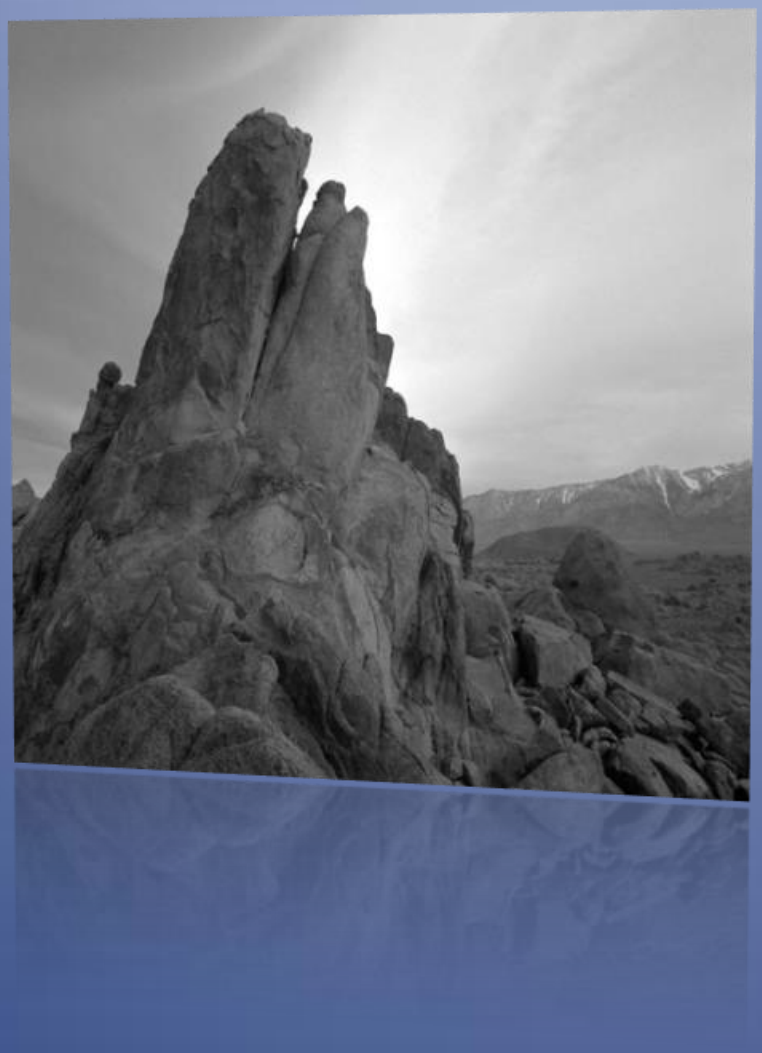


Test Plan

Team 07

WPI CS 509 taught by professor Blake Nelson

Content

Test Plans && Approaches

Overview

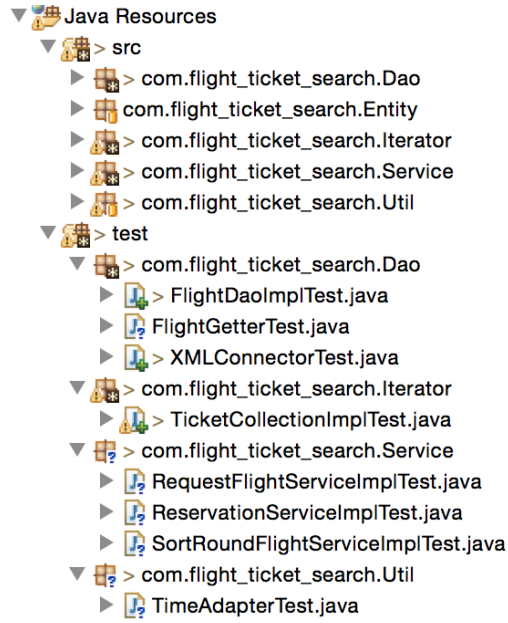
Our groups testing approach are mainly composed of unit && component tests, aligned with some boundary + equivalent + pairwise tests. Junit framework is used by our team to conduct all the unit tests to ensure each units works fine. In order to ensure that our sub system works coherently and as expected in a controlled manner, we used several test cases to start test from the bottom-level(back end layer) of the system up to the top-level (UI perspective) of the system

Once the component and unit tests are smoothly done, we move to the next step of system integration. As unit and component tests are used to ensure the proper behavior of all the sub systems, the integration test process is aiming at smoothly, combining the sub systems and fix the generated issues as the scale and complexity of the system development grows.

Based on MVC framework, our component test cases are mainly divided into DataAccess component, BusinessLogic component, and View component. The integration or system tests are done from a global view, mainly thread testing (Use Case oriented), combining with some Top-down testing. The integration testing environment is under tomcat web server, running the app in web server, start from UI applied pairwise test approach (single/round * coach/firstClass/mixed * none/one/two stopovers, in sum 18 conditions) to verify whether the sub systems works correctly once they are combined together as a whole

Test Case Hierarchy

The hierarchy of each component is shown in detail below



Test Cases

Classifications	Test Case Names	what to test	reason to test
Data-Access component	select flight from DB test case	check if proper airport and airplanes are bind to the flight legs and check if all flight legs fetched contain empty seats for reservation	flights with no seat available should not be displayed to the user; union flights needs the airport info (space info) of each flight leg.
	lock/unlock DB test case	check if the back end server could be locked/unlocked by our team	resolve concurrency access problem for multi user system; lock DB is the precondition of purchasing flights
	remove flight from DB test case	check if the flight legs are actually removed from the database	when users decided to purchase the flights, multiple flight legs needs to be deleted from the database to ensure other clients could search the flights that really exist
Business-Logic component	request flight service test case	check if the unified flights are reasonable (from space && time perspective), if the direction of flight legs and layover time of flight legs are acceptable for the user	ensure the flights unified are what the user really needs
	choose flight service test case	check if the sorting and filtering functionalities of this component works fine	ensure the flights collections could be sorted or filtered in the manner the user wants
	purchase flight service test case	check if the user could remove flights he/she wants from database and unlock the database as soon as the flights are purchased	check if the sub system could lock/unlock and remove flights in a right and cohesive logic flow
View component	user input validation test case	system response to various user inputs, especially those invalid inputs	to handle the boundary cases of user inputs

Test Results and Samples

Sample one (clear version is stored as image under the root directory)

Team07		Test Case One - Normal flow					
Project Name / #		Airline Reservation					
Reqruirement		Help clients reserve airline tickets online					
Test Case		Display Flights					
Date		4/18/2015, 12:00:00 AM					
Description		display available flights from the departure to arrival airport on a specified date including single/round trip					
Step #	Description	Preconditions / Data	Expected Results	Observed Results	Pass	Fail	Defect/Comments
1	choose single trip as the trip type	'single trip' button been clicked					
2	specify BOS as the departure airport	valid 3 digits US airports code (case-insensitive)					
3	specify LAX as the arrival airport	valid 3 digits US airports code (case-insensitive)					
4	choose the default seat type						
5	specify the departure date	input format of 'YYYY-MM-DD'					
6	click the 'Search' button						
6	check the list of one-way flights	internet available	A list of single trip flights displayed on the webpage, with sort/filter function available, most importantly, all the flights displayed must have available seats for reservation and all the flights are unified in a generally reasonable way	A list of single trip flights displayed on the webpage, with sort/filter function available, all the flights displayed have available seats for reservation and all the flights are unified in a generally reasonable way	pass		The layover time between two flight legs ranged from 1h - 8h, default seating type (if not specified) is Coach, with a default order by take-off time of the flights
7	Click 'back' button back to homepage						
8	choose round trip as the trip type	'round trip' button been clicked					
9	specify BOS as the departure airport	valid 3 digits US airports code (case-insensitive)					
10	specify LAX as the arrival airport	valid 3 digits US airports code (case-insensitive)					
11	choose the default seat type						
12	specify the departure date	input format of 'YYYY-MM-DD'					
13	specify the return date	input format of 'YYYY-MM-DD'					
14	click 'Search' button again						
15	check the list of round-trip flights	internet available	A list of round trip flights displayed on the webpage, with sort/filter function available, most importantly, all the flights displayed must have available seats for	A list of round trip flights displayed on the webpage, with sort/filter function available, all the flights displayed have available seats for reservation and all	pass		special case : the departure date and return date are on the same date, a minimum layover of 8 hours are observed (as expected), only none/one stopover for choose(two stopovers are removed for better

Sample Two

Team07		Test Case Two - Abnormal flows					
Project Name / #		Airline Reservation					
Reqruirement		Help clients reserve airline tickets online					
Test Case		Validate user inputs for round trip search (invalid user input)					
Date		4/20/2015, 18:00:00 AM					
Description		Before the display of round trip flights the user searches the round-trip flights with invalid inputs					
Step #	Description	Preconditions / Data	Expected Results	Observed Results	Pass	Fail	Defect/Comments
1	User does not enter anything (hit the "Search" button by accident)		alert popped out and show red font hints on bottom of the page force user to change inputs	alert: empty user input hint: no empty blanks please	pass		
2	User enters invalid airport code name, as "box" instead of "bos"	no empty blanks left	alert popped out and show red font hints on bottom of the page force user to change inputs	alert: invalid user input hint: valid airport code should be 3 digits US airport code	pass		
3	User enters invalid date format, as "2015/5/16" instead of "2015-05-16"	1. no empty blanks left 2. valid airport code is entered	alert popped out and show red font hints on bottom of the page force user to change inputs	alert: invalid user input hint: valid date format should be: YYYY-MM-DD, for eg. 2015-05-10	pass		
4	Return date is earlier than departure date (messed up with departure and return date)	1. no empty blanks left 2. valid airport code is entered 3. valid date format is entered	alert popped out and show red font hints on bottom of the page force user to change inputs	alert: invalid user input hint: return date must not be earlier than departure date	pass		
5	Date picked is not available in backend	1. no empty blanks left 2. valid airport code is entered 3. valid date format is entered 4. return date is no earlier than departure date	alert popped out and show red font hints on bottom of the page force user to change inputs	alert: invalid user input hint: available flight date ranges from 2015-05-06 - 2015-05-17	pass		