Introduction to WxWidgets

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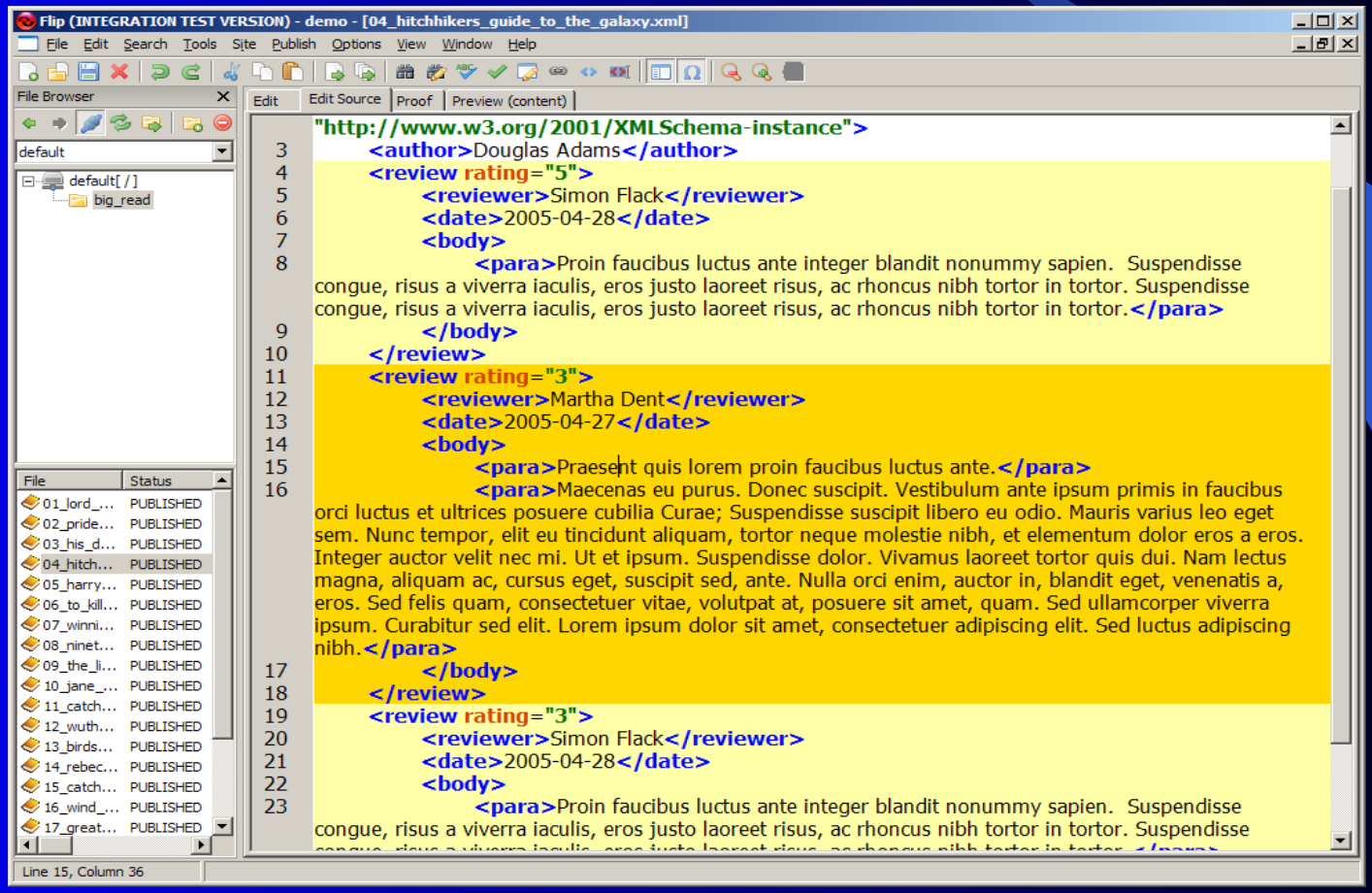
What is WxWidgets?

- GUI library www.wxwidgets.org
- Native widgets, e.g. GTK+, X11, Motif, Win32, WinCE
- Cross-platform
  - Windows
  - Linux
  - MacOS X
- Language bindings
  - Perl
  - C++
  - C# .NET
  - Python

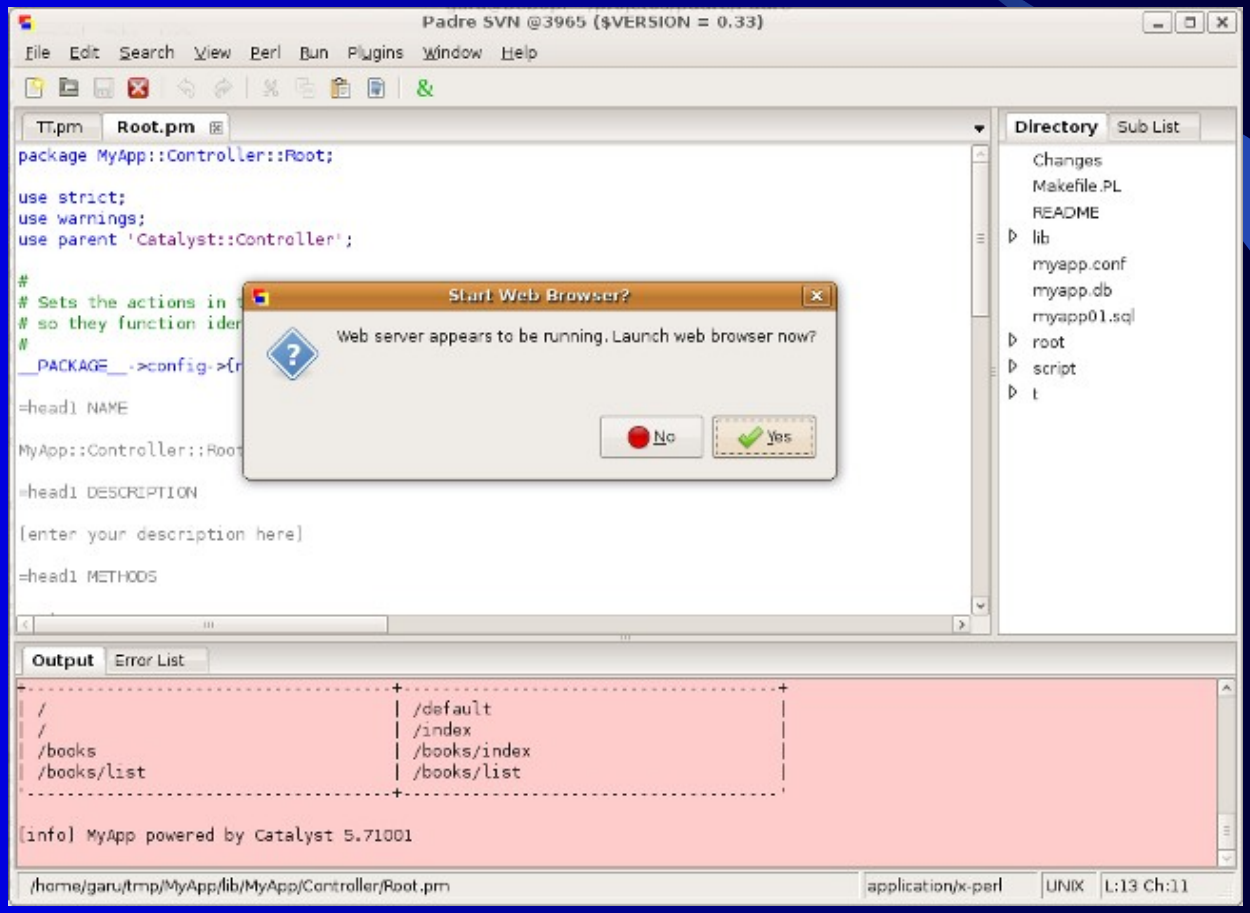
Projects using WxWidgets

BBC “Flip” content management system
+ Scintilla editor component plugin



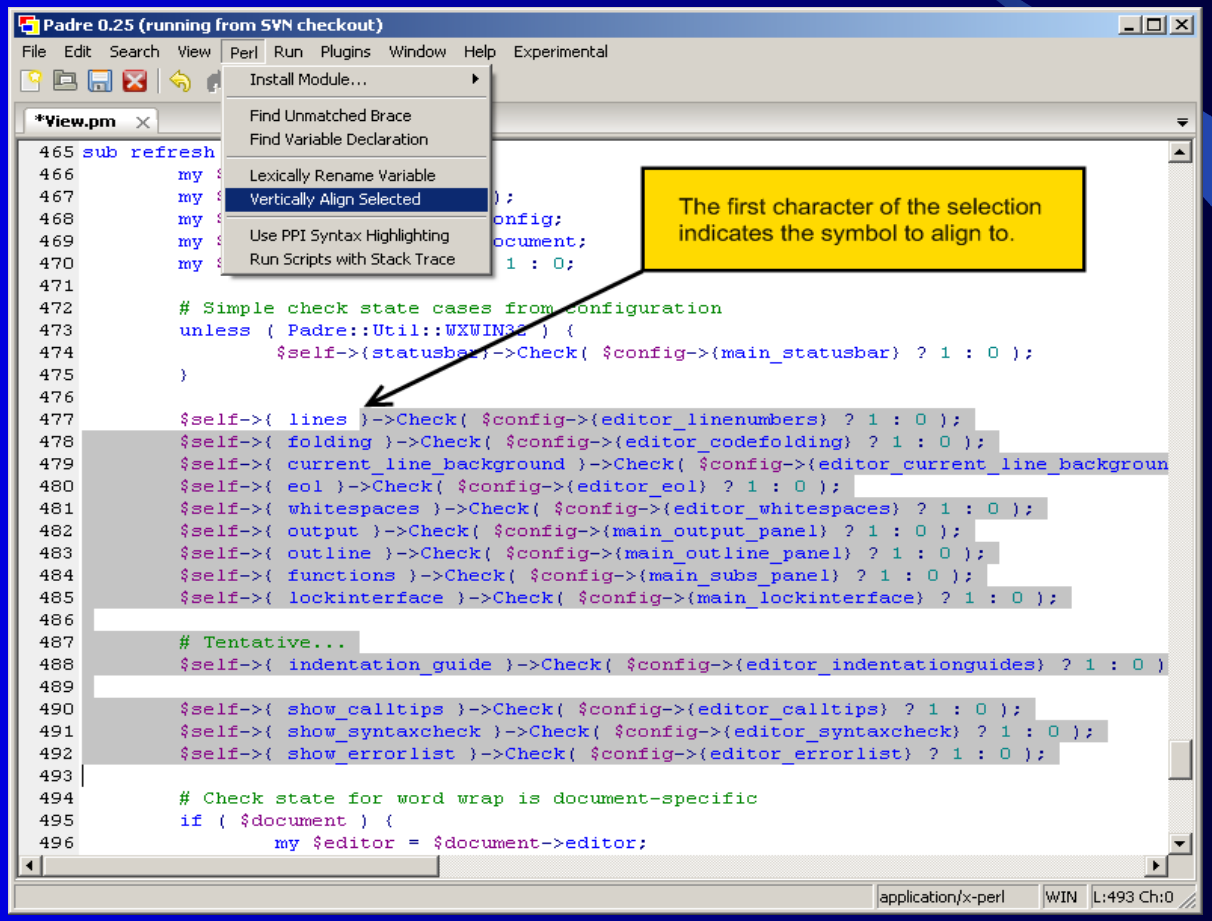
Projects using WxWidgets

Padre Perl Editor – Ubuntu widgets



Projects using WxWidgets

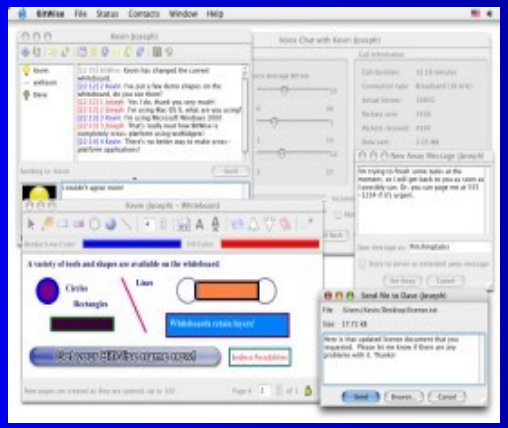
Padre Perl Editor – WinXP widgets

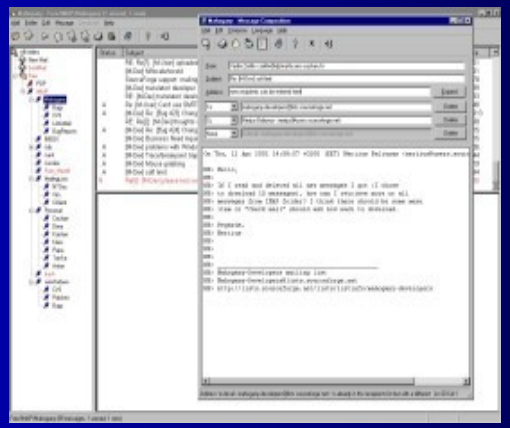


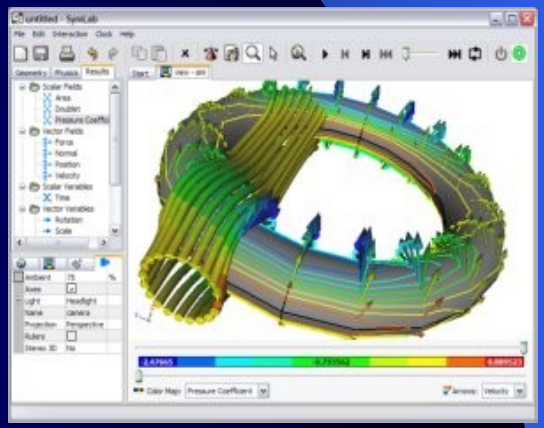
Projects using WxWidgets

From www.wxwidgets.org/about/users.htm

AMD circuit designer, AOL Communicator, Bitwise IM, wxCVS, CMU Audacity audio editor, TortoiseCVS, AVG Anti-virus, Red Hat eCos, W3C Amaya, Mahogany Email, Symlab







Looks promising...

Installing pre-requisites

- For Win32 ASPerl use a PPM for Alien::wxWidgets
  http://www.wxperl.co.uk/ppm.html
- For Debian/Ubuntu the python bundle is handy
  http://wiki.wxpython.org/InstallingOnUbuntuOrDebian
- For Linux get repos wx-common etc. or perl-Wx-*.rpm
- Or build it following instructions at
  - http://search.cpan.org/perldoc?Install
  - Windows prereqs:
    ActivePerl, MinGW, dmake, ExtUtils::FakeConfig,
    wxPerl (sources), wxWidgets (sources),
    Alien::wxWidgets (sources), Wx::ActiveX
  - Linux:
    wxWidgets, Alien::wxWidgets and wxPerl sources

Hello world

- A simple example
- Similar approach to Visual C++ / MFC

```
Load wxPerl main module
use Wx;
```

- Main application will loop forever while a top level window exists, dispatching events

```
Create an application – global state and events
package MyApp;
use base 'Wx::App';
```

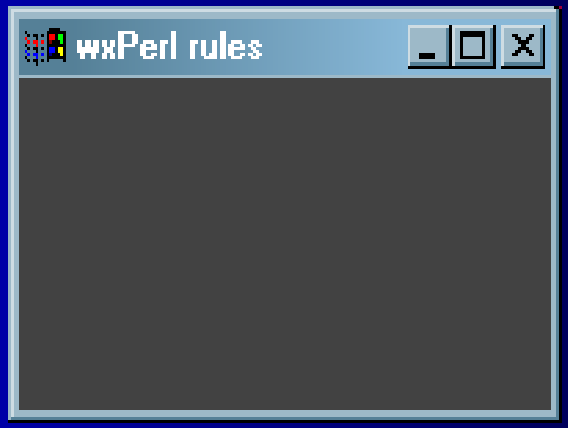
Hello world

- The application object creation triggers an OnInit event which has as default a similarly named callback
- We use it to build the screen objects starting with a top-level “frame” window

```
sub OnInit {
  my $frame = Wx::Frame->new(
    undef,              # parent window
    -1,                 # ID -1 means any
    'wxPerl rules',     # title
    [-1, -1],           # default position
    [250, 150],         # size
    );
  # make it be shown
  $frame->Show( 1 );
}
```

Hello world

- $ perl helloworld.pl
  (Win32 toolkit)



Hello world – button and panel

- We add functionality to Wx::Frame by sub-classing it

```
package MyFrame;

use base 'Wx::Frame';

sub new {
  my $ref = shift;
  my $self = $ref->SUPER::new(
    undef,              # parent window
    -1,                 # ID -1 means any
    'wxPerl rules',     # title
    [-1, -1],           # default position
    [150, 100],         # size
    );
```

Hello world – button and panel

- Panels hold controls and handle navigation

```
# controls go on a panel in a frame
my $panel = Wx::Panel->new(
  $self,                # parent window
  -1,                   # ID
  );

# create a button
my $button = Wx::Button->new(
  $panel,               # parent window
  -1,                   # ID
  'Click me!',          # label
  [30, 20],             # position
  [-1, -1],             # default size
  );
```

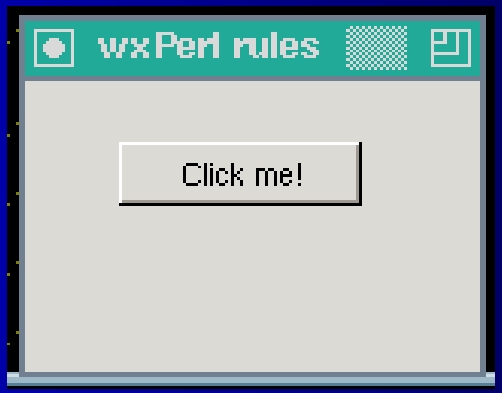
Hello world – button and panel

- Similar app to before but using our Frame sub-class

```
package MyApp;

use base 'Wx::App';

sub OnInit {
    my $frame = MyFrame->new;

   $frame->Show( 1 );
}

package main;

my $app = MyApp->new;
$app->MainLoop;
```

Hello world – button and panel

- Similar app to before but using our Frame sub-class (GTK2 toolkit)

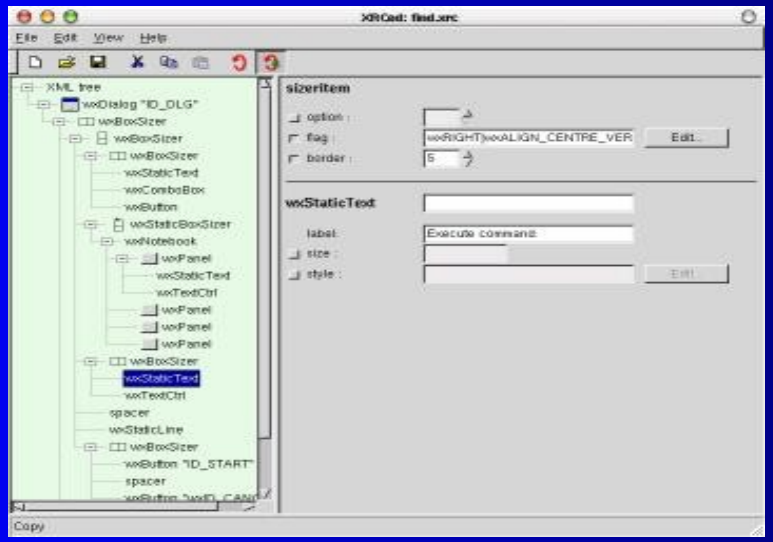


Screen objects are classes

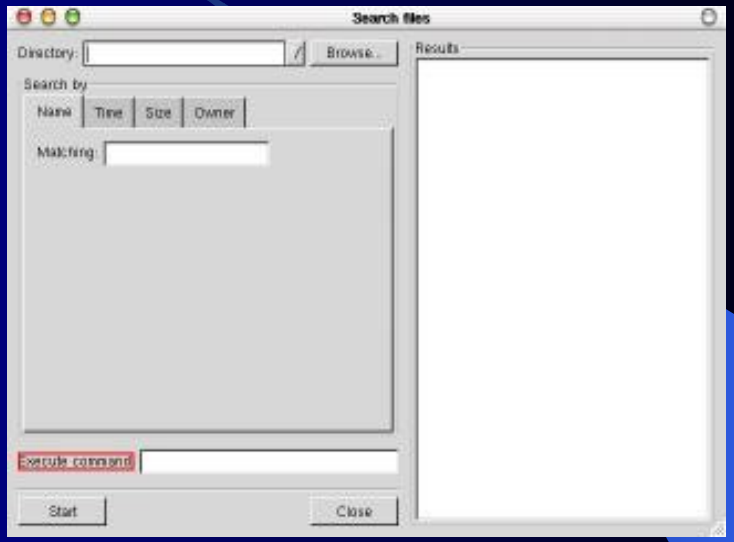
- Screen objects
  - Frame
  - Panels
  - Menus
  - Toolbars
- Are Classes
  - Wx::Frame
  - Wx::Panel etc.
- See the documentation for how to use – the C++ docs are very close to the Perl calling syntax

Design screens with Python's XRCed

Editor



Sample Dialog



- Easier than manually creating screen object from classes
- Produces .XRC XML format dialog resource files
- Download/install XRCed from xrced.sourceforge.net (need to install python first)

Events

- Are accessed through connectors → handlers
- Bubble up until handled or cancelled

Import

```
package MyFrame;

use base 'Wx::Frame';

# import the event registration function
use Wx::Event qw(EVT_BUTTON);
```

Events

Connect object method to event

```
my $button = Wx::Button->new(
   $panel,           # parent window
   -1,               # ID
   'Click me!',      # label
   [30, 20],         # position
   [-1, -1],         # default size
   );

# register the OnClick method as a
# handler for the 'button clicked'
# event. The first argument is a
# Wx::EvtHandler to receive the event
EVT_BUTTON( $self, $button, \&OnClick );
```

Events

- When the button is clicked a “button clicked” event fires in $button and goes via the connector EVT_BUTTON to $method->OnClick
- Event handlers have two arguments: the event receiver (e.g. button, panel) and an event object

Hander

```
sub OnClick {
    my( $self, $event ) = @_;

    $self->SetTitle( 'Clicked' );
}
```

Events

- Result

Using Scintilla editor component

- www.scintilla.org
- WxWidgets bundles the source and wraps it, so if you want the latest you have to rebuild WxPerl
- Lets you build syntax highlighting editors
- XML, HTML, Perl, C++...
  - For decent documentation see the python docs http://www.yellowbrain.com/stc/index.html
  - Also http://docs.wxwidgets.org/trunk/classwx_styled_text_ctrl.html
- You saw a screenshot of it earlier...

Further Information

Documentation

- WxPerl http://wxperl.sourceforge.net/
- WxWidgets http://docs.wxwidgets.org/trunk/
- XRCed http://xrced.sourceforge.net/
- WxCommunity applications

Tutorials/Guides

- http://www.wxwidgets.org/docs/tutorials.htm
- http://wxperl.sourceforge.net/tutorial/tutorial.html
- http://www.ibm.com/developerworks/library/l-wxwidgets/index.htm
- http://padre.perlide.org/wiki/wxWidgets
- http://zetcode.com/tutorials/wxwidgetstutorial/ (C++)

Slides at http://perl.dragonstaff.co.uk
Thank you. Any questions?