focus of hands-on experience
- Time to get things working and get help
- Feel free to participate!

General Overview

Open Source Software

- Free to use, modify, and redistribute
- Examples: Apache, Mozilla, Eclipse
- Grows through the community
- A philosophy or simply a practical method?

The Legal Stuff

- The standard: GNU General Public License (GPL)
- Others: Lesser GPL (LGPL), CeCILL 2.0, Expat (MIT) License



A Brief History

- Linus Torvalds
- Dubbed his kernel 'Linux' - Linus + minix
- Posted on the internet in 1991
- Increasing usage and market share



The Basics

What is the kernel?

- Core of the OS
- Software that allows communication with hardware
- 'Linux' is a kernel, not an environment
- www.kernel.org

X-Windows System

- Basic GUI framework for *nix environments
- Enables basic functions with windowed systems - mouse & keyboard interaction, moving windows, etc.
- Is not a window manager or environment in itself



Window Managers vs. Environments

- Window Managers define style only
- Environments are application packages and window managers combined into one software suite



Window Managers & Environments

A Quick Look

```
kristfhøsjau:~
http://24.78.2.184/helpcenter.htm
<@isect> nop
<+zblade> he
<+zblade> kjørte du den som root?
<@isect> *høkke paa rapport*
<@isect> jepp root ja
<+Trygvis^> heh.. som om det har noe å si
<+zblade> ja
<+zblade> er jo obvious noe feil..
<+zblade> ..hvis det ikke er gnome termen som er fuXØra da :-P
<@isect> zblade saa saa.. ble du saa sjalu nu da
<+zblade> *rippe Ugress*
<@isect> good
<@isect> skal se litt mer paa char bØgsa etter hwent
<@isect> sende mail til dev team elns
<+zblade> damn!
<+zblade> ripper med 10x speed nu :)
<+zblade> fasan det hjalp å tweake disken ass
<@isect> http://205.168.234.4:8004
<@isect> flaresound jazzy beats
<+zblade> + fyre opp preempt patchen (igjen) :)
<@isect> hoh.. flott mussikk gitt
<+Trygvis^> noen som har testa compressed paging patchen?
<+zblade> nm
|17:26|+zblade +i11:1:vestgrensa +nt11Act: 2,4|
[#vestgrensa] []
```

PARSE CHANGE 02:01
1. NNN NNN TRG



Grip


Tracks Rip Config Help About

Rip+Encode
Rip Only
Abort Rip and Encode
Abort Ripping Only
DDJ Scan


Rip partial track

Play Current sector: 0

Start sector 0
End sector 22499

Rip: Trk 4 (10.9x)  

MP3: Trk 2 (3.0x) 

04 00:00  

Play Stop Previous Next 123

Volume Mute Repeat Shuffle Stop Power

```
kristianepanzerfaust: ~
[kristian@panzerfaust]$: scrot grip.png
[~]
```

```
(ikaro@sy: bin)$  
my eye is on fire :>
```

- Genbox
- Terminal
- Browser
- E-mail
- Usenet
- Terminals
- File managers
- System Center
- Applications
- Multimedia
- Editors
- Games
- wallpapers
- wallpapers
- Reload config
- System Styles
- fluxbox menu

- fluxbox menu
- Configure
- Workspace List
- Tools
- Restart
- Exit

- Configuration
- Focus Model
- Slit
- Toolbar
- Image Dithering
- Opaque Window Moving
- Full Maximization
- Focus New Windows
- Focus Window on Workspace Change
- Workspace Warping
- Desktop Wheeling
- Click Raises
- AntiAlias
- Menu Alpha: 199

- Toolbar
- Edit current workspace name
- Toolbar width percent: 70
- Auto hide
- Maximize Over
- Toolbar Layer
- Layer...
- Placement
- Mode...
- Above Dock
- Dock
- Top
- Normal
- Bottom
- Desktop

13:37
MON 08 SEP
0%
64%
8%
CPU 34%
MEM 3.1G
SWAP 17.0
DEV 14.0
PRG 0.1
HUM 88%
WIND ESP 3
00:00 00
000000

```
enable: 0.1.14 fluxbox.org devel: 0.9.6pre3 fluxbox.org/version-0.9.php -> cvs down: fluxbox.org/download/fluxbox-current-cvs.tar.  
[13:24] <ikaro> .. so i've been told  
[13:30] <aleczapka> it has  
[13:30] <gubbs> hm, i haven't ever seen it.  
[13:30] <gubbs> how do i get it running?  
[13:30] <ikaro> edit the init file, and add traybar  
[13:30] .. OpenURL 14  
[13:30] <aleczapka> http://fluxbox.org/zoom.php?shots-dev/aleczapka_fluxbox3.jpg  
[13:30] <aleczapka> get devel version  
[13:30] .. OpenURL 15  
[13:30] <aleczapka> set in fluxbox ini http://fluxbox.org/zoom.php?shots-dev/aleczapka_fluxbox3.jpg  
[13:30] :: eilberichi ("hai@b665289.adsl.hansenet.de") has quit ("Client exiting")  
[13:30] <aleczapka> ups  
[13:30] <gubbs> hehe  
[13:30] <aleczapka> set in fluxbox init: session.screen0.toolbar.tools: workspaceName,iconbar,systemtray,clock  
[13:31] <gubbs> excellent.  
[13:31] <gubbs> thanks a ton.  
[13:31] <gubbs> :)  
[13:31] <aleczapka> np  
[13:31] :: eilberichi ("hai@b665289.adsl.hansenet.de") has joined #fluxbox  
[13:34] :: [ladnet]sykes ("sykes@82-32-52-6.cable.ubr07.azte.blueyonder.co.uk") has joined #fluxbox  
[13:37] [ikaro(+)] [13:freemove/#fluxbox(+nt)] [eth0 in:8K out:313 unixc in:37 out:25 ]  
[Act: 1,3,4,5,6,7,8,9,10,11,12,14,15,16,17] [116 nicks (1Rc0 @0 +0 116)]  
[#fluxbox]
```

```
=64 ID=57898 DF PROTO=UDP SPT=33254 DPT=53 LEN=42  
Sep 8 13:35:53 [kernel] SFW:fw2net:ACCEPT:IN= OUT=eth0 SRC=10.0.0.2 DST=212.242.40.51 LEN=61 TOS=0x00 PREC=0x00 TTL  
=64 ID=57101 DF PROTO=UDP SPT=33255 DPT=53 LEN=41  
Sep 8 13:35:55 [pop3d] Connection, ip=[127.0.0.1]  
Sep 8 13:35:55 [pop3d] LOGIN, user=na@imaginere.dk, ip=[127.0.0.1]  
Sep 8 13:35:55 [pop3d] LOGOUT, user=na@imaginere.dk, ip=[127.0.0.1], top=0, retr=0  
Sep 8 13:36:12 [kernel] SFW:fw2net:ACCEPT:IN= OUT=eth0 SRC=10.0.0.2 DST=212.242.32.26 LEN=60 TOS=0x00 PREC=0x00 TTL  
=64 ID=0 DF PROTO=TCP SPT=47835 DPT=8080 WINDOW=5840 RES=0x00 SYN URG=0  
Sep 8 13:36:14 [kernel] SFW:fw2net:ACCEPT:IN= OUT=eth0 SRC=10.0.0.2 DST=212.242.32.26 LEN=60 TOS=0x00 PREC=0x00 TTL  
=64 ID=47374 DF PROTO=TCP SPT=47835 DPT=8080 WINDOW=5840 RES=0x00 SYN URG=0  
Sep 8 13:36:44 [kernel] SFW:fw2net:ACCEPT:IN= OUT=eth0 SRC=10.0.0.2 DST=193.162.159.194 LEN=76 TOS=0x10 PREC=0x00 T  
TL=64 ID=0 DF PROTO=UDP SPT=123 DPT=123 LEN=56
```

AREA 1: WORK SPACE

```
atem
# see rrstats.conf for some configuration details

# you can replace this with
# $iface = $ARGV[0];           # then call rrstats with_iface_as parametr
$iface = "wlan1";             # for which interface statistic should be generated

require "./rrstats.conf";

# check whether we have dirs for iface
if ( !(-e $wmdir.$iface) ) { mkdir ( $wmdir.$iface ) || die "$wmdir"; };
if ( !(-e $rrdstore.$iface) ) { mkdir ( $rrdstore.$iface ) || die "$rrdstore"; };

$rrdstore = $rrdstore.$iface."/";
$wmdir = $wmdir.$iface."/";

# generate iface statistic (using ifconfig)
system("./rrstats_iface $iface");

# generate ip statistic (using iptables)
### do not put any non .rrd files in $rrdstore!
```

28,1 17%

X Multimedia System

arctic

1. breast fox - title (3:24)

kbps volume kHz balance

shuffle rep

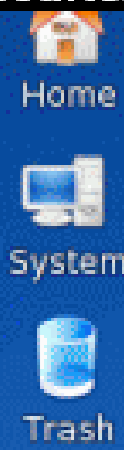
Equalizer

on auto presets

60 170 310 600 1k 3k 6k 12k 14k 16k

AREA 3: RELAX & GAMES

- My Computer
- XCDRost
- Mozilla



K3b - The CD and DVD Kreator

File Project Tools Settings Help

/home/guest/

Home Desktop Root

Filter: All Files

Desktop

Most Used Applications

- Link Checker (KLinkStatus)
- CD & DVD Burning (K3b)
- Image Manipulation Program (Krita)
- Study Spanish Verbforms (Kverbos)
- Strategy Game (KWin4)

All Applications

- Development
- Edutainment
- Games
- Graphics
- Internet
- Multimedia
- Office
- Settings
- System
- Utilities
- Control Center
- Find Files/Folders
- Help
- Personal Files (Home)

Actions

- Bookmarks
- Quick Browser
- Run Command...
- Lock Session
- Log Out...

Welcome to K3b - The CD and DVD Kreator

New Audio CD Project

New Data CD Project

New Data DVD Project

Copy CD...

... screen buttons with a right mouse click.

... Image writing or Formatting are accessible via the K3b menu.

Temp: 396.3 MB/739.8 MB

K3b 0.12.7

- CD & DVD Burning (K3b)
- CD Player (KsCD)
- CD Ripper (KAudioCreator)
- Media Player (Noatun)
- Music Player (JuK)
- Recording Tool (KRec)
- Sound Mixer (KMix)
- More Applications

Theme Preferences

User Interface Preferences

Theme Icon Theme

- ThinIce
- Wasp
- Xfce
- Xfce-4.0
- Xfce-b5
- Xfce-basic
- Xfce-cadmium

Font: Sans 9

Toolbar Style: Icons

Font Rendering

- Use anti-aliasing for fonts
- Use hinting:
- Use sub-pixel hinting:

Display Preferences

Display Preferences

Resolution

- 1600x1200@85
- 1600x1200@75
- 1600x1200@70
- 1600x1200@65
- 1600x1200@60
- 1280x1024@85
- 1280x1024@75
- 1280x1024@60
- 1400x1050@85
- 1400x1050@75

Gamma correction

Revert

Sessions and Startup

Sessions and Startup

General Advanced

Session chooser

- Display chooser on login

Logout settings

- Automatically save session on logout
- Prompt on logout

Close

Xfce Settings Manager

Xfce Settings Manager

- Desktop
- Display
- Keyboard
- Mouse
- Printing system
- Screensaver
- Sessions and Startup
- Sound
- Splash Screen
- Taskbar
- User interface
- Workspaces and Margins
- Xfcecalendar
- Xfce Panel
- File manager
- Lil' Star - Iconbox
- Window Manager

Close



You are currently using:
GNOME

(GNU Network Object Model Environment)

Package Management

- What is a package?
- What are package management systems?
- Examples: Windows installer, dpkg & APT, RPM & yum, Portage, Mac OS X installer & fink, SysV

Filesystem Layout

/

/bin /boot /dev /etc /home /lib

/mnt /media /opt /proc /root /sbin

 /tmp /srv /usr /var

This presentation is stored at:

/home/bhilburn/Documents/LUUG/Crash_Course.key

~/Documents/LUUG/Crash_Course.key

Basic CLI Usage and Tools

CLI Terminology Basics

- \$ for normal user, # for root
- Variety of shells - most commonly used is 'bash' - "Bourne-again Shell" (ported to Windows with Cygwin)
- \$ <command> <options> <objects...>
- Example: \$ grep -n "kernel" /var/log/kern.log
- Folders & directories act as file objects

What is 'root'?

- 'root' is the system administrator - a 'super-user'
- Has full access and privilege rights
- Protection against others.
- More importantly, protection against you.
- Example: `# rm -rf /*`

Virtual Consoles

- 'Ctrl+Alt+F[1-6]' are all terminals
- 'Ctrl+Alt+F7' is your X-Session
- 'Ctrl+Alt+F8' is sytem output

The Most Important Command You Will Ever Learn

```
$ man <command>
```

```
$ apropos <subject>
```

Tab - Completion

- Tab twice: show possibilities of completion
- Tab once: auto-complete incomplete file or command name

Basic Navigation

- `$ ls`
- `$ cd <dir>`
- `$ pwd`
- `$ pushd <dir> ; $ popd`
- `./` refers to current directory
- `../` refers to one directory up
- `$ clear` clears the screen

Moving Around the Command Line

- 'Ctrl+A' moves your cursor to the beginning
- 'Ctrl+E' moves your cursor to the end

File Management

- `$ cp [-r] <file> <location>`
- `$ mv <file> <location>`
 - `$ mv <file> <file>`
- `$ rm [-rf] <file>`
- `$ mkdir <name>`
- `$ rmdir [-rf] <name>`

Types of Files

- Use the command `$ ls -l <file>` to display file attributes
- `drwx-wx-wx 3 bhilburn bhilburn 102 Aug 2 2005 Drop Box/`
- Type - Permissions - Links - Owner - Group - Bytes - Date - Name
- 'd' is a directory, 'l' is a symbolic link, '-' is a normal file
- Hidden files have a '.' in front of their name. Try doing: `$ ls -a`

Permissions

- Owner | Group | Other
- Read: 400, 40, 4
- Write: 200, 20, 2
- Execute: 100, 10, 1
- 755 allows the owner to read, write, and execute, and allows everyone else - group members and others - to read and execute

Setting Permissions

- `$ chmod <permissions> <file>`
- **Example:** `$ chmod 755 chmod`
- `$ chmod [+,-][rwx] <file`
- **Example:** `$ chmod +x someScript`

Rundown of Regular Expressions (RegEx)

- RegEx provide a way to represent a set of strings with one string
- * - any character or set of characters
- [abc] or [a-c] - anything contained within the brackets

RegEx Continued...

- Example: `system*.log` would pertain to `system.A0.log`, `system.ex.9ap.log`, and `system.log`
- Example: `*.so[1-3]` would pertain to any string ending with `.so1` `.so2` or `.so3`
- Example: `*` pertains to all strings

CLI & RegEx

- Example: `$ find /var/log -name "*.log"`

Setting and Viewing Environment Variables

- `$ echo $SHELL`
- `$ echo $PATH`
- `$ PATH=$PATH:<directory>`

Executing Files

- `$ <filename>` (if in `$PATH`)
- `$./<filename>`
- `$ sh filename.sh`
- `$. filenameShellScript`

Forking to the Background

- Fork a process to the background so you can still use a terminal with '&'
- Example: `$ xterm&`

Recalling Old Commands

- Use the up and down arrows to cycle commands.
- Old commands can be recalled with the use of the ‘!’ operator - to be used with a string or an ID garnered from `$ history`
- Example: `$!g` OR `$!15`

Doh'!

- To kill the foreground process, press 'Ctrl +C'
- Example: `$ find / -name "*log"`
 - Then Ctrl+C to kill it.

Suspending Programs

- You can suspend the current foreground process by pressing 'Ctrl+Z'
- To return to it, \$ fg

Controlling Processes with CLI

- `$ top`
- `$ ps -ef`
- `$ kill <PID>`

Piping Commands

- You can route the output of one command into another with the '|' operator
- Example: `$ ps -ef | grep "bash"`

Outputting to a File

- You can save the output of a command to a file
- Example: `$ ps -ef >> processList`
 - `$ cat processList`

/dev/*

- /dev/null
- /dev/zero
- /dev/random

Aliasing Commands

- `$ alias ls="ls -aF"`
- `$ alias linux="echo is amazing"`

Other fun commands...

- `$ uname -a`
- `$ date`
- `$ df -kh`
- `$ fdisk -l`
- `$ dmesg`

Programming in *nix

Terminal Editors

- nano / pico
- Vi / ViM
- Emacs

Linux IDEs

- Kdevelop
- Eclipse
- jGrasp
- Anjuta
- OpenLDev

Integrated Development Environments

A Quick Look

```

return fFilterDescription;
}

// virtual
TFilter TFilter::operator+( const TFilter& filterToAdd ) const
{
    if ( fFilterDescription == filterToAdd.fFilterDescription) {
        if ( fFilterValue < filterToAdd.fFilterValue ) {
            return TFilter( filterToAdd.fFilterValue );//return filter with this value
        }
        else {
            return TFilter( fFilterValue ); // return filter with the other value
        }
    }
    else {
        Fatal( "TFilter", "operator+", "The filter descriptions didn't match!" );
    }
}

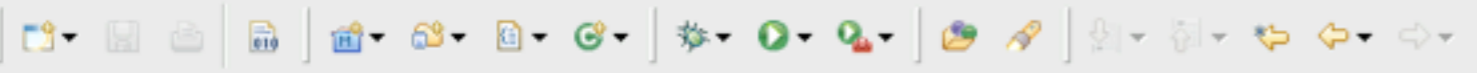
// virtual
TFilter& TFilter::operator=( const TFilter& otherFilter )
{
    if ( this != &otherFilter ) {
        fFilterValue = otherFilter.fFilterValue;
        this->
        fFilter
    }
    return *
}

// virtual
bool TFilter
{
    return (
        (fFilter
        //are filter values AND
        //description equal?

```

Context menu for `this->` showing class members:

- TFilter(tFilterValueType filterValue)
- TFilter(const TFilter& otherFilter)
- TFilter(string& FilterDescription, tFilterValueType filterValue)
- TFilter()
- fFilterDescription
- fFilterValue
- getFilterDescription() const
- getFilterValue() const
- operator +(const TFilter& filterToAdd) const
- operator =(const TFilter& otherFilter)



Project Navigator showing a tree view of the workspace:

- GaussianElimination
 - Binaries
 - Includes
 - gauselim.f90
 - gauselim - [x86le]
 - Makefile
 - matrixx.txt
- LineFitting
 - Binaries
 - bestfit - [x86le]
 - Includes
 - bestfit.f90
 - <Free Form Source>
 - BstFitProj
 - Mdataset
 - Tdataset
 - bestfit - [x86le]
 - Makefile
 - mdataset.mod

```

! Display a list of options, and allow the user to select one
write (*, *) ! Blank line
write (*, *) '-----'
write (*, *) 'MENU'
write (*, *) '-----'
write (*, *) '1. Compute three linear least squares lines'
write (*, *) '2. Compute distances between points and a given line'
write (*, *) '3. Find linear, exponential, and power least squares'
write (*, *) '4. Exit'
write (*, *) '-----'
write (*, *) ! Blank line
write (*, *) 'Choose an option: '
read (*, *) icheice

if (if .eq. 5) then
  print *, DontNameYourVariableIF
end if

select case (icheice)
  case (1) ! Option 1 - Three linear least squares lines

    write (outu, *) 'THREE LEAST SQUARES LINES:'

    ! Linear least squares, vertical distances
    call LinearLeastSquares(ds, 1, 2, aval, bval)
    write (outu, *) ! Blank line
    write (outu, *) 'Using vertical distances:'
    write (outu, *) 'y = ', trim(real2str(aval)), &
                  'x + ', trim(real2str(bval))

    ! Linear least squares, horizontal distances
    call LinearLeastSquares(ds, 2, 1, aval, bval)

```

Outline view showing the project structure:

- <Free Form Source>
- Mdataset
 - Tdataset
 - datapt
 - npts
 - valsum
 - sqsum
 - xysum
 - has_np
- BstFitProj
 - LoadDataSet
 - ShowDataPoints
 - SquareDistances
 - OpenOutput
 - LinearLeastSquares
 - PerpLeastSquares
 - ExpLeastSquares
 - PowerLeastSquares
 - int2ctr

Make Targets view showing build targets:

- GaussianElimination
- LineFitting
 - all

2 errors, 0 warnings, 0 infos

Description	Resource	In Folder	Location
*** [build] Error 1	LineFitting		
This name does not have a type, an	bestfit.f90	LineFitting	line 99

```

Managed Make Build [LineFitting]
rm -f *.mod *.fwd *.map *.ydg >/dev/null 2>&1
for file in a.out bestfit.exe; do if [ -x $file ]; then rm
-f $file; fi; done
for file in bestfit; do ifort -g -o $file $file.f90; done
fortcom: Error: bestfit.f90, line 99: This name does not
have a type, and must have an explicit type.
[DONTNAMEYOURVARIABLEIF]
    print *, DontNameYourVariableIF
-----^
compilation aborted for bestfit.f90 (code 1)
make: *** [build] Error 1
make: Target `all' not remade because of errors.

```

File Project Messages Settings Window Tools UML Help

/ALTAIR\$DKA0/sys0/sysmgr

/ALTAIR\$DKA0

↑ R Ada95 Files Sort By Name

- 📁 _com_oxygenxml
- 📁 _grasp_settings
- 📁 _installanywhere
- 📁 _secureftp
- 📁 dt
- 📁 system
- 📁 xmcdcfg
- 📄 timestamp.adb
- 📄 uti_hexa.ads

Browse

Project

Find

Debug

Workbench

timestamp.adb /ALTAIR\$DKA0/sys0/sysmgr - jGRASP CSD (Ada95)

File Edit View Templates Compiler Run CPG Help



```

Timestamp : Time;
The_Seconds  : Integer;

Hour        : Integer;
Remainder   : Integer;
Minute      : Integer;
Second      : Integer;

```

begin

```

Timestamp := Clock;
The_Seconds := Integer (Seconds (timestamp));

Hour := The_Seconds / 3600;
Remainder := The_Seconds mod 3600;
Minute := Remainder / 60;

```

OVS BLK Line:17 Col:1 Code:32 Top:6

timestamp..

Compile Messages

jGRASP Messages

Run I/O

Stop

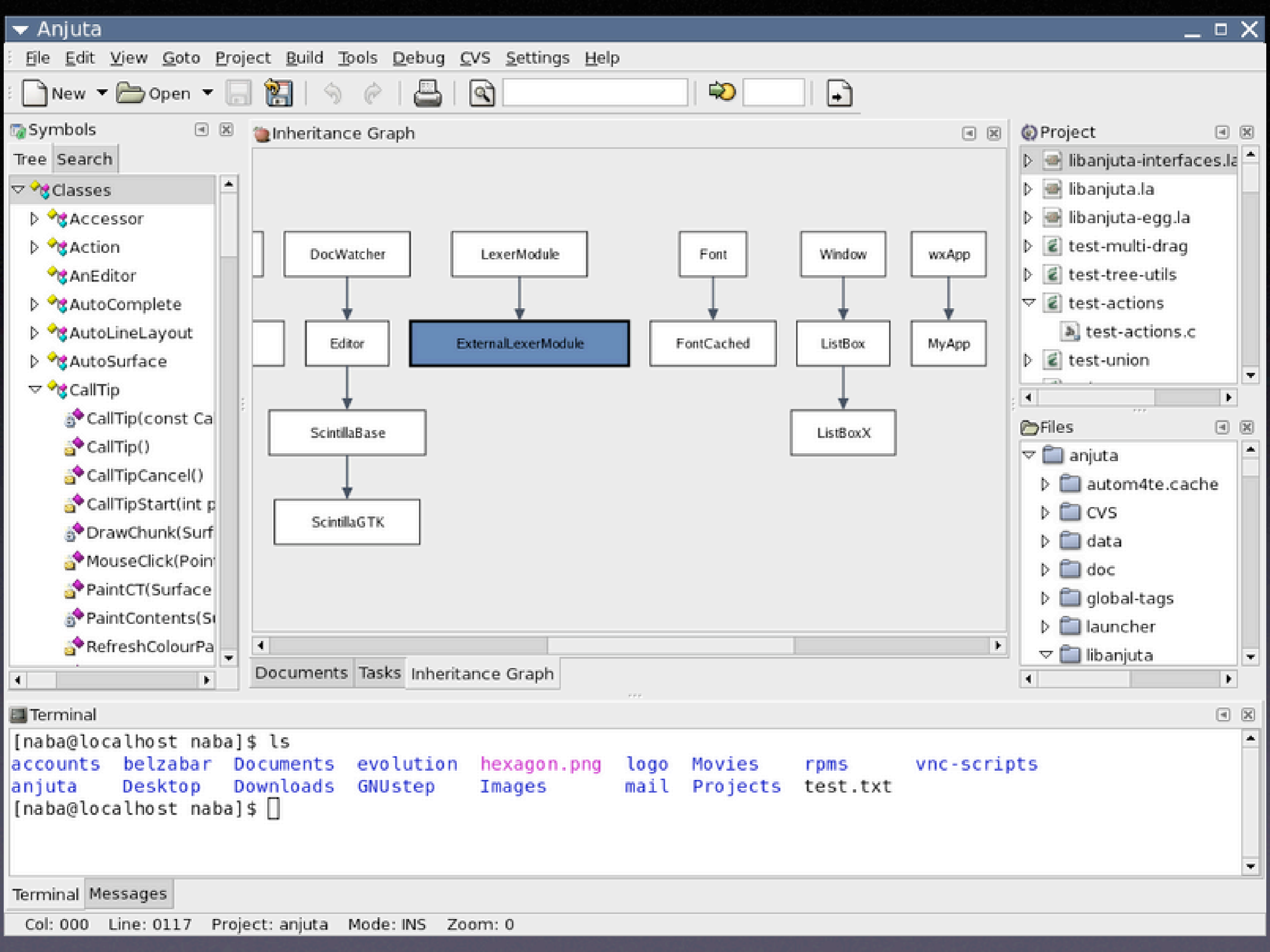
Clear

Copy

```

----jGRASP exec: gcc -c /ALTAIR$DKA0/sys0/sysmgr/timestamp.adb
timestamp.adb:17:49: missing ")"
----jGRASP: operation complete.
----jGRASP: unexpected exit value (3514378) from wedge.

```



File Edit View Project Build Help



Project

main.cc x

- acinclude.m4
- aclocal.m4
- AUTHORS
- autogen.sh
- ChangeLog
- config.guess
- config.h
- config.h.in
- config.status
- config.sub
- configure.in
- COPYING
- cvs2cl
- glade
- INSTALL
- install-sh
- libtool

```

1 /*****
2  *   Copyright (C) 2004-2005 by Andrew Krause
3  *
4  *   This program is free software; you can redistribute it and/or modify
5  *   it under the terms of the GNU General Public License as published by
6  *   the Free Software Foundation; either version 2 of the License, or
7  *   (at your option) any later version.
8  *
9  *   This program is distributed in the hope that it will be useful,
10 *   but WITHOUT ANY WARRANTY; without even the implied warranty of
11 *   MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
12 *   GNU General Public License for more details.
13 *
14 *   You should have received a copy of the GNU General Public License
15 *   along with this program; if not, write to the
16 *   Free Software Foundation, Inc.,
17 *   59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.
18 *****/
19
20 #include "openldev.h"
21 #include <string>
22
23 static bool on_delete_event (GtkWidget*, GdkEvent*, gpointer);

```

Compiler
 Search
 Terminal

```

make
cd . && automake-1.4 --gnu Makefile
cd . \
  && CONFIG_FILES=Makefile CONFIG_HEADERS= /bin/sh ./config.status
config.status: creating Makefile
config.status: executing default-1 commands

```

Compiling

- GCC - GNU Compiler Collection
 - `$ g++ myFile.cpp myNextFile.cpp`
- Makefiles
 - `$ make all`

CLI Tools for Programmers

- `$ grep -b "string" <files>`
- `$ find <start dir> -name "string"`
- `$ diff <file1> <file2>`
- `$ gdb`

Installing *nix

Choosing your 'flavor'

- Ubuntu
- Mandriva
- SUSE
- Fedora
- Red Hat
- Debian
- Gentoo
- Slackware
- BSD - FreeBSD, NetBSD, OpenBSD



Getting Linux

- Internet
 - www.distrowatch.org
 - www.linuxiso.org
- Order CDs

Types of Install

- Full
- Minimal
- Network

Partitions

- How and what tools?
- ext2 / ext3 filesystems
- swap space
- Number of partitions and sizes?
 - / , /usr/, /home/

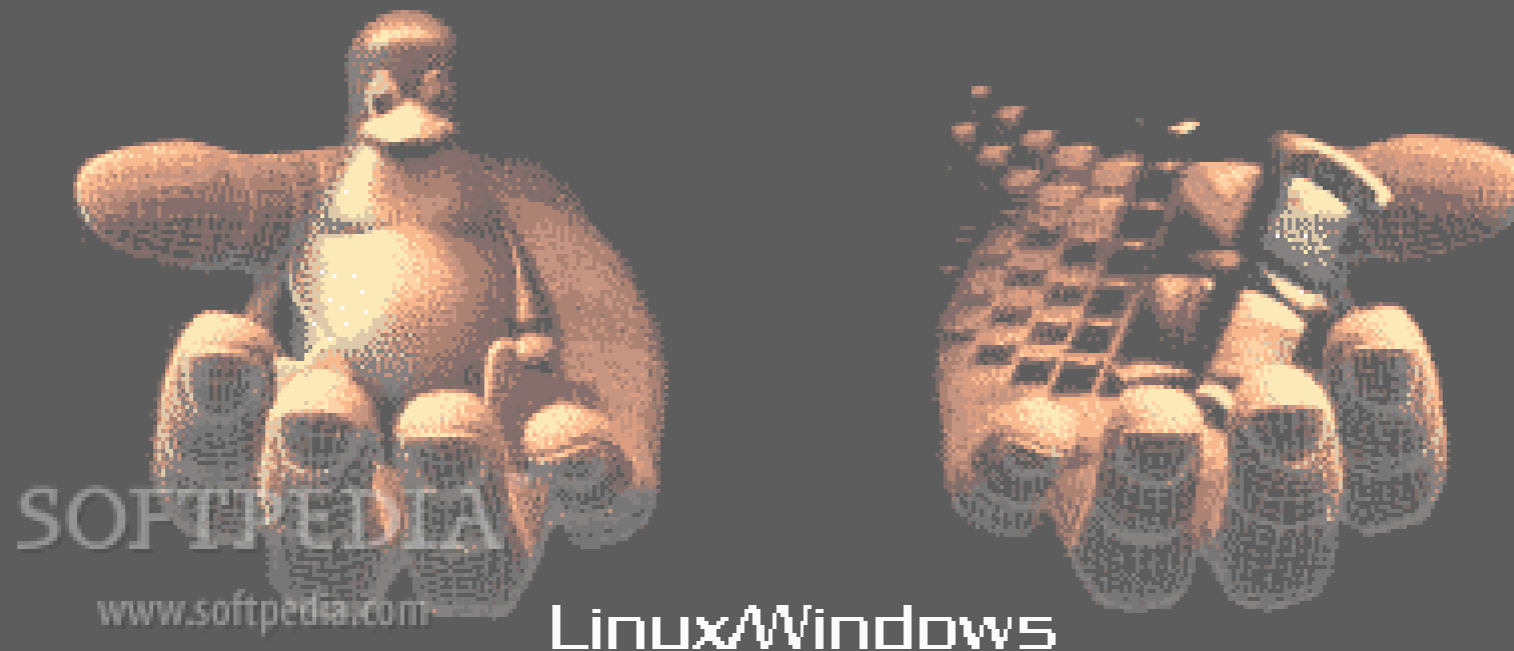
Compatibility with Windows

- Dual-booting systems
- FAT / NTFS abilities

GRUB version 0.91 (638K lower / 195584K upper memory)

Red Hat Linux

Windows



Use the ↑ and ↓ keys to select which entry is highlighted. Press enter to boot the selected OS, 'e' to edit the commands before booting, 'a' to modify the kernel arguments before booting, or 'c' for a command-line.

LILO 22.7 Boot Menu

Windows		
Gentoo		

Hit any key to cancel timeout 00:18
Use ←↑↓→ arrow keys to make selection
Enter choice & options, hit CR to boot

boot: _