

Aircraft Scheduler

CSE 4101

Computer Science Projects

Spring 2009 – Fall 2009

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1 Overview

1.1 Description

Currently, the available aviation scheduling systems on the market are pricey, limited, featureless, and are fixated towards medium to large flight departments. Many of these systems are stand-alone applications that can only be accessed on one computer and in one physical location. Our objective is to develop an aviation scheduling system that is not only affordable and accessible, but reliable, secure, and scalable for years to come.

1.2 Goals

The system has to be scalable. Extensions to the basic system, such as Invoices and Quoting, must be able to be added with ease. Future technology has to be considered when designing the system. Emerging technologies, such as touch screens, can cause unseen complications.

The project is a business-critical system. However, it will focus solely on the software component of the system. The development team will have no control over the hardware components or human operators of the system.

2 Requirements - Functional

Priority is on a scale from 1 star to 5 stars. One star is the lowest priority and 5 stars denoting that the requirement is to be met as soon as possible. In addition, requirements are broken by risk factor. These factors are Low, Medium, and High. A requirement of High risk is absolutely necessary for the system to function.

2.1 Customer Pages

2.1.1 Main Page

2.1.1.1 – Revision 1 (2-17-09)

Name: Customer List Table

Description: The page will have a dynamically sized table that will be used to display the most up-to-date list of customers. The table will include fields for Last Name, First Name, Company, and Contact Information.

Type: Functional

Risk: Medium

Priority: ***

2.1.1.2 – Revision 1 (2-17-09)

Name: Customer List Navigation

Description: The customer list table will have a navigation link at the bottom. This will allow the user to jump quickly between pages

Type: Functional

Risk: Medium

Priority: ***

2.1.2 Add Customer

2.1.2.1 – Revision 1 (2-17-09)

Name: Contact Information Fields

Description: This page will contain a form to input customer contact information. Fields to be included are: First Name, Last Name, Company, Phone Numbers, Fax Number, E-Mail, Address, City, State, and Zip Code.

Type: Functional

Risk: High

Priority: ***

2.1.2.2 – Revision 1 (2-17-09)

Name: Secondary Contact Information Fields

Description: This group of fields will contain information for another point of contact with a customer. These fields include First and Last Name, E-Mail, Phone, Cell Phone, and Fax.

Type: Functional

Risk: High

Priority: ***

2.1.2.3 – Revision 1 (2-17-09)

Name: Customer Flight Preferences Fields

Description: These fields will allow a user to set a customer's general flight specifications. Fields to be noted are Primary and Secondary Aircraft and Primary and Secondary Airport.

Type: Functional

Risk: High

Priority: ***

2.1.2.4 – Revision 1 (2-17-09)

2.1.2.4 – Revision 2 (2-22-09)

Name: Comments Field

Description: This area will include a text input box for the user. The user may input any miscellaneous information about their customer in this field. **The box should accept up to 255 Unicode characters.**

Type: Functional

Risk: High

Priority: ***

2.1.2.5 – Revision 1 (2-17-09)

Name: Add Customer Button

Description: Upon being pressed, the system shall take all given input information and create a new customer. The information will be stored in a data base and will be used so that the user can reference the customer for future transactions.

Type: Functional

Risk: High

Priority: ***

2.1.3 Search Customers

2.1.3.1 – Revision 1 (2-17-09)

2.1.3.1 – Revision 2 (2-22-09)

Name: Search Input Field

Description: This page shall have a small input text box that the user will use to type in specific search criteria for quick customer look-up. **The text box should accept up to 32 characters.**

Type: Functional

Risk: Medium

Priority: **

2.1.3.2 – Revision 1 (2-17-09)

Name: Search By Drop-down Box

Description: This page shall have a drop down menu of different criteria that can be searched by. Items in this menu include Last Name, First Name, and Company.

Type: Functional

Risk: Medium

Priority: **

2.1.3.3 – Revision 1 (2-17-09)

Name: Show Details Button

Description: The system will have a button that will show the details of the user's search. Upon being pressed, the button should take information from the search criteria box and input field and attempt to find a matching customer.

Type: Functional

Risk: Medium

Priority: **

2.1.4 Export Customer List

2.1.4.1 – Revision 1 (2-17-09)

Name: Export List Button

Description: This page shall have a button that will bring up a dialogue box. The user will then be prompted to save his/her customer list on a local machine.

Type: Functional

Risk: High

Priority: ****

2.2 Flight Management Pages

2.2.1 Add Flight

2.2.1.1 – Revision 1 (2-17-09)

Name: Select Customer Field

Description: This page shall contain a field for selecting a customer to associate with a given flight. This field is step 1 of a 4 step process for adding a flight. The field will contain a small search box to select a customer and a Customer Select button. When the button is pressed, the system stores the customer to be used and highlights step 2.

Type: Functional

Risk: High

Priority: *****

2.2.1.2 – Revision 1 (2-17-09)

Name: Select Aircraft Field

Description: The select aircraft field is step 2 of the process and will be initially grayed out. Upon completion of step 1, step two will light up. This field will contain a small search box for finding a desired aircraft to add to this flight. In addition, an Aircraft Select button will be used to store the aircraft to be used for this flight and move on to step 3.

Type: Functional

Risk: High

Priority: *****

2.2.1.3 – Revision 1 (2-17-09)

Name: Edit Flight Information Field

Description: This field is step 3 of the process and will only be highlighted once step 2 has been completed. This field will contain a table that can be dynamically sized to add different information about a flight. There should be no limitation to the amount of information that a user can add about a flight. The information to be included in the table is: Leg Number, Departure, Destination, Date, Calendar Button, Time, F/T, L/T, and an Edit button.

Type: Functional

Risk: High

Priority: *****

2.2.1.4 – Revision 1 (2-17-09)

Name: Add Leg Button

Description: This button is part of step 3 of the process. This button will be used to store the flight information that the user has entered into the table as part of step 3.

Type: Functional

Risk: High

Priority: *****

2.2.1.5 – Revision 1 (2-17-09)

Name: Remove Leg Button

Description: This button is part of step 3 of the process. This button will be used to delete a selected row of the flight information table.

Type: Functional

Risk: High

Priority: *****

2.2.1.6 – Revision 1 (2-17-09)

Name: Confirm and Save Field

Description: This field will be the final step of the add flight process and will only be highlighted after the user has added at least one leg in step 3. This field will contain two buttons, Save New Flight and Discard. These buttons will either submit the information to be stored in a data base or reset all fields to default values and remove all information.

Type: Functional

Risk: High

Priority: *****

2.2.2 Edit Flight

2.2.2.1 – Revision 1 (2-17-09)

Name: edit schedule

Description: The user will be able to edit the schedule, date, flight leg/ flight segment, and destination. information.

Type: Functional

Risk: High

Priority: *****

2.2.2.2 – Revision 1 (2-17-09)

Name: access edit/add passenger

Description: The user will be able to access add/edit passenger from this page which will allow the user to add or edit passengers to the flight.

Type: Functional

Risk: High

Priority: *****

2.2.2.3 – Revision 1 (2-17-09)

Name: save event on calendar button

Description: The user will be able to save the event on the calendar through this button.

Type: Functional

Risk: High

Priority: *****

2.2.2.4 – Revision 1 (2-17-09)

Name: delete flight event

Description: The user will be able to delete the flight event. The user will have to confirm the deletion process before system deletes the event.

Type: Functional

Risk: High

Priority: *****

2.2.2.5– Revision 1 (2-17-09)

Name: add flight segment button

Description: The user will be able to add a new flight segment. By clicking on this button a user will be able to add a flight leg to an existing event.

Type: Functional

Risk: High

Priority: *****

2.2.2.6– Revision 1 (2-17-09)

Name: email button

Description: The user will also be able to email the new information to all the people concerned with the change made to the event.

Type: Functional

Risk: High

Priority: *****

2.2.3 Add/Edit Passenger pages

2.2.3.1 – Revision 1 (2-17-09)

Name: edit passenger list

Description: After a flight is added/edited, this will allow the user to edit passengers to the flight. The user will be able to access this feature from Edit Flight page. The user will be able to add, edit, and delete passengers from the current list of passengers.

Type: Functional

Risk: High

Priority: *****

2.2.3.2 – Revision 1 (2-17-09)

Name: save new list button

Description: The user will be able to save the new changed list of passenger list and information through this button.

Type: Functional

Risk: High

Priority: *****

2.3 User Pages

2.3.1 Add User

2.3.1.1 – Revision 1 (2-17-09)

Name: add user page

Description: The main objective of this page will be to allow the admin to add a user to the system. This page will be accessible only to user at admin level and he/she will be able to add a new user to the system through this page. The user will be able to fill in the user fields such as an email address, password, first and last name, user level (admin, crew etc.), assigned aircrafts. The user will also be able to check if he/she wants to receive email from the system or admin, to be viewed on the calendar, and to receive emails with account information.

Type: Functional

Risk: High

Priority: *****

2.3.1.2 – Revision 1 (2-17-09)

Name: Reset all button

Description: The user at the admin level will be able to reset the page through this 'Reset all' button

Type: Functional

Risk: Medium

Priority: **

2.3.2 Edit User

2.3.2.1 – Revision 1 (2-17-09)

Name: Edit user page

Description: The purpose of this page will be to allow a user at admin level or same user as being edited to edit their user page information such as name, email address, etc. The user will be able to edit in the user fields such as an email address, password, first and last name, user level (admin, crew etc.), assigned aircrafts. The user will also be able to edit if he/she wants to receive email from the system or admin, to be viewed on the calendar, and to receive emails with account information.

Type: Functional

Risk: High

Priority: *****

2.3.2.2 – Revision 1 (2-17-09)

Name: Reset all button

Description: The user described above will be able to reset the page through this 'Reset all' button

Type: Functional

Risk: Medium

Priority: **

2.3.3 Delete User

2.3.3.1 – Revision 1 (2-17-09)

Name: Delete user feature

Description: This page or the feature allows the user at Admin level to delete an existing user in the system.

Type: Functional

Risk: High

Priority: *****

2.3.3.2 – Revision 1 (2-17-09)

Name: Confirm authentication

Description: The user at the Admin level will need to retype his/her login password to double check the eligibility of the user before he/she could delete a user.

Type: Functional

Risk: High

Priority: *****

2.3.3.3 – Revision 1 (2-17-09)

Name: Confirm delete and delete

Description Users will need to confirm if they really want to delete the user before the system deletes a specific user.

Type: Functional

Risk: High

Priority: *****

2.3.4 View User

2.3.4.1 – Revision 1 (2-17-09)

Name: view user page

Description The user will be able to view simple list of users, which includes their name, email address, last login. The user at Admin level will be able to view and click on the link for add, edit, or delete user. The other users i.e. not at the admin level will be able to view the users but will not have access to add, edit, or delete users.

Type: Functional

Risk: High

Priority: *****

2.3.4.2 – Revision 1 (2-17-09)

Name: Search User Box

Description: All the users will be able to search a specific user through the quick search box.

Type: Functional

Risk: Medium

Priority: ***

2.4 Aircraft Management Pages

2.4.1 View Fleet

2.4.1.1 – Revision 1 (2-17-09)

Name: view Flight page

Description The user will be able to view a list of all aircrafts, which includes their make/model, type, tail number, and home base. The user at Admin level will be able to view and click on the link for add, edit, or delete aircraft. The other users i.e. not at the admin level will be able to view but will not have access to add, edit, or delete users.

Type: Functional

Risk: High

Priority: *****

2.4.1.2 – Revision 1 (2-17-09)

Name: Search Aircraft Box

Description: All the users will be able to search a specific aircraft through the quick search box.

Type: Functional

Risk: Medium

Priority: ***

2.4.2 Add Aircraft

2.4.2.1 – Revision 1 (2-17-09)

Name: Add Aircraft page

Description: The main objective of this page will be to allow the admin to add a aircraft to the system. The user at Admin level will be able to add a new aircraft to the system through this page. The user will be able to fill in the user fields such as aircraft type, tail number, make/model, number of seats, range etc. The user will also be able to add the specific technical information like fuel type, mileage etc. The user will also have an option to upload the picture of a plane but will not be necessary.

Type: Functional

Risk: High

Priority: *****

2.4.2.2 – Revision 1 (2-17-09)

Name: Reset all button

Description: The user at the admin level will be able to reset the page through this 'Reset all' button

Type: Functional

Risk: Medium

Priority: **

2.4.3 Edit Aircraft

2.4.3.1 – Revision 1 (2-17-09)

Name: Edit Aircraft page

Description: The user at Admin level will be able to edit user in the system through this page. The user will be able to edit in the user fields such as aircraft type, tail number, make/model, number of seats, range, fuel type, mileage etc. The user will also be able to change an existing picture, remove picture, or add a picture of the aircraft.

Type: Functional

Risk: High

Priority: *****

2.4.3.2 – Revision 1 (2-17-09)

Name: Reset all button

Description: The user described above will be able to reset the page through this 'Reset all' button. This button is similar to reset buttons described above for other sections.

Type: Functional

Risk: Medium

Priority: **

2.4.4 Delete Aircraft

2.4.4.1 – Revision 1 (2-17-09)

Name: Delete Aircraft Page

Description: This page or the feature allows the user at Admin level to delete an existing aircraft in their department. User at the admin level will be able to access this page through a link on the 'edit aircraft' page.

Type: Functional

Risk: High

Priority: *****

2.4.4.2 – Revision 1 (2-17-09)

Name: Confirm authentication

Description: The user at the Admin level will need to retype his/her login password to double check the eligibility of the user before he/she could delete an aircraft.

Type: Functional

Risk: High

Priority: *****

2.4.4.3 – Revision 1 (2-17-09)

Name: Confirm delete and delete

Description: Users will need to confirm if they really want to delete the Aircraft before the system deletes a specific user.

Type: Functional

Risk: High

Priority: *****

2.5 Calendars

2.5.1 Viewing Calendar

2.5.1.1 – Revision 1 (2-17-09)

Name: Complete Month View

Description: The calendar should accurately show a list of crew members that are available for the current month.

Type: Functional

Risk: High

Priority: *****

2.5.1.2 – Revision 1 (2-17-09)

Name: Month Selection

Description: System should allow the user to select the month they want to look at.

Type: Functional

Risk: High

Priority: *****

2.5.1.3 – Revision 1 (2-17-09)

Name: Legend

Description: System should provide a legend explaining what each of the colors in the calendar mean.

Type: Functional

Risk: High

Priority: *****

2.5.1.4 – Revision 1 (2-17-09)

Name: Filter

Description: System should provide filter that allows user to select what personnel or flights he wants to see in the calendar.

Type: Functional

Risk: High

Priority: *****

2.5.1.5 – Revision 1 (2-17-09)

Name: Print View

Description: System should provide a “print view”, which should allow the user to print the calendar and only the calendar (without menus) as is on the current page.

Type: Functional

Risk: High

Priority: *****

2.5.1.6 – Revision 1 (2-17-09)

Name: Text View

Description: System should provide view of the calendar that consists only of text for easy readability and black and white printing.

Type: Functional

Risk: High

Priority: *****

2.5.1.7 – Revision 1 (2-17-09)

Name: “Add Event” menu

Description: System should provide links to the pages “List flight,” “Maintenance Event,” and “Calendar note.”

Type: Functional

Risk: High

Priority: *****

2.5.1.8 – Revision 1 (2-17-09)

Name: Calendar Settings Filter

Description: System should provide filter for user to select what type of view of the calendar they want to see. Required views are month flight (default), month crew, week view, timeline view, and month text.

Type: Functional

Risk: High

Priority: *****

2.6 Company Details

2.6.1 Email Company

2.6.1.1 – Revision 1 (2-17-09)

Name: Recipients

Description: The user should be able to select entire groups in the organization such as admins, pilots, schedulers, maintenance, cabin attendants, **view only**, FAA, or/and customers. They should also be able to select everyone or specific users.

Type: Functional

Risk: High

Priority: *****

2.6.1.2 – Revision 1 (2-17-09)

Name: Subject

Description: System should allow the user to enter a subject message of less than **100** characters in length.

Type: Functional

Risk: High

Priority: *****

2.6.1.3 – Revision 1 (2-17-09)

Name: Subject

Description: System should allow the user to enter a body message of less than 1000 characters and more than 1 character in length.

Type: Functional

Risk: High

Priority: *****

2.6.2 Billing Information

2.6.2.1 – Revision 1 (2-17-09)

Name: Credit Card Auto Dectect

Description: System should detect creditcard type on runtime without need of refreshing the webpage as soon as the credit card number field loses focus.

Type: Functional

Risk: High

Priority: *****

2.6.2.2 – Revision 1 (2-17-09)

Name: Verification

Description: System should verify that all information has been entered before proceeding to next page. This information includes all fields in page plus the two agreements at the end of the page.

Type: Functional

Risk: High

Priority: *****

2.6.3 Billing History

2.6.3.1 – Revision 1 (2-17-09)

Name: Printable

Description: System should provide a printable list of all billing history.

Type: Functional

Risk: High

Priority: *****

2.6.3.2 – Revision 1 (2-17-09)

Name: Printable

Description: System provide accurate, up-to-date, complete billing history.

Type: Functional

Risk: High

Priority: *****

3 Requirements – Non Functional

Below is a list of non-functional requirements for the project. These requirements define how the system is to be implemented. These requirements will include frameworks, languages, and system support.

3.1 Languages

3.1.1 Primary Languages

3.1.1.1 – Revision 1 (2-17-09)

Name: PHP

Description: This will be the basic language used to construct our system and webpages displayed to the user. This language will be used for all of the server-side application.

Type: Non-functional

3.1.1.2 – Revision 1 (2-17-09)

Name: Javascript

Description: This language will be used for all client-side scripting. This language can be used to make a variety of flashy features on the webpage. This can be used to detect mouse events and allow for a more interactive and dynamic web environment.

Type: Non-functional

3.1.1.3 – Revision 1 (2-17-09)

Name: MySQL

Description: MySQL will give developers access to an open-source database system. This will allow for the development of simple database structures used to store important information for customers.

Type: Non-functional

3.1.2 Language Support

3.2.1.1 – Revision 1 (2-17-09)

Name: Kohana PHP Framework

Description: This framework will be used to support PHP development. This will help developers create well built applications in less time. The design pattern for Kohana is a Model View Controller format. This will allow developers to split the system up into a more understandable format.

Type: Non-functional

3.2.1.2 – Revision 1 (2-17-09)

Name: JQuery Javascript Framework

Description: This framework will be used to support Javascript development. This is a high performance, flexible, and scalable Javascript framework. JQuery will allow developers to enhance user web browsing experience.

Type: Non-functional