

# Programming in Facebook

hussein suleman  
uct cs honours 2007

## What is Facebook?

The screenshot shows a Facebook profile for Paolo Pileggi. The page layout includes a top navigation bar with 'facebook', 'Profile', 'Friends', 'Networks', 'Inbox', and links for 'home', 'account', 'privacy', and 'logout'. On the left, there is a search bar and a sidebar with 'Applications' such as Photos, Groups, Events, Marketplace, Movies, Visual Bookshelf, and Developer. The main content area features a profile picture of Paolo Pileggi, a 'Mini-Feed' with a post from July 24th, and sections for 'Information' and 'Education Info'. The 'Information' section lists contact details like email (ppileggi@gmail.com) and website (http://paolopileggi.blogspot.com). The 'Education Info' section shows he attended Cape Town '07 for Computer Science (hons). At the bottom, there is a 'Gift Box' section displaying one gift.

facebook Profile edit Friends Networks Inbox home account privacy logout

Search

Applications edit

- Photos
- Groups
- Events
- Marketplace
- Movies
- Visual Bookshelf
- Developer
- more

View Photos of Paolo (82)

- Take my Just for fun Quiz
- Recommend a book
- Compare Movie Taste
- Send Paolo a Message
- Poke Him!

Mutual Friends

8 Friends in common. See All

Norman Ken Matthew

Paolo Pileggi Profile

Networks: Cape Town Grad Student  
Worcester, MA

Sex: Male  
Birthday: February 18  
Hometown: South Africa

Mini-Feed

Displaying 2 stories. See All

Today

Paolo added the Developer application. 7:23am

July 24

Paolo is very happy. 8:44am

Information

Contact Info

Email: ppileggi@gmail.com  
Google Talk: ppileggi  
Residence: Cape Town  
Website: http://people.cs.uct.ac.za/~ppileggi  
http://paolopileggi.blogspot.com

Education

Education Info

College: Cape Town '07  
Computer Science (hons)

Gift Box

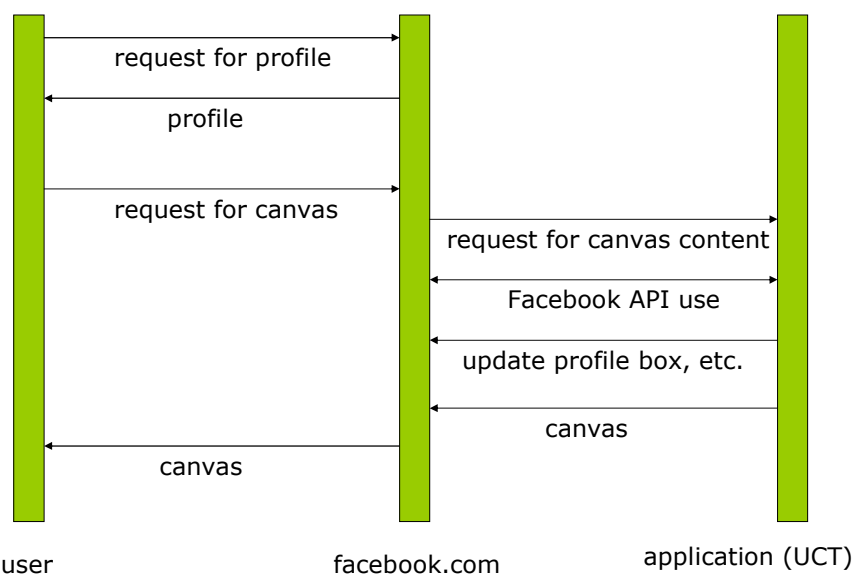
Displaying 1 gift. Give a Gift | See All

uctac.facebook.com...

## 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

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- ❑ 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

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- ❑ 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

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- 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

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- 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	<a href="#">View About Page</a>   <a href="#">Edit About Page</a>	<a href="#">Submit Application »</a> Once you have completed your application you may submit it to our product directory.
API Key	8a3b63fd6e900f853c51903e6689e5b	
Secret	f1818d69d7140fa0192b623b55e7da59	
Support Email	hussein@cs.uct.ac.za	
Callback URL	http://banzai.cs.uct.ac.za/~hussein/cgi-bin/2007/facebook/per/index.pl/	

**hussein\_testc** | [Edit Settings](#) | [Delete App](#)

About Page	<a href="#">View About Page</a>   <a href="#">Edit About Page</a>	<a href="#">Submit Application »</a> Once you have completed your application you may submit it to our product directory.
API Key	dc3fe90cf7c3929477cb0a690b70e45	
Secret	1c795864d45d5af4d392f7e6ea0e833c	
Support Email	hussein@cs.uct.ac.za	
Callback URL	http://banzai.cs.uct.ac.za/~hussein/test_c	

**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

Facebook Developer Back to My Applications

### Edit hussein\_testb

Required Fields

Application Name   
(Limit: 50 characters)

Optional Fields

Base options

Support E-mail   
(Limit: 100 characters) We will contact you at this address if there are any problems or important updates.

Callback Url   
(Limit: 100 characters) After logging into Facebook, users are redirected to the callback URL. See [authentication overview](#) for more details.

Canvas Page URL   
 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.

facebook.com/developers

**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.

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**Installation Options**

**Post-Add URL**   
(Limit: 100 characters) 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**   
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.**

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**Integration Points**

**Side Nav URL**   
(Limit: 100 characters) 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

[NEW - Take your Music Videos quiz](#)

▼ **hussein\_testb** X

### Watch My Students

Sneak peek at what the 1016 students are chatting about in the class forum ...

- **1011 students** Author: hussein Posted: Mon Jul 30, 2007 3:44 pm  
hiif you are signed up for 1011, please note that i have pre-allocated your lab sessions according to information i got from Gary Stewart. please do not try to move to another section or i will simply move you back ttfn, ---hussein
- **welcome!** Author: MichelleKuttel Posted: Sun Jul 29, 2007 11:50 am  
Hi all The slides for ch11 are up. These will be covered during the whole of the first week. Note - there are some gaps in the slides which I expect you to fill in during lectures!see you MondayMichelle
- **Avatars** Author: JOel Posted: Tue Jul 31, 2007 3:20 pm awesome thx

### ▼ The Wall

Displaying 10 of 53 wall posts.

[Wall-to-Wall](#) | [See All](#)

Write something on your own Wall...

## Example: Application Canvas

The screenshot shows a Facebook profile page for 'hussein\_testb'. The page is divided into two main sections within a canvas:

- Watch My Students:** This section features a profile picture of Hussein Suleman and a list of entries under the heading 'Hussein Suleman's Current Watched Entries'. The entries include:
  - Delete 1011 students:** Posted by Hussein on Mon Jul 30, 2007 3:44 pm. Content: 'hif you are signed up for 1011, please note that i have pre-allocated your lab sessions according to information i got from Gary Stewart. please do not try to move to another section or i will simply move you back ttfn.----hussein'
  - Delete welcome!** Posted by MichelleKuttel on Sun Jul 29, 2007 11:50 am. Content: 'Hi all The slides for ch11 are up. These will be covered during the whole of the first week. Note - there are some gaps in the slides which I expect you to fill in during lectures(see you MondayMichelle'
  - Delete Avatars:** Posted by Joel on Tue Jul 31, 2007 3:20 pm. Content: 'awesome thx'
- Hussein Suleman's Latest RSS Entries:** This section lists several entries:
  - Avatars (by Joel):** Author: Joel Posted: Tue Jul 31, 2007 3:20 pm. Content: 'awesome thx'
  - Question 2 (by hussein):** Author: hussein Posted: Tue Jul 31, 2007 2:54 pm. Content: 'a) do whatever you think default constructors should be doing (assuming you need a default constructor, that is(b) what do you think?moral of the story ... i think you should be able to figure out the answers to these questions yourself ...tfn.----hussein'
  - New to this course/stream (Prec 1 Question 1) (by hussein):** Author: hussein Posted: Tue Jul 31, 2007 12:32 pm. Content: 'hit is the output generated by your program, based on whatever test data you used. the point of output is to demonstrate that your program does work, without requiring that we test it (although we will as well). in principle, the onus for testing should be on the programmers.see the notes to students for more details ..tfn.----hussein'
  - Recursion using Strings (by Jacobim Mugatu):** Author: Jacobim Mugatu Posted: Tue Jul 31, 2007 8:39 am. Content: 'Derek, you're so hot right now!Ye, I was wondering when AL would say something. He's already registered but alas, no word of wisdom yet'
  - 1011 students (by hussein):** Author: hussein Posted: Mon Jul 30, 2007 3:44 pm. Content: 'hif you are signed up for 1011, please note that i have pre-allocated your lab sessions according to information i got from Gary Stewart. please do not try to move to another section or i will simply move you back ttfn.----hussein'

## 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!^\s*(\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++;
□ $aresult->[2] =~ s/\s<[\^>]+\s//go;
□ print "<li><a href=\"http://banzai.cs.uct.ac.za/~hussein/cgi-bin/2007/face
□ book/perl/add.pl?position=$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;/>/&lt;/go;
□   $description =~ s/&gt;/&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 $areport = $$results[$position];
□   if (defined $areport)
□   {
□     $areport->[2] =~ s/<[^>]+\>//go;
□     open (my $ofile, ">>data.txt");
□     print $ofile "<a href=\"\$areport->[1]\"><b>$areport->[0]</b></a> $areport-
□ >[2]\n";
□     close ($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;/>/<br>/go;
□   $description =~ s/&gt;/>br>/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();

```