Final Report

University of Massachusetts Lowell

COMP.4610 GUI PROGRAMMING II

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http://tripplanner.ml/

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Project Overview

As you know, planning a trip can always be a challenging task. We have been working so hard in everyday life. On the other hand, we would like to have fun and enjoy our life as well. Then why is planning a trip such a challenge?

When I decide to plan a journey from Boston to New York, I used the best trip planning service, such as TripAdvisor, Expedia, and Booking.com. I was looking forward to planning my trip quickly at once using these services. However, these services cannot personalize my travel route. They recommend only the tourist attractions and accommodations. It means that they did not reflect how long the trip is and where my destination is. So, I should consider a lot of variables, such as tour route and period. Expedia is the same as well. There is no way to personalize my trip route at once! Thus, these services are a time-consuming and complicated service to planning my trip. Unfortunately, I have spent a lot of time on planning this trip; it is stressful for me every time.

To solve this problem, we began a new project. That is "Trip Planner" project. Our goal is that nobody needs to consider the variables for their journey using Trip Planner. The user just decides their period of the trip and destination, that's it. It is straightforward and easy to make a travel plan himself. This project complies with GUI standards. We utilized web standards, especially GUI standards, to make a high-quality graphical front end. It also makes smoother user interaction design and user-friendly interface. Our goal is most people wish that planning a trip is as much fun as the journey itself.

Our website project has a sufficient impact on the people, community and especially tourists. The audiences of our project are both planned and unplanned visitors. Some travelers plan their trip. However, there is another majority that would like to travel without a plan or going out instantly. There will be no more problems for them anymore.

The significance of our project is to let people manage their schedule and destination for their trip with just seconds. Another significant feature of our project that impacts the visitors is, for example, imagine if you are a new tourist in a city and you would like to go out for dinner, find some fun events in the city or places to go with your family. Our web project could provide new tourists the recommendation or suggestion of restaurants, events that are happening in the city, accommodation, and activities that most people go and do at those places in the city.

Most traveling websites don't have this feature unless they type their original destination they would like to go or some activities which specifically know they would like to do around the area. What happens if the visitors have no absolute idea what to do or how to start a trip? It is the central feature of our project that would like to assist the guests in providing ideas where they could go and what they should do for fun in the area based on the schedule they filled in.

System Specification

Trip Planner arranged the schedule for the trip at one time automatically. It includes the tourist attractions and accommodations nearby their travel route depending on the period of the journey. However, to realize this, we need a lot of specifications of the web server. The web server should support PHP 5 based on Linux, MySQL database, phpMyAdmin tool, FTP (File Transfer Protocol), and SMTP (Simple Mail Transfer Protocol).

Our project's superior capability is PHP 5, which is a server scripting language, and a powerful tool for making dynamic and interactive web pages. As some persons know, PHP 7 is the latest version, but we will use the previous version because that is more compatible than newer. For PHP 5, our web server is Linux-based hosting which is seen as being more stable, it also performs faster and is free. We got shared PHP 5.6 web hosting server which operates 24 hours a day.

Also, Trip Planner offers user convenient features. The user can save their trip plan and load it quickly. To provide this function, it needs web database system. MySQL is the most popular than with PHP. Our project is compatible with MySQL 5.5 and newer.

To build MySQL convenient, we installed phpMyAdmin on our web hosting server. It is a free and open source tool written in PHP intended to handle the administration of MySQL with the use of a web

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browser. It is the best graphic interface tool that can create, edit or delete MySQL databases, tables, fields or rows; executing SQL statements; or managing users and permissions.

To implement that, we utilized Google Map API (Application Programming Interface) which is the best option for this project. It will be effective service which reacts to the user. Google Maps API returned JSON file which had places information, such as place name, location, review point, unique place id, and vicinity.

Our web server support FTP to upload and download our web resources, such as HTML, PHP, CSS, JS, and image files.

Trip Planner can send an access code to user's email. So, for this feature, it needs SMTP. We used PHP mail() function which works when relayed over SMTP.

Also, we set permissions on a shared Linux web host due to security protection. The permission of directory is 755 and permission of file is 644.

Just a reminder that brief specification of the system, final features in the project.

- Linux-based web hosting server
- PHP Version 5.6.30
- MySQL Version 5.5.54 (Must support MySQLi Extension)
- phpMyAdmin
- FTP
- SMTP for PHP main() function
- Linux Permission: 755 (Directory), 644 (File)

Project Design

We followed web standards design guidelines from W3C. It is critical because web page will display in a wide variety of browsers and computers, including mobile devices. So, we used GUI standards languages, such as HTML 5, CSS 3, and JavaScript. In the final stage, we received both HTML5 and CSS3 certification because of responsive design for any device.

We were planning to use jQuery, but we used only pure JavaScript for performance. jQuery has a lot of libraries and frameworks; also, we did not need everything. So, we implemented only native JavaScript even if it takes more time to develop.

Team Work

Team member	Responsibilities
Junghwan Kim	I implemented significant core programming part. • Build Linux-based web hosting server • Implement all of PHP with MySQLi • Build MySQL database structures • I wrote HTML and CSS code myself • JavaScript for form validation • Google Maps API part: download JSON file from Google, insert places data into our database, and load dynamic Google Map when user plan their trip. • Get proper logo, icon, and background images for our web page using Photoshop
	I also prepared for our project together. • Prototype • Project Report • Usability Test • Presentation Slides

	I made the below files myself. • index.html • mysqli.php • planner1.php • planner2.php • planner3.php • /css/ planner.css • /css/ style.css • /img/* • /js/ planner.js
Rotana Nou	Managed and Implemented in the following. • Front-end development • Project Timeline • Schedule Team Meeting • Project Reports • Project Prototype • Conducted project demonstration and usability testing • Video Prototype • Google Maps API part: download JSON files from Google
	Implemented the following files. • about.php • /css/temp.css • /js/map-content.js • /images • image.html • image.css • image.js

User Testing

For the final user testing, we did the same steps as the usability testing in the class. However, we didn't get a chance to have the same group in class to do user testing again in our final product. Thus we invited few of our friends as users testing. We conducted our project testing into four phases. These steps are reading the instruction to the test subject, hand out the task sheets to be performed by the subject, evaluator recording the situation of testing, and the final phase of usability testing is asking questions to the question about the project.

To start testing, we read the overview and the main purpose of our project to the subjects to let them understand about our project. Then we began to read the instruction to the subjects. After that, we passed out task sheets to the subject to begin testing. In our worksheets, we have arranged the works to subject that needed to be performed. There were five subject testers for our project. During the testing performance, we focused on user's performances and user's expression. We observed each user testing carefully.

After the subject finished the trial by going through the instructions and went through all the features, pages and links. We asked them a bunch of questions, and the majority of the answers were fine. During our beta user testing, we get some feedback and suggestions about the logo on the home page; the slideshow is changing too fast, text alignment and making mobile web application version. For the logo, they suggested making it clickable that link back to home page. The subject noticed the slideshow on the homepage is changing too fast. Thus, they proposed to make it slower. There were also some minor

problems regarding the text alignment in the plan trip page as well as the result page and about us page. And lastly, about the suggestion from the subject is making a download as pdf feature and a mobile version of our project. After the beta testing, our team accepted some feedback and suggestion. Thus we made some changes in our final product including reducing the slideshow in our home page slower, adding linking to the home page by clicking the trip planner logo and text alignment. However, another suggestion in the beta version about mobile web application version and a download as pdf feature are still considering for the next release of our project. When we made some changes as described above, we didn't receive any feedbacks regarding the above suggestion in our final product user testing.

This usability testing is helpful because we could share our project idea, testing our project to find bugs or errors and gives us a lot of benefits such as improve our project efficiency and group learning ability. Usability testing requires us to explain the point of view of our project and ask questions. It is not only provided the subjects the opportunity to understand and be able to accept our project idea but also provides us back what is a unique feature in our project that different from other project ideas. Also, improve our project efficiency; every member of our team is participating in the testing process and activities. Thus, we conclude that beta and final product testing was helpful and necessary to improve our project for the next version.

Future Work

After the beta and final usability test, we have received some of the suggestions such as "Download as PDF" feature at the trip result page. We discussed to add this feature, but the amount of time to implement this feature in our final product. Thus, we would like to add this feature in the next version. The specification of this feature is to allow users to save and download the trip result as a pdf form. In Windows 10, "Print to PDF" is available without using any software. In Mac OS, the user can select "Save as PDF." As a result, we are considering to add this feature to our project in the next version.

Another suggestion we would like to add to our project is accessing Trip Planner using mobile phone and tablet. However, for now, Trip Planner is designed for only PC webs browsers, such as Google Chrome, Mozilla Firefox, and Microsoft Edge. Google offers Google Maps API mobile version, but we implemented only Google Maps API using JavaScript for the computer. To make a mobile version web application is a time-consuming task because we have start over the whole thing for mobile friendly HTML, CSS, JavaScript, and API. We do not have enough time to do it in our final product, and we can't introduce the mobile version. Thus, we would like to accept this suggestion, and we will work on it for the next release.

Currently, in our project, we have a bunch of cities implemented such as Boston, Miami, New York, Washington, D.C, Los Angeles and Chicago. We are planning to add more cities to expand the ability. So, we will download Google Maps on file that is included place information and then store this JSON data into our MySQL database server. In final, user experiences a wider variety of city.

In contact us page, our email addresses are public and exposed. The email address-harvesting robot can collect it. For privacy security, we removed our email addresses text and plan to add another feature. Which is a feedback form in contact us page? For this feature, the user is allowed to provide their name, email address and write up a paragraph if they have any suggestions, questions or feedback about our web application. This feature is also considering adding in the next version of our project.

Related work

In our project, we have many similar works and resources to help us to accomplish this web application projects such as web hosting services, MySQL database, phpMyAdmin tool, TripAdvisor, TripHobo, Google Maps API, W3Schools, and more listing as the following.

"Google Inc" (No date) Google Maps for every platform [Online] available at:
https://developers.google.com/maps/ [access date: 02/01/2017]
"Uber Technology Inc" (2016) UBER Developers [online] available at: https://developer.uber.com/
[access date: 02/02/2017]

"TripHobo, Inc" (2016) TripHobo Best Vacation Planner [Online] available at:
https://www.triphobo.com/ [access date: 02/02/2017]
"TripAdvisor, Inc" (2017) TripHobo Best Vacation Planner [Online] available at:
https://www.tripadvisor.com [access date: 02/02/2017]
"MapQuest Inc" (No date) MapQuest [Online] available at: https://www.mapquest.com/ [access date: 02/04/2017]
"phpMyAdmin" (2003-2017) Bringing MySQL to the web [Online] available at:
https://www.phpmyadmin.net [access date: 02/10/2017]
"W3Schools" (1999-2017) The World's Largest Web Developer Site [Online] available at:
https://www.w3schools.com/default.asp [access date: 03/05/2017]