Programming in Facebook

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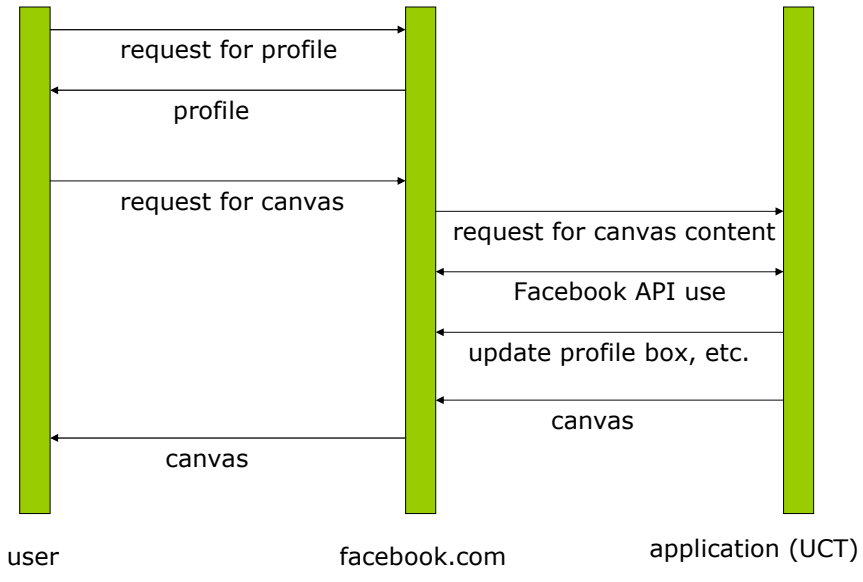
uct cs honours 2007

What is Facebook?

How Facebook Apps work

- Every profile page is made up of many independent portlets or profile boxes.
- Each portlet is generated statically by a possibly external **application** and stored by Facebook.
- It could be an iframe, but in most cases is not.
- Portlets are not actually changed in the profile page – they are changed elsewhere!
- Facebook has mechanisms to link in applications, and APIs for applications to communicate with Facebook.

Facebook Communication



What can the API do

- Get a list of friend ids or friends who are running the same app
- Get and set notifications of events
- Set content of profile box
- Get specific information on a user
- Add to the Newsfeed for a user
- etc.

See: http://developers.facebook.com/documentation.php?v=1.0&doc=

FBML

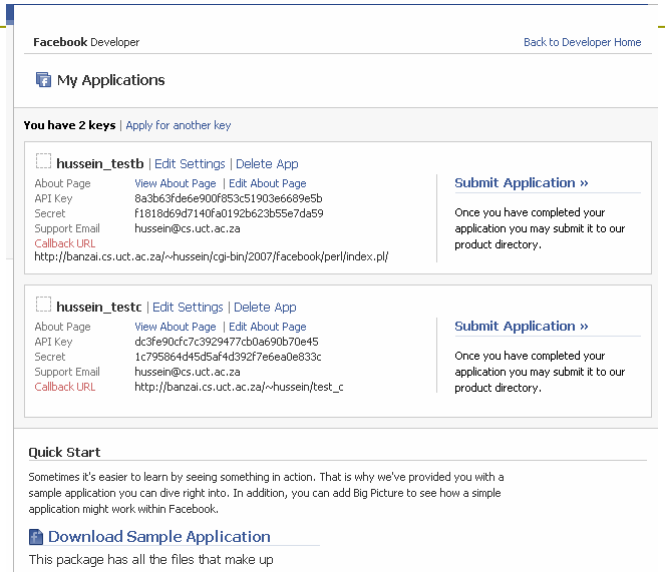
- Language used by Facebook to specify any fragment of Web pages.
- Mostly just like HTML!
- Forms get additional fields added to pass Facebook parameters silently.
- Images are redirected to local copies.
- Links must be absolute (parameters do not work as expected in all toolkits).
- Lots of additional Facebook-specific items
  - <fb:name uid=…> for a user's name
  - <fb:profile-pic …> for a user's profile picture

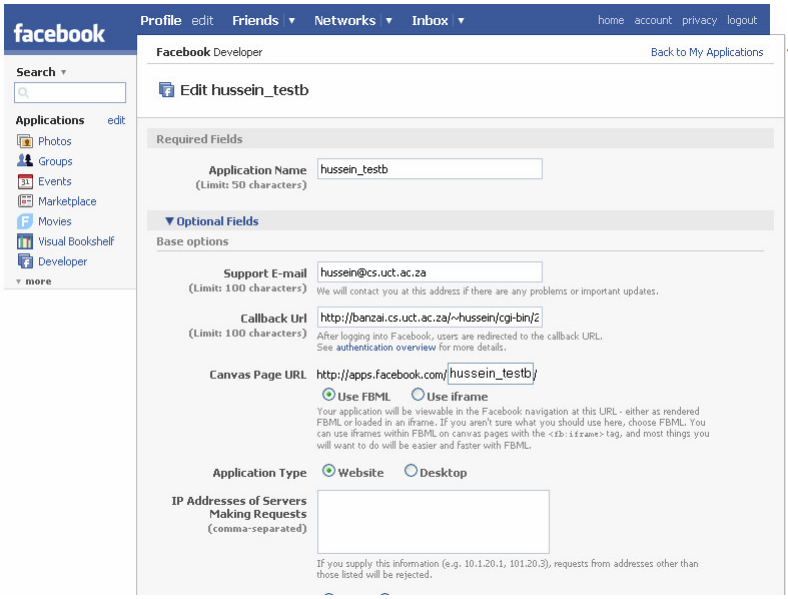
FQL

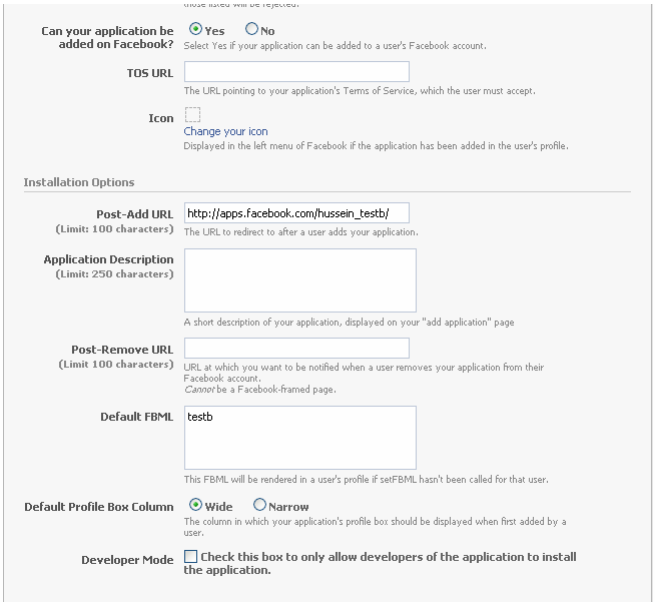
- Facebook Query Language allows access to user database with language that is similar to SQL.
- Example:
  - SELECT first_name FROM user WHERE uid=$params->{user}
  - To get the first name of a user based on the user-id

Creating an Application

- What you need:
  - Web Server
  - API toolkit or roll-your-own
- Add the Developer application to your profile.
- Switch to the Developer application.
- Apply for a key.


Facebook Developer
Back to Developer Home
My Applications
You have 2 keys | Apply for another key
hussein_testb | Edit Settings | Delete App
About Page View About Page | Edit About Page
API Key 8a3b63fde6e900f853c51903e6689e5b
Secret f1818d69d7140fa0192b623b55e7da59
Support Email hussein@cs.uct.ac.za
Callback URL
http://banzai.cs.uct.ac.za/~hussein/cgi-bin/2007/facebook/perl/index.pl/
Submit Application »
Once you have completed your application you may submit it to our product directory.
hussein_testc | Edit Settings | Delete App
About Page View About Page | Edit About Page
API Key dc3fe90cfc7c3929477cb0a690b70e45
Secret 1c795864d45d5af4d392f7e6ea0e833c
Support Email hussein@cs.uct.ac.za
Callback URL http://banzai.cs.uct.ac.za/~hussein/test_c
Submit Application »
Once you have completed your application you may submit it to our product directory.
Quick Start
Sometimes it's easier to learn by seeing something in action. That is why we've provided you with a sample application you can dive right into. In addition, you can add Big Picture to see how a simple application might work within Facebook.
Download Sample Application
This package has all the files that make up


facebook
Profile edit Friends Networks Inbox
home account privacy logout
Search
Applications edit
Photos
Groups
Events
Marketplace
Movies
Visual Bookshelf
Developer
more
Facebook Developer
Back to My Applications
Edit hussein_testb
Required Fields
Application Name
(Limit: 50 characters)
hussein_testb
Optional Fields
Base options
Support E-mail
(Limit: 100 characters)
hussein@cs.uct.ac.za
We will contact you at this address if there are any problems or important updates.
Callback Url
(Limit: 100 characters)
http://banzai.cs.uct.ac.za/~hussein/cgi-bin/
After logging into Facebook, users are redirected to the callback URL.
See authentication overview for more details.
Canvas Page URL
http://apps.facebook.com/hussein_testb/
Use FBML
Use iframe
Your application will be viewable in the Facebook navigation at this URL - either as rendered FBML or loaded in an iframe. If you aren't sure what you should use here, choose FBML. You can use iframes within FBML on canvas pages with the <fb:iframe> tag, and most things you will want to do will be easier and faster with FBML.
Application Type
Website
Desktop
IP Addresses of Servers Making Requests
(comma-separated)
If you supply this information (e.g. 10.1.20.1, 101.20.3), requests from addresses other than those listed will be rejected.

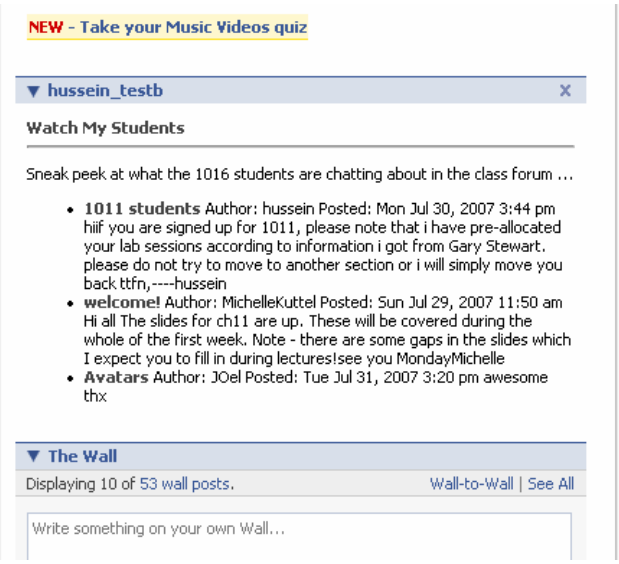

Can your application be added on Facebook?
Yes
No
Select Yes if your application can be added to a user's Facebook account.
TOS URL
The URL pointing to your application's Terms of Service, which the user must accept.
Icon
Change your icon
Displayed in the left menu of Facebook if the application has been added in the user's profile.
Installation Options
Post-Add URL
(Limit: 100 characters)
http://apps.facebook.com/hussein_testb/
The URL to redirect to after a user adds your application.
Application Description
(Limit: 250 characters)
A short description of your application, displayed on your "add application" page
Post-Remove URL
(Limit 100 characters)
URL at which you want to be notified when a user removes your application from their Facebook account.
Cannot be a Facebook-framed page.
Default FBML
testb
This FBML will be rendered in a user's profile if setFBML hasn't been called for that user.
Default Profile Box Column
Wide
Narrow
The column in which your application's profile box should be displayed when first added by a user.
Developer Mode
Check this box to only allow developers of the application to install the application.

This FBML will be rendered in a user's profile if setFBML hasn't been called for that user.
Default Profile Box Column
Wide
Narrow
The column in which your application's profile box should be displayed when first added by a user.
Developer Mode
Check this box to only allow developers of the application to install the application.
Integration Points
Side Nav URL
(Limit: 100 characters)
http://apps.facebook.com/hussein_testb/
URL for your app if you want a link in the side nav. Must be a Facebook canvas page.
Privacy URL
(Limit: 100 characters)
Link to a privacy configuration page for your application.
Help URL
(Limit: 100 characters)
Link to a help page for your application.
Private Installation
Check this box to disable News Feed and Mini-Feed installation stories for your application.
Attachments
Attachment Action:
The action in a dropdown or button for creating a wall or message attachment. (Limit: 20 characters)
Callback URL:
The URL from which to fetch content for attachments. (Limit: 100 characters)
Save
or Cancel
Facebook © 2007
about
developers
jobs
advertisers
polls
terms
privacy
help

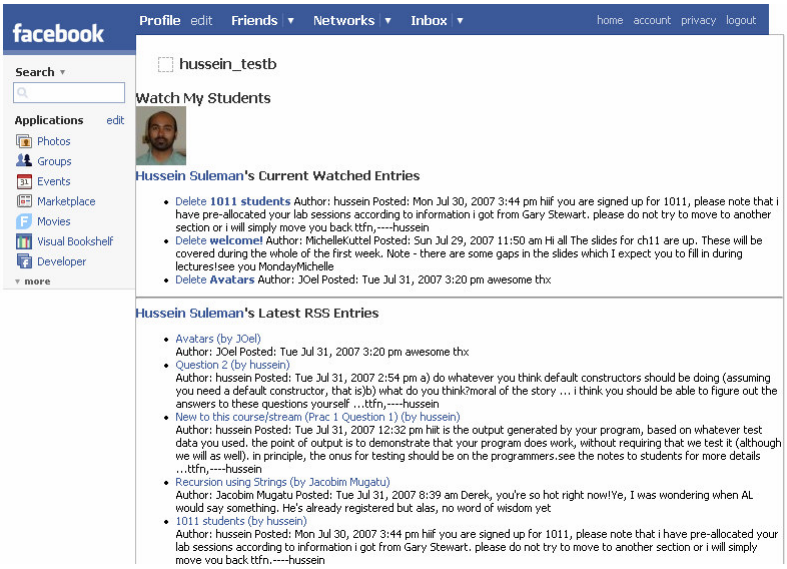
What does a typical application do?

- Check CGI parameters.
- Authenticate using Facebook API.
- Draw configuration Web page on canvas.
- Allow user to update options …
- Write FBML to profile box.
- Save per-user state in database or in filesystem.

Example: Profile Box



Example: Application Canvas



The Code – index.pl

```
#!/usr/bin/perl
#
# sample adapted from Facebook Perl API example
# hussein suleman
# 31 july 2007

use strict;
use CGI;
use WWW::Facebook::API;
use Data::Dumper;
use LWP::UserAgent;
use XML::DOM;

# create FB object with keys included
my $facebook = WWW::Facebook::API->new(
  api_key  => "8a3b63fde6e900f853c51903e6689e5b",
  secret   => "f1818d69d7140fa0192b623b55e7da59",
  app_path => "hussein_testb",
  parse    => 1,
);

# remember to add proxy for UCT!
$facebook->ua->proxy ('http', 'http://cache.uct.ac.za:8080/');

sub main {
   # handler CGI parameters
   my $q = new CGI;
   print $q->header;

   redirect("Must be called in facebook canvas")
     unless $facebook->canvas->in_fb_canvas($q);

   my $params = $facebook->canvas->validate_sig($q);
   if ( $params->{user} ) {
      # Canvas takes care of setting up a session for us, no need to call the
```

```
    # auth methods.
        $facebook->session_key( $params->{session_key} );
    }
    else {
        # User hasn't added app (could reject/display info/whatever)
        # (Or handle later when a user is needed).
    }

    my ( $action, $param ) = ( $q->path_info =~ m!^/(\w+)/?(.*)! );

    # trigger action depending on parameters passed to app
    if ($action eq '')
    { handle_index($param, $params); }
    else
    { print_error ("cannot understand request"); }
}

# canvas drawing routine
sub handle_index {
    my ( $param, $params ) = @_;

    print "<fb:header/>";
    print "<h1>Watch My Students</h1>";
    print "<fb:profile-pic uid=\"$params->{user}\"/> ";

    # list data from disk file with links to delete entries
    print "<h2><fb:name uid=\"$params->{user}\" useyou=\"false\"/>\'s Current Wat
ched Entries</h2>";
    my $fbml = "<b>Watch My Students</b><hr/><p>Sneak peek at what the 1016 stude
nts are chatting about in the class forum ...</p><ul>";
    print "<ul>";
```

```
    open (my $ofile, "data.txt");
    my $po = 0;
    while (my $aline = <$ofile>)
    {
        $po++;
        chomp $aline;
        print "<li><a href=\"http://banzai.cs.uct.ac.za/~hussein/cgi-bin/2007/face
book/perl/delete.pl?position=$po\">Delete</a> $aline</li>";
        $fbml .= "<li>$aline</li>";
    }
    close ($ofile);
    print "</ul>";
    $fbml .= "</ul>";

    print "<hr/>";

    # list data from RSS feed with links to add entries
    print "<h2><fb:name uid=\"$params->{user}\" useyou=\"false\"/>\'s Latest RSS
Entries</h2>";
    print "<ul>";
    my $results = get_RSS();
    $po = 0;
    foreach my $aresult (@$results)
    {
        $po++;
        $aresult->[2] =~ s/\<[^\>]+\>//go;
        print "<li><a href=\"http://banzai.cs.uct.ac.za/~hussein/cgi-bin/2007/face
book/perl/add.pl?position=$po\">$aresult->[0] (by $aresult->[1])</a><br/>$aresul
t->[2]</li>";
    }
    print "</ul>";

    # add application if it has not been added
    if ( !$params ) {
        print "<a href='", $facebook->get_add_url,
```

```
    "'>Add this application</a>.";
    }

    # update profile box
    $facebook->profile->set_fbml (markup => $fbml);
}

# deal with users trying to use app without logging into FB
sub redirect {
    div_error("Please go <a href='"
    . $facebook->get_app_url
    . "'>to facebook</a>" );
    exit;
}

# general error handler
sub print_error {
    print "<div style='padding: 20px'>", join( "", @_ ), "</div>";
}

# retrieve and parse an RSS feed
sub get_RSS
{
    my $ua = new LWP::UserAgent();
    $ua->timeout(10);
    $ua->proxy ('http://cache.uct.ac.za:8080/');

    my $response = $ua->get('http://banzai.cs.uct.ac.za/phpBB2-1016/rss.php');
    my @results = ();

    if ($response->is_success) {
        my $parser = new XML::DOM::Parser;
        my $doc = $parser->parse ($response->content);

        foreach my $anitem ($doc->getElementsByTagName ('item'))
```

```
    {
        my $title = '';
        foreach my $anode ($anitem->getElementsByTagName ('title'))
        {
            if ($anode->hasChildNodes == 1)
            {
                $title = $anode->getFirstChild->toString;
            }
        }
        my $author = '';
        foreach my $anode ($anitem->getElementsByTagName ('author'))
        {
            if ($anode->hasChildNodes == 1)
            {
                $author = $anode->getFirstChild->toString;
            }
        }
        my $description = '';
        foreach my $anode ($anitem->getElementsByTagName ('description'))
        {
            if ($anode->hasChildNodes == 1)
            {
                $description = $anode->getFirstChild->toString;
            }
        }
        $description =~ s/&lt;/\</go;
        $description =~ s/&gt;/\>/go;
        $description =~ s/[\n\r]//go;
        push (@results, [$title, $author, $description]);
      }
    }

    \@results;
}

main();
```

The Code - add.pl

```
#!/usr/bin/perl
#
# sample adapted from Facebook Perl API example
# hussein suleman
# 31 july 2007

use strict;
use CGI;
use LWP::UserAgent;
use XML::DOM;

sub main {
   my $q = new CGI;

   handle_add ($q->param('position'));

   print "Location: http://apps.facebook.com/hussein_testb/\n\n";
}
```

```
sub handle_add {
   my ( $position ) = @_;

   $position--;
   my $results = get_RSS();
   my $aresult = $$results[$position];
   if (defined $aresult)
   {
      $aresult->[2] =~ s/\<[^\>]+\>//go;
      open (my $ofile, ">>data.txt");
      print $ofile "<a href=\"$aresult->[1]\"><b>$aresult->[0]</b></a> $aresult-
>[2]\n";
      close ($ofile);
   }
}

sub get_RSS
{
   my $ua = new LWP::UserAgent();
   $ua->timeout(10);
   $ua->proxy ('http://cache.uct.ac.za:8080/');

   my $response = $ua->get('http://banzai.cs.uct.ac.za/phpBB2-1016/rss.php');
   my @results = ();

   if ($response->is_success) {
      my $parser = new XML::DOM::Parser;
      my $doc = $parser->parse ($response->content);

      foreach my $anitem ($doc->getElementsByTagName ('item'))
      {
         my $title = '';
         foreach my $anode ($anitem->getElementsByTagName ('title'))
         {
            if ($anode->hasChildNodes == 1)
```

```
foreach my $anode ($anitem->getElementsByTagName ('title'))
        {
          if ($anode->hasChildNodes == 1)
          {
            $title = $anode->getFirstChild->toString;
          }
        }
        my $guid = '';
        foreach my $anode ($anitem->getElementsByTagName ('guid'))
        {
          if ($anode->hasChildNodes == 1)
          {
            $guid = $anode->getFirstChild->toString;
          }
        }
        my $description = '';
        foreach my $anode ($anitem->getElementsByTagName ('description'))
        {
          if ($anode->hasChildNodes == 1)
          {
            $description = $anode->getFirstChild->toString;
          }
        }
        $description =~ s/&lt;/\</go;
        $description =~ s/&gt;/\>/go;
        $description =~ s/[\n\r]//go;
        push (@results, [$title, $guid, $description]);
      }
    }

    \@results;
}
```

The Code – delete.pl

```
#!/usr/bin/perl
#
# sample adapted from Facebook Perl API example
# hussein suleman
# 31 july 2007

use strict;
use CGI;

sub main {
  my $q = new CGI;

  handle_delete ($q->param('position'));

  print "Location: http://apps.facebook.com/hussein_testb/\n\n";
}

sub handle_delete {
  my ( $position ) = @_;

  open (my $ofile, "data.txt");
  my @lines = <$ofile>;
  close ($ofile);

  splice (@lines, $position-1, 1);

  open (my $ofile, ">data.txt");
  foreach my $aline (@lines)
  {
    print $ofile $aline;
  }
  close ($ofile);
}

main();
```