RacQual Conceptual Design

Problem Statement:
Although racquet retailers such as Tennis Warehouse and Tennis Express have written documents to help amateurs choose tennis racquets, none of these resources take racquet quality index into consideration.

Product Objectives:
We aim to enable recreational tennis players to evaluate, rate, and trade tennis racquets, while staying aware of quality indexes of the racquets that they are considering. As far as racquet trading is concerned, RacQual will be much more a Craigslist-like trading utility than an Ebay or Amazon of tennis racquets.
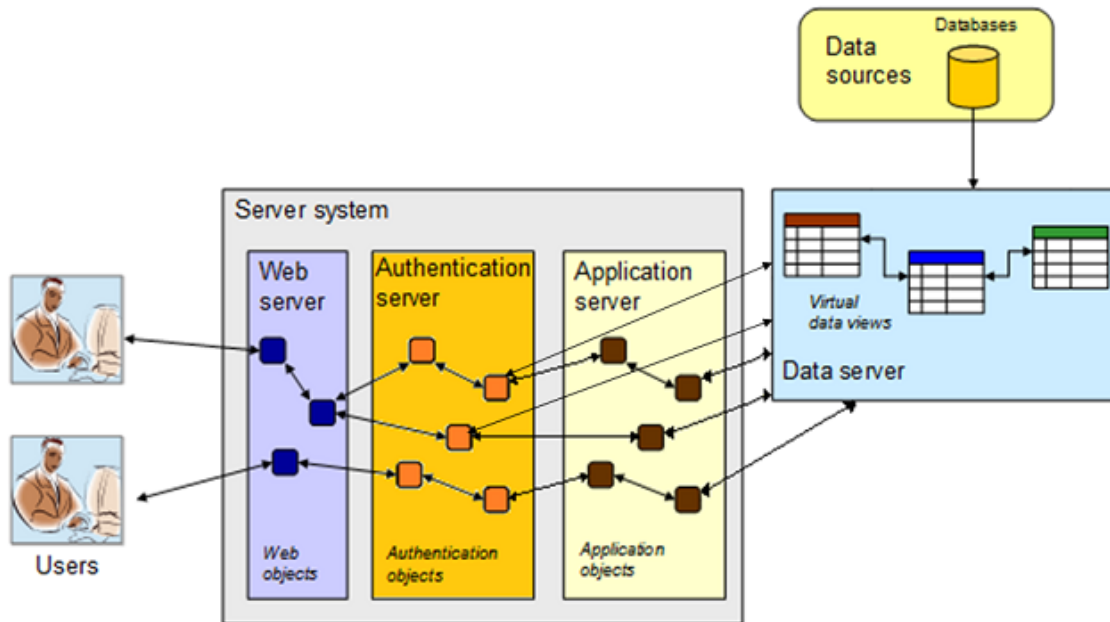
Major Features
- Compute racquet quality index
- Browse through classified listings for tennis racquets
    - Sortable by mass, length, balance point, swingweight, or quality index
- Create and maintain a user account with login credentials
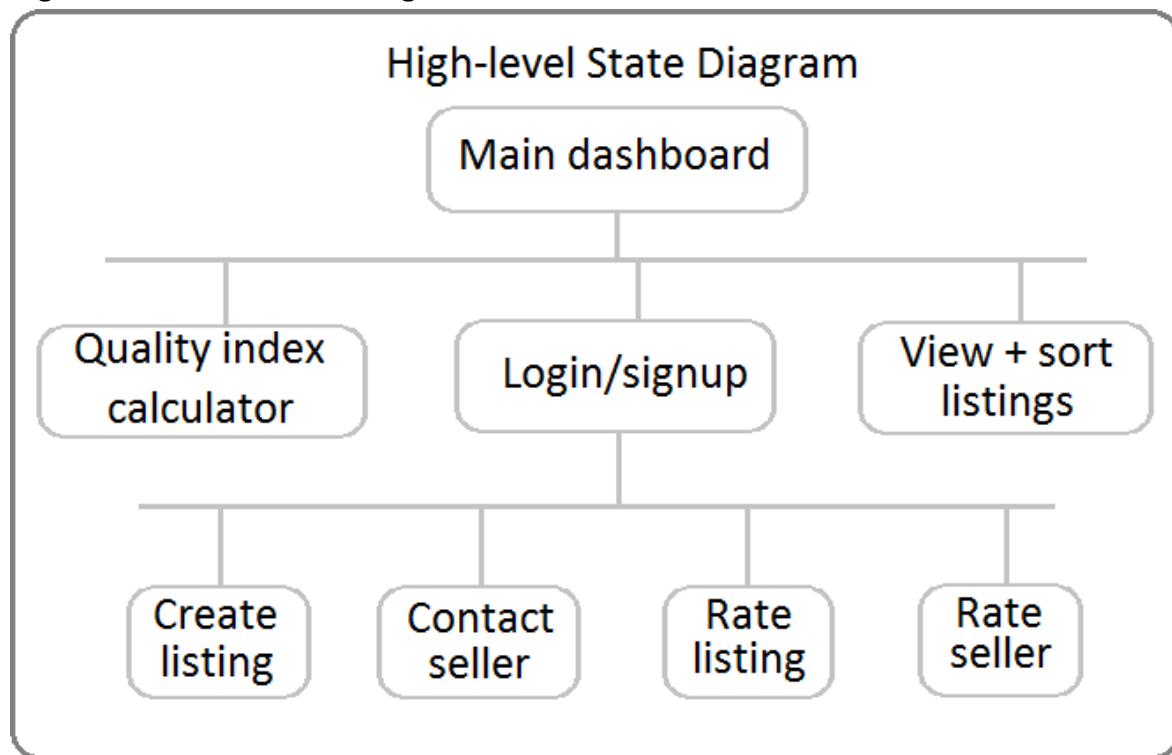
Additional features with user account:
- Create classified Craigslist-style racquet listings, complete with technical specifications necessary for computing quality index
- Get in touch with the author of a listing
- Receive interest from prospective buyers straight from the listing
- Rate and comment on listed racquets
- Rate and comment on sellers

Major Modules

RacQual is a web-based utility. Hence, we need a web server. Additionally, the core functionalities depend on a java servlet. Hence, we need an application server. Furthermore, user accounts require authentication. Therefore, we should have an authentication server. Finally, racquet listing information as well as seller details need to be persisted. So, we need a data server along with a location to data that is related to racquets and/or sellers. Authentication server and Application server will interact with Data Server to fetch needed information, update information, and add additional information. Users will interact with the web server by accessing the generated JSP pages. The database server interacts with the database by allowing for data manipulation and maintenance. Additionally, the database server may retrieve information from the database.

High-Level Architecture Diagrams

High-level State Diagram

Main dashboard

Quality index calculator — Login/signup — View + sort listings

Create listing — Contact seller — Rate listing — Rate seller

Mockups

Use Case #1: Using the Quality Index Calculator

Step 1: Proceed to dashboard and click "Quality Index Calculator"

RACQUAL

QUALITY INDEX CALCULATOR   VIEW RACQUET INFORMATION   BUY QUALITY RACKETS!

Step 2: Enter racquet details and click "Calculate**"**

Step 3: View result of calculation

Your Quality Index is: **1.07**

Additional Screenshots:
Log-in page:

Result of clicking on "Buy Quality Rackets" from main dashboard:

BUY QUALITY RACQUETS			
Racquet	Quality Index	Price	Contact Information
	0.89	$250.00	Jay Patel
	1.00	$239.99	Srikanth Narahari
	1.07	$199.99	Subha

Result of clicking on "View Racquet Information" from main dashboard:

SORTING PAGE				
Image	Brand	Model	Description	Quality Index
	Hello Kitty Sports	Junior Tennis Racquet	Cute and stylish, the Hello Kitty 19 Inch Junior Tennis Racquet is the perfect frame for the tiniest tennis players. Featuring a pink and white color scheme, Hello Kitty branding and the trademark Hello Kitty bow stenciled on the strings, little ones ages five and under are sure to love this racquet.	0.944
	Wilson	Tour Slam Adult Strung Tennis Racket	Get the power and stability you need to play your best with the Wilson Tour Slam Tennis Racket. The Tour Slam racket features Volcanic Frame Technology which gives you the control and power you need to succeed. A 110 inch head size creates an expanded hitting area that is ideal for players with a moderate swing, while the easy to swing design helps generate extra power and manoeuvrability.	1.044
	Head	Ti S5 Comfort Zone Tennis Racquet	The Head TiS5 Comfort Zone is best suited to a beginning to intermediate level player with a slow to medium speed swing who requires a generous sweetspot that is easy on the arm (thanks to Head's Comfort Zone technology). Open string pattern further enhances sweetspot without sacrificing control. Comfort Zone is the new patented dampening system made up of a combination of a hard and soft material reduces string vibration up to 25%. The cone shape of the grommets optimizes the sweetspot area on the string. The additional dampening of the ComfortZone provides for ultimate comfort. The sweetspot is enlarged by 20% and ball acceleration is increased.	1.054