**Louis Saporito** (Group Leader)

Ruben Castano

Mehul Vaghani

Nikko Roy

**IT490 Project Report Analysis**

For our group project we were tasked with creating a system that replaced Wrong Way Airlines old paper system of managing their data with a digital version. This involved the creation of several components to create a functional back end and front end to this system as well as a good deal of planning to prep ourselves for the actual development of our site. We were first tasked with designing an ER diagram and a project abstract. This allowed us to create a broad look at what we accomplished to do in the long run, as well as give us an actual depiction of the relationships between our databases. Next we had to create a data flow diagram which showed the flow of data between components of our system. We also had to create a data dictionary which was a collection of meta-data that contained descriptions of our variables names and table fields. These preparation steps helped us better organize and understand where our project was going before we even got started.

We were required to make a web site, from which data could be submitted, and viewed in the form of tables. The data for these tables was retrieved from a database that had to be created to store the records of incoming and outgoing flights as well as cargo information. The final component of our project was the creation of a standalone client in java that would be used to insert, update, and delete data entries in our databases without the need to write any sql queries.

As the group leader I had to assign each of these tasks to one of my group members. I tried to give each a task that they had ready some experience with so that they would each have a idea of where to start. I decided to work on the client side java program because I’ve had to most programming experience in the group. I assigned Nikko to work on the HTML pages and the CSS to handle the creation of our front end site. I also assigned the database creation and writing the of the PHP code to Ruben. These were both areas that they had experience working with in the past. I assigned Mehul originally to work on our server because he’s done a lot of work with personally operated servers in the past; however we decided to ultimately stick to using the NJIT web space. This allowed us to use the NJIT SQL sever as well as our AFS web space. It eliminated any future unforeseen problems we might have trying to manager our own server. After this decision I had Mehul help me work on the client. He handled the creation of the GUI system while I handled the back end part of the code. His GUI created a set of menus that allowed a user to select a type of query, then in put some information. My back end code connected to our database, then took this text input and built SQL queries from it. These queries were then sent up to our database to modify and create records.

The client was a bit of a challenge since neither of us had used much java in the past. Part of the issue came with looking up what classes or libraries could be used to accomplish what we needed. There is such a broad spectrum of java elements for both database connecting and gui work that it is easy to become lost in the overabundance of information. We decided in the end to use the Java Database Connector (JDBC) to for our socket connection and sql submissions to the database. We also decided to use JPanel for much of the GUI work.

The first part of getting the client to work was to create a connection between it and our database. Luckily this wasn’t too difficult since I was using JDBC and didn’t have to write and socket code from scratch. However, as I had never used the library before, installing it, referencing the drivers, and implementing it took a bit of time as I tried to learn the syntax of the system. Once it had connected I then looked into how to send SQL queries to our database. With JDBC this was only about two lines of code. I first send hard coded SQL queries up to our database to test to make sure the code was working. Once that was finished I made a simple text box that allowed a user to input an SQL query that would be sent to the database. Once I had this working I could have the user input data that would generate queries. This is where Mehul’s part of the project came in. Much like I had to learn about JDBC for the first time, Mehul had to learn how to use JPanel. He built me a small frame work that consisted of drop down menus that linked themselves to separate forms on our JPanel window. I then overplayed this GUI framework to my back end SQL queries and had the program generate and submit and SQL query to the data base.

I believe that overall this project was a success. Communication through my group was excellent and we all worked well together. If one group member had a problem one of the others always had a solution or was willing to lend a hand in solving the issue. Everything went rather smoothly, most everyone on the group was experienced in some technical aspect of what we needed to, the only exception being much of the java programming. However Mehul and I were able to figure it out without too much trouble. It was thorough the constant team work of my group that we were able to create a fully functional system with all of the facets that we had to create.

**Nikko Roy**

For my part, I did the front-end of the project. My part deals with the HTML and CSS portion. Originally, the idea was to create the CSS from scratch, until Lou suggested using Bootstrap. I used Bootstrap 3 at first, but nothing was linking correctly, again Lou suggested using 2.3 instead and the CSS started working. Thanks to the CSS included with Bootstrap, I was able to get a nice looking design but simple at the same time in a short matter of time. Before using Bootstrap however, Ruben and I came up with concept designs for the website, with the final design being what ended up on the website. I also created a bare-bones website for Ruben to begin testing the database portion of the project before using Bootstrap.

Overall, I did not have many problems for my part. The problem I had the most was trying to center the form for the user. Lou assisted me with it and we found out that there was a class in Bootstrap’s CSS for centering the form. Trying to figure out Bootstrap’s many components was also time consuming, but ended up being beneficial for the Wrong Way Airlines, as it would be pleasing to the eye.

There are still some things that I wanted to add or need touching up but time cut those added features off and decided to keep the website simple. One feature was to add a logo on the tab of the browser. I have all the pages in separate html files. What I intended to do, was to have all the pages on one file. To do this, I would have each form in a div on one page, using Javascript, when the user clicks one of the tabs on the navbar, one div disappears and the clicked tab’s div appears on the page. Since I didn’t have time, decided to just copy and paste and make some editing on each page for consistency. I Will get back to it eventually.

**Ruben Castano**

For my part of the assignment I specifically handled the PHP code which had to connect to the database and I had to fill the database with information. We had a web page which inserted information into the database and there had to be a retrieval select option as well on the HTML webpage. I feel that this was accomplished with our project, it allows for insertion of the required information and then there is retrieval for the information through a separate tab. The steps required to this task were not necessarily complicated but there are parts that could still be improved on to make a more professional layout of a website through the database retrieval and insertion process.

The first step of the process was to fill the database of the information relevant to the task at hand, I followed the SQL documents that was provided to us on how to setup a database and it was extremely helpful, therefore I followed those guidelines and tried to keep true to the data dictionary and prior diagrams as to what was being filled. In the database I created three tables, Cargo, Flight, Outbound, each one having its own tab to insert data on the html side. After the data was all filled, it just had to be connected to html files, therefore I used a PHP file with some insert statements to give the information to the database, again, each table has its own insertion interface since each part is for different sections of a flight, but of course the cargo is still eventually connected with the same flight, or tail number. The insertion was successful, the database got all the required information that was needed and worked as necessary. The next step in the task was to retrieve some form of data from the database after inputting whatever is relevant to the information asked. To retrieve the data there had to be select statements used that would select from each table and somehow show the table. We chose to show the information after inserting the appropriate data; it would retrieve a table made in PHP with the information that was inserted for that specific part. After getting the retrieval to work, we added a flights tab, this is for retrieval only and allows the user to retrieve all the information towards that specific tail number, we were trying to create some sort of if statement that when a null value would be entered it would just show all flight information, which we got to work when inputting nothing into the “Flights” tab, you can just press submit and it will retrieve all information, else you type in the specific tail number and get that information.

For the entirety of the PHP connection between the database and html form and from the standalone client, we had all the connections work between each part of the assignment, insertion and retrieval all works, from there we decided to add some CSS files which would allow for a better visual appearance of the table and other minor details just so that the retrieval and insertion had some parameters and was somewhat easy to understand. The most difficult part of the assignment was essentially getting a decently formatted retrieval between each table and showing all the tables at the end and creating the “if” statement to make it possible for someone to just retrieve all the information. As of now the project should be completely working, but I would like to eventually add some more details, parameters and CSS styles to the assignment, maybe make a logo to give it the full professional look.

**Mehul Vaghani**

My part in this project was to create a MYSQL server with phpMyAdmin to manage the server. I also made an Apache server. I created all these servers using LAMP server. While making the Linux server, I used Centos and I happen to run into a few problems. The first one was that it would not install on the hard drive I had because the hard was 2TB or more. So I ended up installing it on a 32GB flash drive. I then installed Apache with Secure Shell in it so that I can have encryption going to the clients. This way, they are safe from Session Hijacking. After this, I used an online service called DynDNS.com, where I can sync my IP Address with a domain, either mine or a pre-made one that they provide, so that it’s easier to connect to the server at my house. We all decided to do it this way first since this would give us all access to the web space and anyone of us can secure shell into the server to edit or update any files. One of reason we didn’t want to join NJIT’s server was that one of us had to share the password of our AFS account in order for everyone to connect. The second reason was that since you asked us to create an apache server on a Linux server, we assumed that you wanted us to create our own server and not just use the existing NJIT’s server.

The server I created had issues running Apache on it, so I decided to format the drive and do a clean install, which didn’t work at all and we decided as a group to not use the server anymore. This is when I email you if it’s ok to use school’s AFS and you said it was fine. Just to have a temporary server running with MYSQL and Apache, I just gave the info to my personal server to the group so we can just use that as a temporary space and once everything was working on the website, we then decided to host it on Ruben’s AFK account which currently has all the files.

At this point, Nikko already had the website almost done and Ruben finishing up his database, I decided to take a look at the website to see if I can add some more stuff to it. I was thinking about adding an .XML file with a little Ajax and JavaScript to make it more efficient. But Nikko did a good job with Bootstrap so I decided not to add anything and leave it the way it is.

This was about the same time as when Louis asked you if you wanted the GUI client or just a CLI client. When we found out about the GUI client, Louis asked me if I could help him get the GUI since he already had the CLI client working. I started looking up forums, tutorials, videos and examples of making a GUI java. Since I only took one java class, it was a little difficult for me to get the coding to understand at first, so Lou said he will take care of coding if I can just create him the GUI client. So then I decided to use JSwing to create the GUI. To make this easier on me, I used Window Builder in Eclipse to make it. But I was having a hard time adding an event handler to the buttons I added in there so I decided to use a different kind of approach and not use Window Builder at all. So now me and Lou decided to just make a really simple GUI and then we will just build more stuff on it. So we started simple and got the menu’s to work. Then added the Update / Delete / Insert options to all three menu’s of the client. We recompiled it just to make sure everything was working. As soon as I saw everything working fine, I exported it as a .JAR file just because that was my first java application that I ever created in a group and I was really happy that it was working. This was I have a sample of the program with me.

This project helped me understand a lot of things that I learned over the last few semesters. I also learned how to integrate all the different things that I know into one project and make it work as a whole. This project alone made me refresh all the stuff we learned on the following topics. HTML5, CSS, JavaScript, Ajax, Bootstrap, PHP, MYSQL, Installing a LAMP server, using JSwing in java to create a GUI standalone client. I love the project and I think this makes the students realized how the real work applications need to be and how we need to integrate all the things we know together to make them all work as one.