High order testing - FreeFoodEngine

We will be using the Usability Testing, Security Testing and Stress Testing. The reason we choose Usability. With Usability Testing we will obtain this datas on how user friendly and easy to navigate our web application is. On the other hand, Security Testing is also very crucial because our web application deals with private information about our users. We have to protect all those informations, so that they are not compromised or injected and users are confident about the privacy terms. Finally, we choose Stress Testing because our web application will be made public where there are possibility that we will have a large user audience. We have to make sure that our web application doesn't crash when we have a large user traffic and optimize the response time and server capacity.

Usability Testing

Our strategic, our Usability Testing involves user to interact with our webapp using their own personal computer based on test plan that we have designed. Before we started the test, we have inputted some events into the web application. We gather 6 people who was not involved in the development of this web app in Lawson Computer lab. Since our web app is running live, we provided them with a link to our web app. Then each team member went around and recorded every user experience that all of our participant had. Once all 6 people have done interacting with our web application we had a short discussion where each participant are given an opportunity to tell us how to improve our web app. Finally, we provided all test user with an online questionnaire. Below is our test plan:

- **Observation**
    - Make sure that our web application fits perfectly to computer screen resolution.
- **Login**
    - Login into FreeFoodEngine using their Facebook Account
- **Location**
    - Verify that google map shows their current location
- **Add event**
    - Add a fake event and make sure the event shows up in main page and in google map
- **Scroll till end of the page**
    - Make sure only 5 events are displayed in one page
- **Load more page**

    - This should load more events into the page
- **Comment on an event**
    - Comment on an event
- **Like an event**
    - Like an event and make sure that you can't like the same event twice
- **Google map**
    - Play around with google map (eg. try to change location of the marker, zoom in and zoom out, click on the marker)
- **Logout**
    - Once done interacting, click on logout

Questionnaire that we have used

https://docs.google.com/forms/d/1TXYM-mu2ccRMMf6d4Z17_uc3TkPtmXJyo3JQpje-4-o/edit

Results
https://docs.google.com/spreadsheet/ccc?key=0AhSjui_0MhSldEwweGppenlQMGpCQjQ1XzhZWEd1ZlE&usp=sharing#gid=0

Questionnaire analysis

Based on data that we collected via questionnaire, our web application is thought to be good. Five out of six test user was very satisfied with our web application. Base on this we believe that our idea of free food around campus is an idea that will be well accepted by Purdue University student. Most of the test users also said that events information are well organized and easy to navigate. Despite that, majority of them also suggested that our web application needs some layout design improvement. They believe that more vibrant colors and better background would make our web application more attractive. Besides that, our navigation bar also needs some work, some if the test user were having problem in location "create an event" button.Integrating google map into our web application was a wise decision, all of the test user agreed that google map helped them in finding events that are near to their location. Using google api, place autocomplete was also very helpful for test users to create an event. They just have to type few words and google api would suggest an appropriate address for them. Many users mentioned about the facebook login. Some of them believe facebook login simplifies their life, while others think viewing an event should not require user to login. There is something to be improved on this. In a nutshell, our web application got a very good review and we need to add some improvement to it before releasing it to the public.

Reaction and comments from test user

- **Test user 1**
    - User seems to like very much the idea of free food. Once logged in, user was happy on how information was organized in one page. User seems not to be having any trouble navigating FreeFoodEngine User commented that google map was a good idea, as it is easy to find information about free food that was close to user's location. User suggested FreeFoodEngine to have a better layout.
- **Test user 2**
    - User liked the fact that facebook login was used and on how fast login process was. Once logged in, user was happy on how information was organized in one page. User commented on an event and liked that feature a lot. User thought overall our web application is good and should be made public.
- **Test user 3**
    - User loved the facebook login ("thats the future!" he exclaimed). He loved the picture of the login page. From a design perspective he thought the engine could have benefitted from a non-white background. User thought the google maps implementation was a great idea but could have used some better organization. User searched for an event and liked the event viewed. User loved the app idea and said with a few minor updates it should be made public.
- **Test user 4**
    - User seems like the whole idea and user got one question if somebody does not have the facebook account to login. The whole app is easy to use, but only the google map is kind of too sensitive to user interaction. User has no problem navigate the app.
- **Test user 5**
    - User believes the whole idea is great and if adding some more features, the apps should be made public. User thought that the create an form should be more clear and add some tooltips to clarify each field. The idea of showing the about to happen event in time order is greate and user thought a live feed of newly posted event would be great.
- **Test user 6**
    - The user thinks this website is very clear and easy to read. He pointed out that if there is picture information for each event, it will be better. The website requires user to login bothered him at first. Overall it's fantastic.

- **Test user 7**
    - The user thinks the website looks good. The idea was great. Since this user don't usually use the facebook, he refused to login for further testing. He suggested a better way would be allow any users to view the events and only allow logged in user to comment or any further operation.

Defect identified during Usability Testing

# Defect	Defect	How to correct	Severity
1	Website loads slow	Include javascript, css files at the end of code. So, that page loads first and then loads all the libraries.	1
2	User couldn't locate "create an event buttion"	Make the font and color of "create an event" button more visible and vibrant	2
3	Cannot logged in if the user does not have a facebook account	Suggest you to register one or implement the guest feature.	1
4	User could not find the room information or field in the event list or create field	Added a separate room field for event to make sure that user know where is the event	3
5	The search bar is confusing, user do not know what to input	Added the categories and also the drop down suggestions search results and also change the placeholder to be more specific	2

6	Some error messages are confusing and needs computer science degree to comprehend	Catch these errors and convert them to easy understand text and tell user that encountering specific problem	2
7	The processing time is not considered and user are not informed	Added message to show to user that some processes is going on and please wait	2

Security Testing

For Security testing, we are going to focus on data encryption, sql injection that will cause a leak of user's private information and database entries. We will use the free software netsparker to test for detection of SQL injection and cross-site scripting issues and the software can also provide the solutions along with the HTTP request/response.

# Defect	Defect	How to correct	Severity
1	Data are not encrypted during the transmission	Added SSA or SHA to encrypt the data during the communication	**1**
2	Sql injection can be done in the search textbox	Added parameter protection and check for forms to prevent the injection	**2**
3	Cross-site scripting can be performed	Filter input parameters for special characters	**2**
4	Database is has no backup.	Backup database to local disk.	**3**
5	Apache server-status is enabled and attackers can get	Disable the functionality	**1**

	internal server information		
6	Cookie not marked as HttpOnly and maybe attacked by cross-site scripting and hijack the users session	Mark the cookie as HTTPOnly	**2**
7	Internal error presented during a Netspark search for ajax_load	Correctly handle the errors caused by server-side error	**2**
8	Detected version discloure(Apache) during scan and can hack the specific security vulnerabilities	Configure the web server to prevent information leakage from the server header of its HTTP response	**1**

Stress Testing

For stress testing, we are focusing on the behavior of web server when heavy loads and stresses are presenting. We will stress test it against the software that send and request a lot of HTTP requests at certain time and try to see the response time or processing time and also the user experience when the web server is experiencing a peak volume of requests handling and also import large data into the database to see how fast can a query be made based on that. And also combine the above strategies together to see the performance of the web server and user experience.

# Defect	**Defect**	**How to correct**	**Severity**
1	As the number of active event increases, the map was fulfilled and hard to locate one event.	Merge nearby events to one mark.Clicking the mark show all the events belong to it.	2
2	When size of stored data becomes large	Optimize the query or separate tables	2

	in the database, the search query become slow	and make different unique keys or use inner join.	
3	Database size now is limited 1GB. Such size of database cannot handle the increase number of users.	Upgrade the server setting if necessary to gain more size and speed	2
4	The site currently does not have a good scalability.	Consider using hadoop and restful for future deployment.	1
5	Mysql database becomes slow when data is large	Consider switching to NoSQL for future deployment	1