

GraphDB Web App

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Project Overview

Using the graph database Neo4j alongside APEX and a RESTful service (written in PHP), we implemented a service to allow users to view and share free events with other users.

url: <https://apex.oracle.com/pls/apex/f?p=77063:1>

Specifications

- Based on a user's liked categories, events will be recommended to them that contain those tags
- Users -
 - can follow other users, and see events those users are planning to attend
 - can create new events, which will be visible to all other users
 - have a dynamically created dashboard that is populated with data from the database
 - can search within the application for users and events, and view the pages for them

Graph database -- Neo4j

- Graph database - everything represented as node or link between nodes
- Ability to better represent the complex relationships between nodes.

Database Comparison

Graph - Neo4j

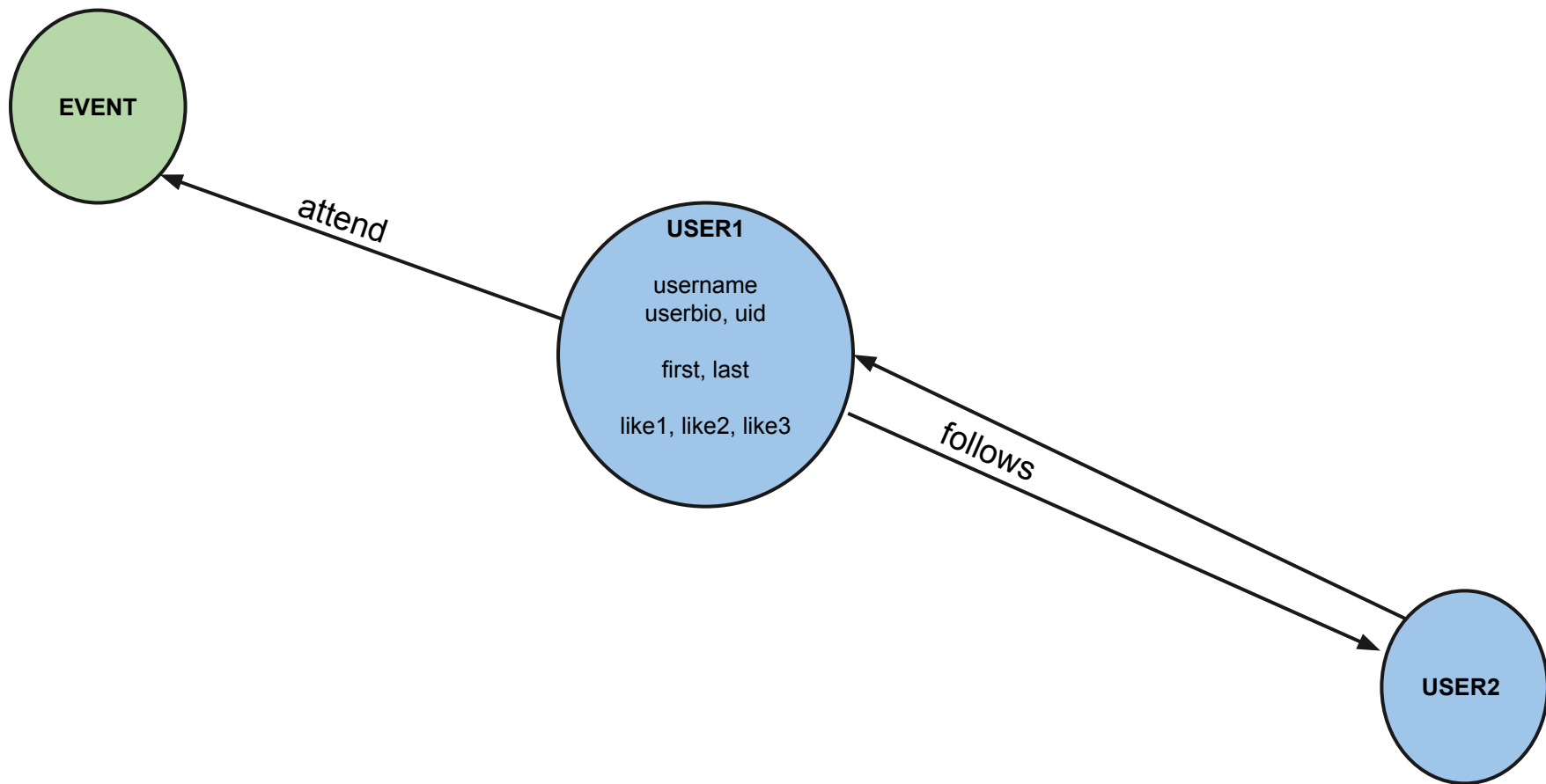
- Relationships are built into the database, same quality as nodes
- Data remains represented in real-world style
- Node labels
- Single Node
- Node Properties
- Queries using Cypher

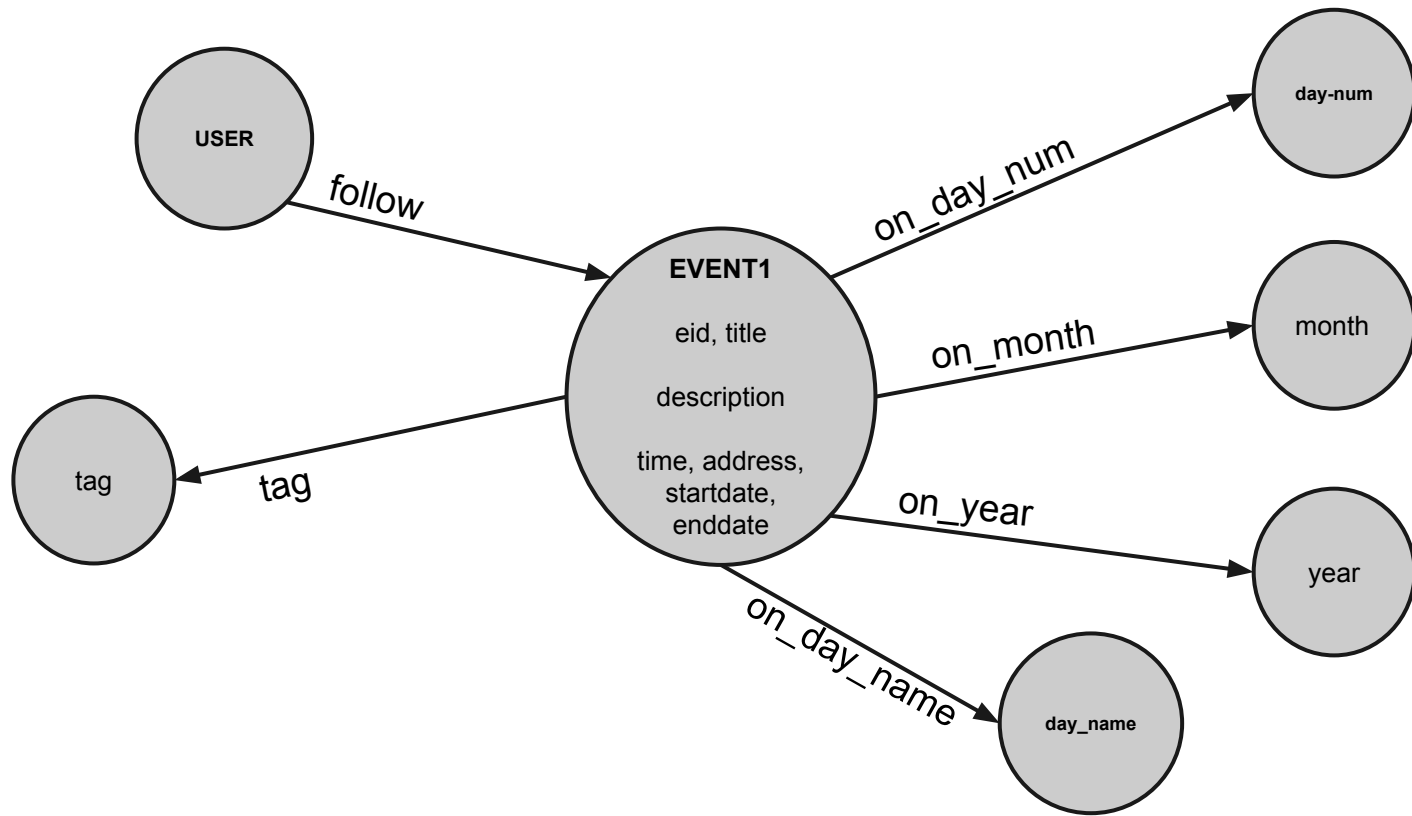
Relational - Oracle

- Implied relationships (through foreign keys, etc.)
- Data has to be abstracted to a large degree
- Entity Table
- Row in the Table
- Column in the Table
- Queries using SQL

Neo4j Specifics

- Neo4j
 - node-property database
 - edges AND nodes can have properties
- Most Other Graph DBs
 - RDF database
 - only nodes have properties, edges are just connections





Cypher Example

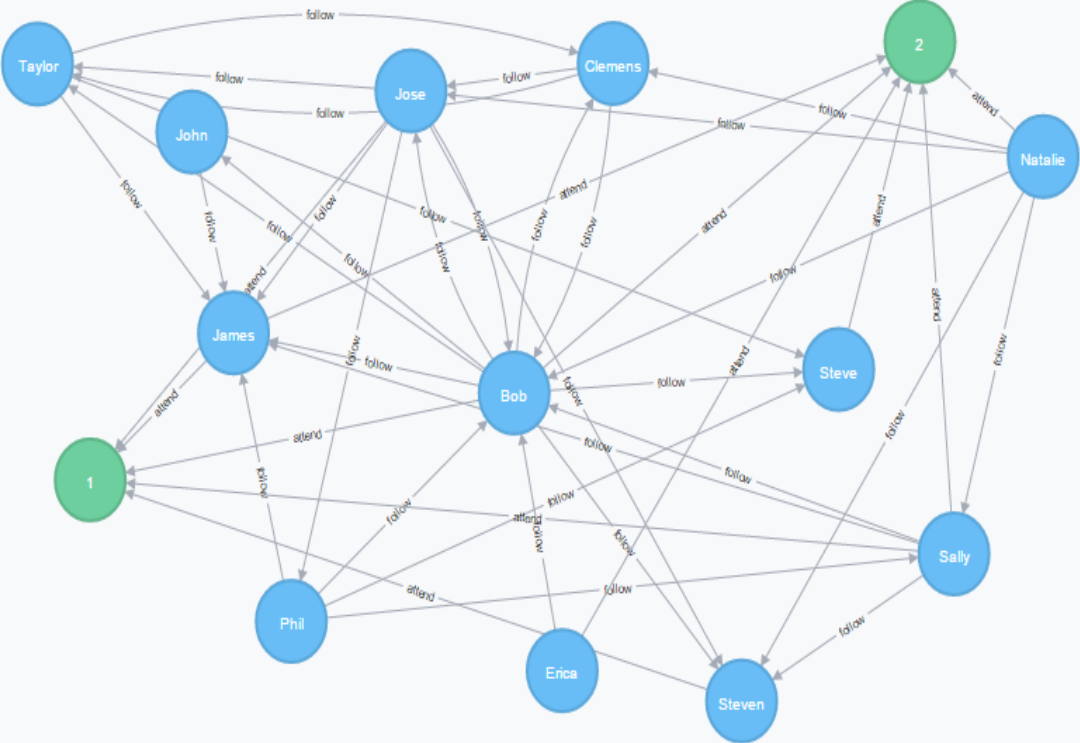
```
match (n {username: "pcannata"})-[]->(m)  
set n.last = "Cannata"  
return n, m
```

This query finds the node with the username “pcannata,” sets the *last* property of that node to “Cannata”, then returns that node, as well as all edges and nodes directly connected to it.

```
$ MATCH (n:user{username:'bbuilder'})-[]-(m) RETURN m,n LIMIT 25
```

*(14) event(2) user(12)

*(43) attend(11) follow(32)



RESTful Service Intro

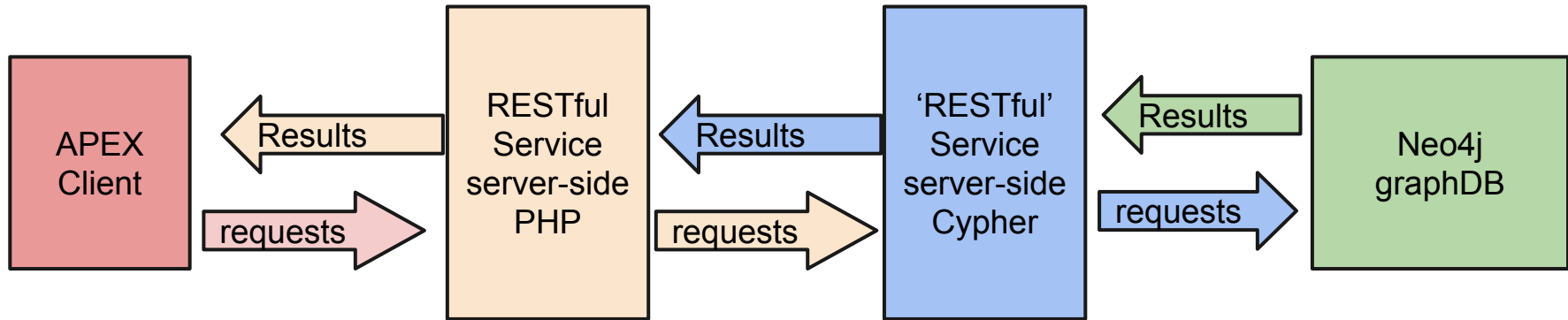
Representational State Transfer

- software architecture style to allow for scalable, distributed, maintainable web system
- GET, POST, PUT, DELETE, etc...
- web browser communication with server

Our RESTful Service

- PHP RESTful service built on top of Neo4j
'RESTful'
 - cleaner calls from APEX
 - cleaner results
 - conform to RESTful guidelines

RESTful Communication



Web Services Shared Components

Web Service ReferencesHistory

GoActions

ResetCreate

Name	URL	Test	View	Updated By	Updated
get_adv_events	staycalm.me/REST/REST.php			MARTINC5408@GMAIL.COM	11 hours ago
get_attend	staycalm.me/REST/REST.php				
get_bio	staycalm.me/REST/REST.php				
get_event	staycalm.me/REST/REST.php				
get_follows	staycalm.me/REST/REST.php				
get_follows_events	staycalm.me/REST/REST.php				
get_rec_events	staycalm.me/REST/REST.php				
put_attend	staycalm.me/REST/REST.php				
put_event	staycalm.me/REST/REST.php			CLEMENSLEE@UTEXAS.EDU	12 hours ago
put_follow	staycalm.me/REST/REST.php				
put_unattend	staycalm.me/REST/REST.php				
put_unfollow	staycalm.me/REST/REST.php				

Web Service References

The Application Express engine can use Web Service References to access a Web service across the network. The Web service performs an action and then sends back a response.

To edit an existing reference, click the reference name. To test a reference, click the **Test** icon. To view details about a reference, click the **View** icon. Click the **Create** button to create a new Web reference.

Note: To view the **Test** and **View** icons, you must be in the report view and not the icon view. Click the **View Report** button in the interactive report search bar.

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Web Service Processes

Processes			
After Regions			
10 Web Service Request Following	Web Service		
11 Web Service Request Rec Events	Web Service		
12 Web Service Request Attend	Web Service		
13 Web Service Request Follows Events	Web Service		
Dynamic Actions			

Web Service Processes

```
select title as "Event Title", description, eid
from xmltable (
    '/json/row'
    passing apex_json.to_xmltype((select clob001 from apex_collections
    where collection_name = 'P50_DOREST_RESULTS_REC_EVENTS'))
    columns
        title varchar(255) path '/row/title',
        description varchar(4000) path '/row/description',
        eid varchar(255) path '/row/eid');
```


Preview Slides

Free Stuff!

Chris

ABP

https://apex.oracle.com/pls/apex/f?p=77063:1:106062752850436:::...

FreeStuff

Your Profile

Create Event

Advanced Event Search

Log Out

Home

Please Select User

Login

Bob Builder

Sally Roe

John Doe

Juan Perez

Jose Martinez

Natalie Martinez

James Bond

Phil Cannata

Sally Fields

Taylor Ellis

Clemens Lee

Chris Martin

Tim Bedard

Han Solo

Luke Skywalker

Indiana Jones

Steven Green

Erika Speegle

Peggy Carter

release 1.0 [Set Screen Reader Mode On](#)

Windows Taskbar

12:35 PM 4/28/2015

Main Menu

User Dash

https://apex.oracle.com/pls/apex/f?p=77063:50:6488108876575::NO::

Taylor

Apps

Facebook

School

Organization

Fun

Workout

Music

Money

Computer

Relax...

Dress

Read Later

Watch Marvel's Age...

Other bookmarks

FreeStuff

Log Out

Your Profile

Create Event

Advanced Event Search

Find People

Enter Username

search

Find Events

Enter Event ID

search

Your Recommended Events

Q

Go

Actions

Event Title	Description	Eid
SXSW Swag	Free SXSW gear from our sponsors!	6

1 - 1

Your Events

Q

Go

Actions

Event Title	Description	Eid
Wine Tasting	free sampling of wine from local vineyards	3
Film Festival	Austin fifth annual film festival	4

1 - 2

Your Network

Q

Go

Actions

Name	Likes
Juan Perez	food, movies, and clothes
Tim Bedard	games, code, and music
James Bond	movies, action, and drinks
Luke Skywalker	action, flying, and wit
Han Solo	flying, action, and wit

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Events in your Network

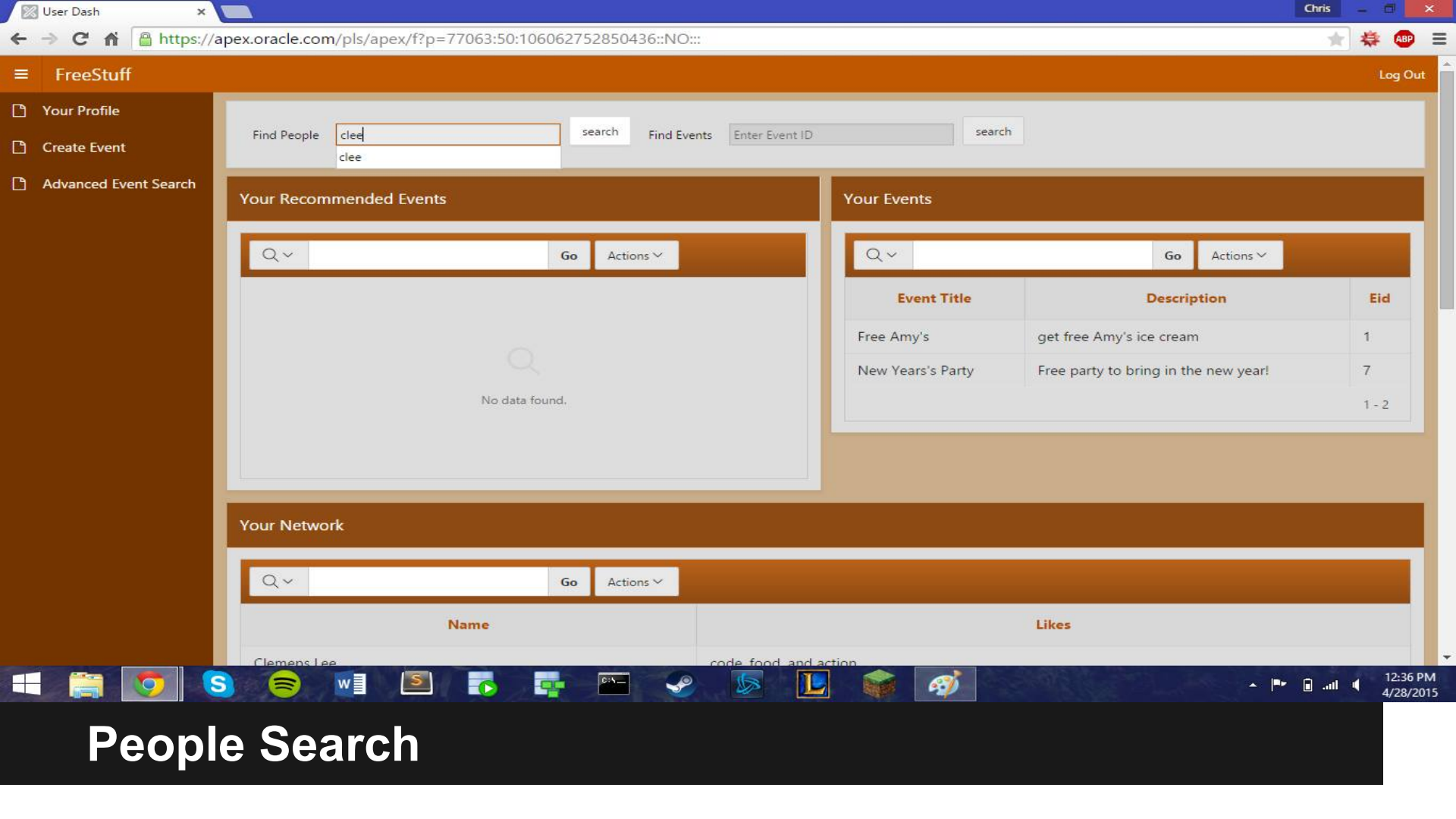
Q

Go

Actions

Event Title	Description	Eid
-------------	-------------	-----

User Dashboard -



People Search

Chris

12:37 PM 4/28/2015

https://apex.oracle.com/pls/apex/f?p=77063:55:106062752850436::NO:RP%2C50%2C55%2C60::

FreeStuff

Log Out

Your Profile

Create Event

Advanced Event Search

Find People

Enter Username

search

Find Events

Enter Event ID

search

Follow

Unfollow

User Details

Q

Go

Actions

See User Bio

Name	About Me
Clemens Lee	Clemens Lee is a co-creator of this site. He is employed at National Instruments.

1 - 1

Events They're Attending

Q

Go

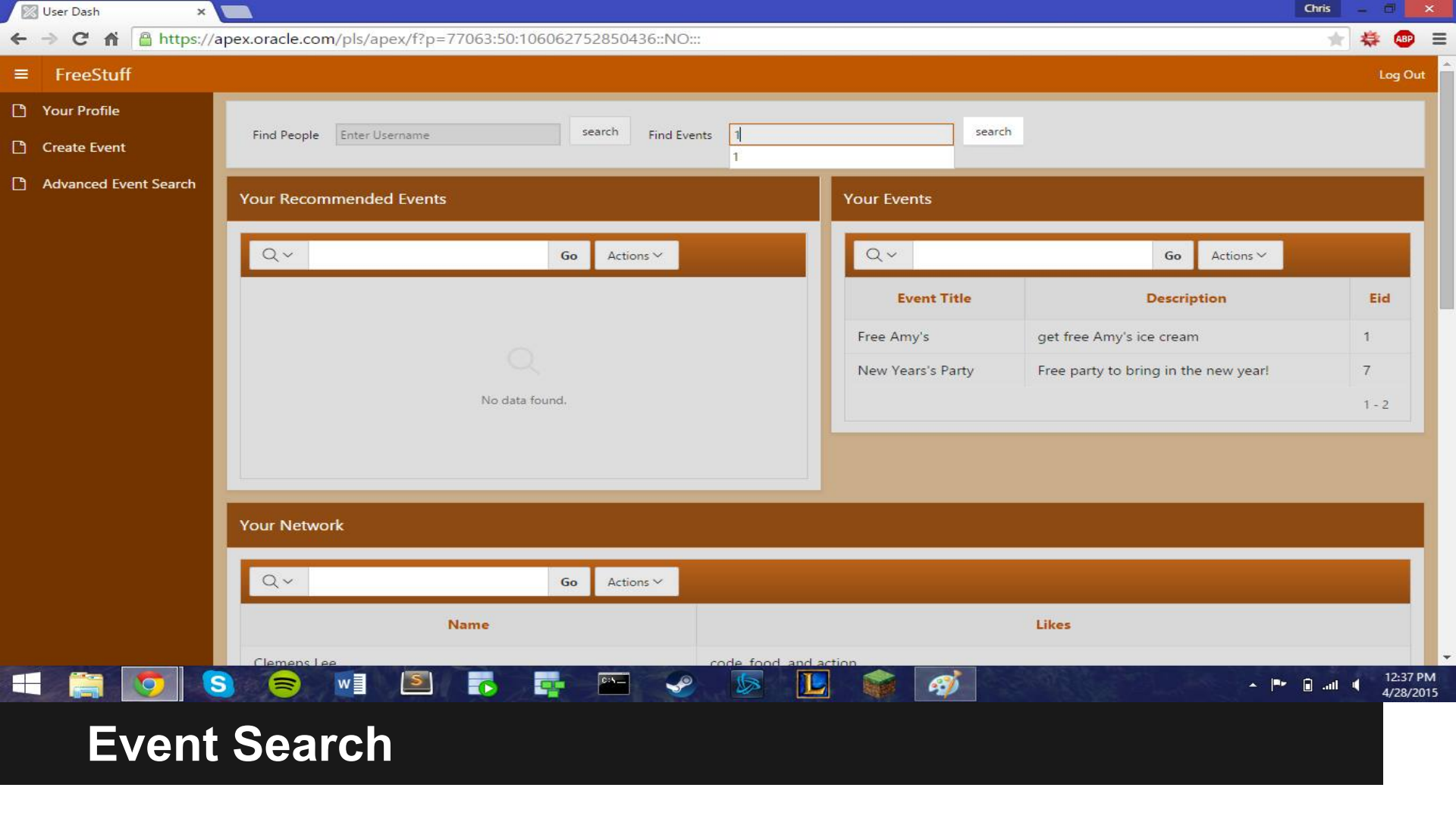
Actions

Event Title	Description
New Years's Party	Free party to bring in the new year!
Film Festival	Austin fifth annual film festival

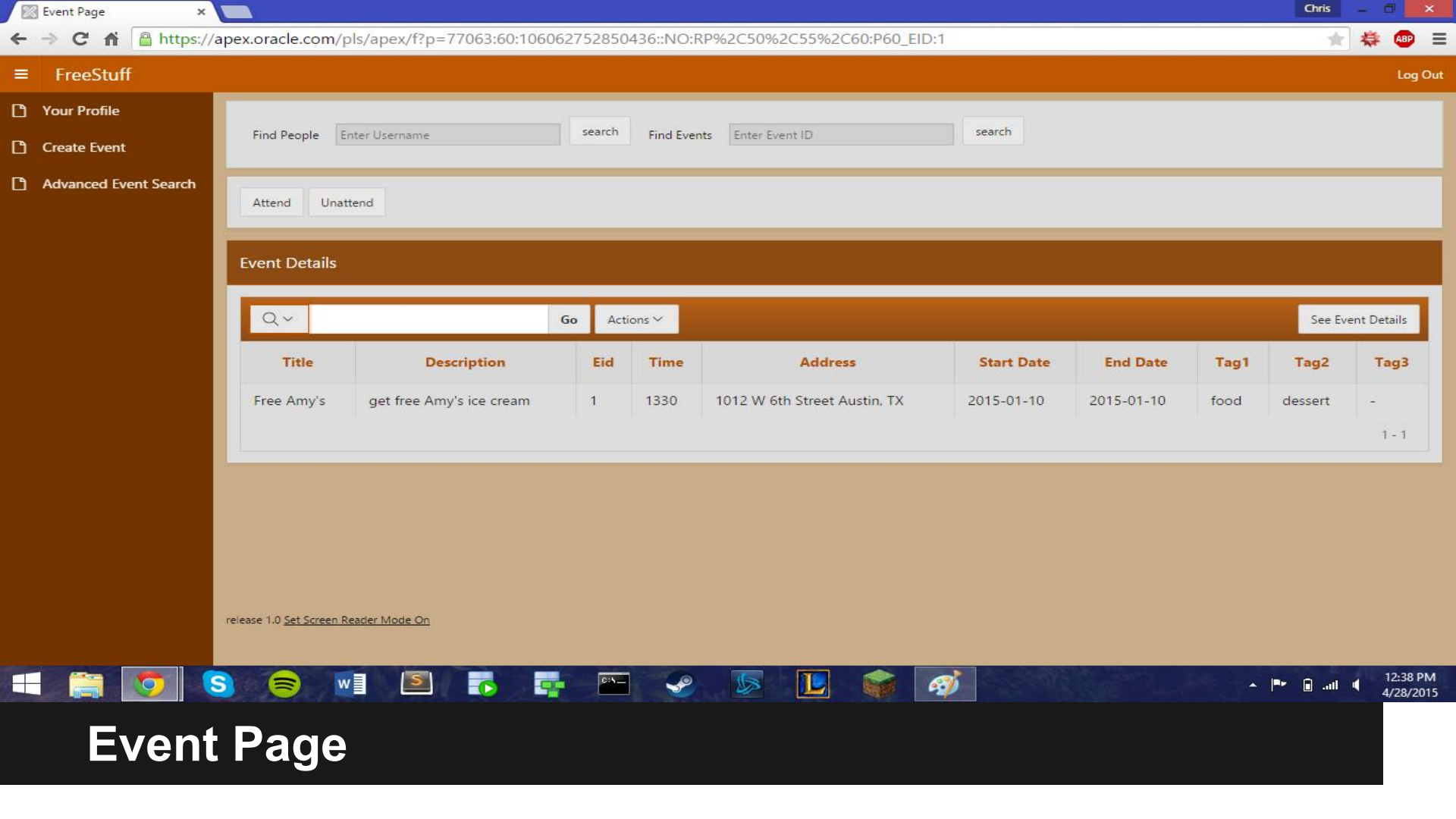
Windows Taskbar

12:37 PM 4/28/2015

Public Profile



Event Search



Event Page

User Dash Taylor

https://apex.oracle.com/pls/apex/f?p=77063:50:6488108876575::NO::

Apps School Organization Fun Workout Music Money Computer Relax... Dress Read Later Watch Marvel's Age... Other bookmarks

FreeStuff Log Out

Your Profile

Create Event

Advanced Event Search

Find People Enter Username search Find Events Enter Event ID search

Your Recommended Events

Q Go Actions

Event Title	
SXSW Swag	Free SXSW gear from our sponsors

Your Events

Q Go Actions

Description	Eid
free sampling of wine from local vineyards	3
Austin fifth annual film festival	4

1 - 2

Create Event

Event Title

Event Description

Event Time (HHMM - 24 Hour)

Event Address

Start Date (YYYY-MM-DD)

End Date (YYYY-MM-DD)

Tag1

Tag2

Your Network

Q Go Actions

Name

Juan Perez

Tim Bedard

James Bond

Luke Skywalker

Han Solo

Events in your Network

Q Go Actions

Event Title	Description	Eid
-------------	-------------	-----

Event Creation

FreeStuff

Your Profile

Create Event

Advanced Event Search

Find People

Enter Username

se

Your Recommended Events

Q

Go

Event Title

SXSW Swag

Free SXSW gear from our sponsors!

Your Network

Q

Go

Nam

Juan Perez

Tim Bedard

James Bond

Luke Skywalker

Han Solo

Events in your Network

Q

Go

Event Title

Advanced Event Search

Search by

Day of the week (Monday, Tuesday, etc.)

Day of the month (#)

Month (1 = January, 2 = February, etc.)

Year (YYYY)

2015

Submit

Search Results

Title	Description	Eid	Time	Address	Start Date	End Date	Tag1	Tag2	Tag3
Madam Mam's tasting	try some delicious Asian cuisine at Madam Mam's!	5	1800	2514 Guadalupe St, Austin, TX 78705	2015-05-31	2015-05-31	food	chinese	
Film Festival	Austin fifth annual film festival	4	1600	801 Salina St. Austin, TX 78702	2015-04-28	2015-04-28	drinks	movies	food
New Years's Party	Free party to bring in the new year!	7	2200	2201 Speedway, Austin, TX 78712	2015-12-31	2016-01-01	food	drinks	music
SXSW Swag	Free SXSW gear from our sponsors!	6	1200	6th Street, Austin, TX	2015-06-17	2015-06-17	clothes	books	movies
Free Amy's	get free Amy's ice cream	1	1330	1012 W 6th Street Austin, TX	2015-01-10	2015-01-10	food	dessert	
Wine Tasting	free sampling of wine from local vineyards	3	1530	24912 #1 Singleton Bend East Marble Falls TX 78654	2015-03-23	2015-03-23	drinks		
Free CS	comp nut free			Bill and Melinda Gates Computer Science Complex, The	2016	2016			

Go

Actions

Description

Eid

g of wine from local vineyards

3

annual film festival

4

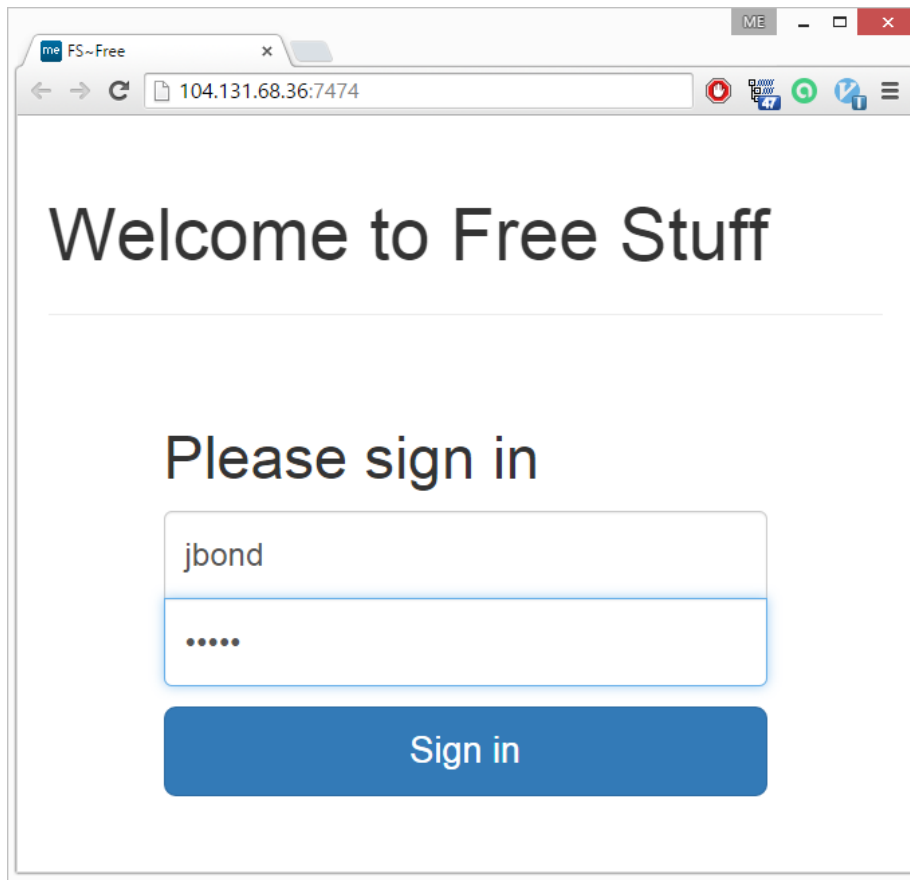
1 - 2

Likes

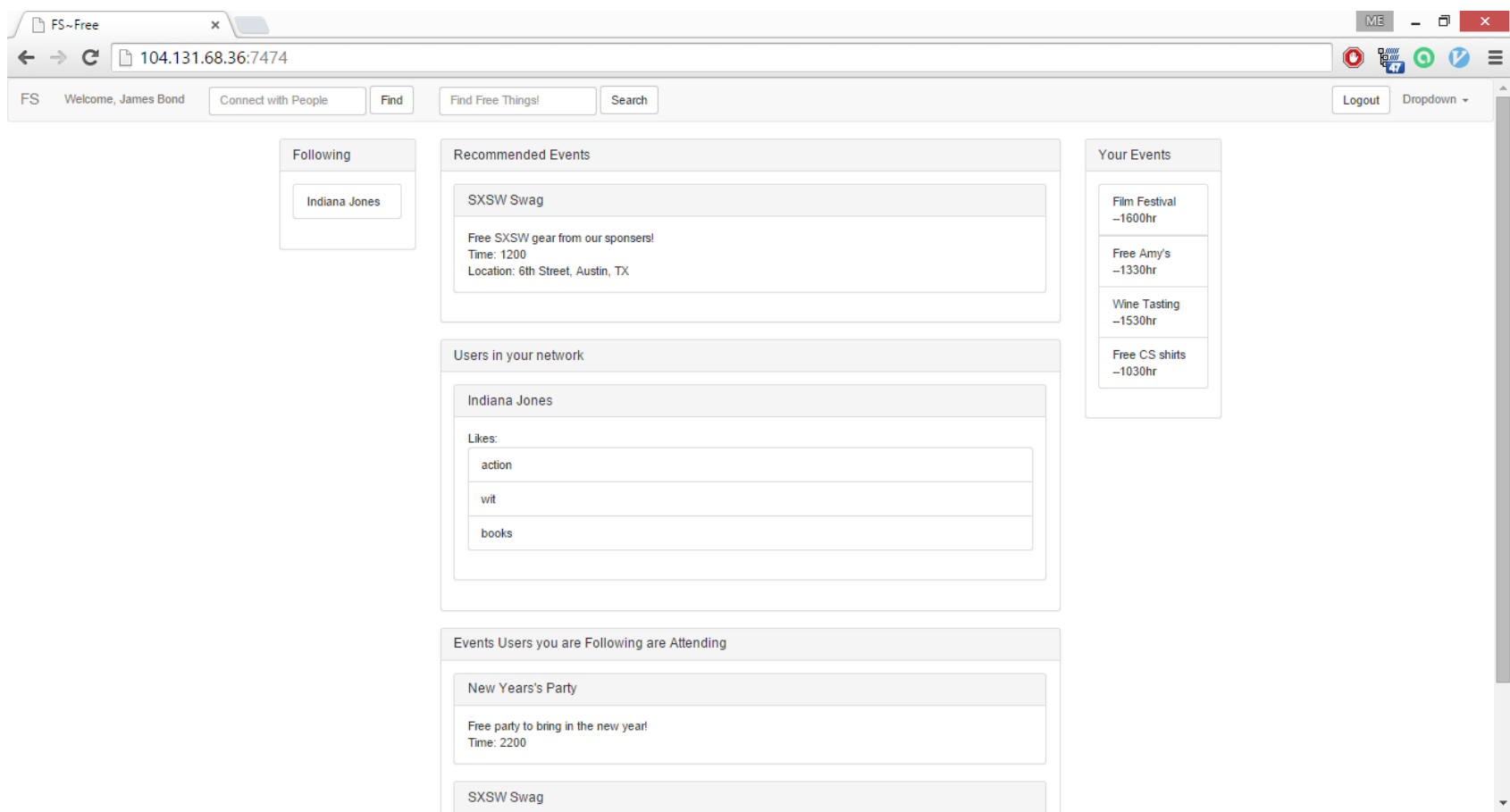
1 - 5

Eid

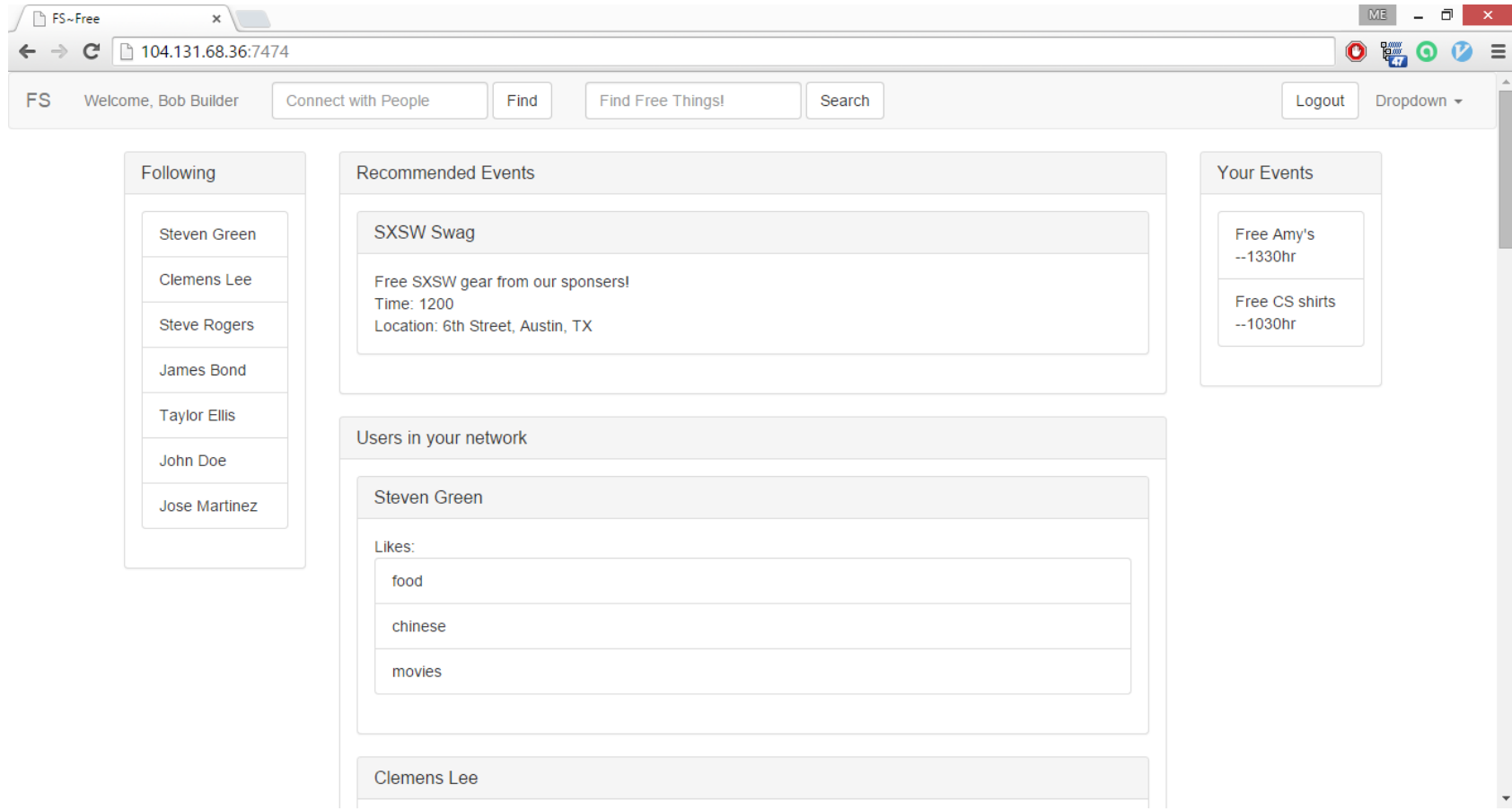
Advanced Searching



non-APEX login page



non-APEX user dash



non-APEX user dash

Events Users you are Following are Attending

New Years's Party

Free party to bring in the new year!
Time: 2200

Film Festival

Austin fifth annual film festival
Time: 1600

Madam Mam's tasting

try some delicious Asian cuisine at Madam Mam's!
Time: 1800

Wine Tasting

free sampling of wine from local vineyards
Time: 1530

SXSW Swag

Free SXSW gear from our sponsors!

non-APEX Events in your Network