



SOAR Design Review II

THE AVIATORS

2/27/2014

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Version 2.0

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Who is our sponsor?

- Our Sponsor is Arjomand Kalayeh

- He is the CEO of True Course Aviations

What does our sponsor do?

- Teach people how to operate aircraft

- Use flight simulator software

The Flight Simulator

- Prepar3D
 - Developed by Lockheed Martin
 - Open to development



Sponsor's goal

- Our sponsor wants to monetize pilot training using Prepar3D
- To accomplish this, a system called SOAR is being developed

What is the SOAR System?

Two parts:

- Custom missions
- SOAR Desktop Application
 - Program used to launch the Prepar3D flight simulator with custom missions
 - Aggregates Prepar3D flight user data

How is the data handled?

- There is no current way to process user data
- Without this component
 - Users **will not** receive feedback
 - Sponsor **will not** make a profit

Our proposed solution

- The SOAR Web Application
 - Will receive data from SOAR Desktop Application
 - Users will receive feedback
 - Sponsor will have the opportunity to profit

A quick demo...

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SOAR



SOAR web-
app



Register Here

Email

Password

Re-Enter
Password

Register



Purchasing Student Account

Total Cost: \$XXX

Select A Payment Option

Payment Option

Credit Card



Debit Card

Paypal

Payment Details

Account Information

Expiration Date

Card Code

Purchase

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SOAR



SOAR web-
app

SOAR



Email Password



Welcome back John,

Logout

Select a course below

Lift Helicopter

Fly Plane

Land Plane

...




Prepar3D - Select A Plane


- ▶ A2A Piper
 - ▶ A2A Piper J 3 Cub
 - ▶ A2A Piper J 3 Cub w/floats
 - ▶ A2A Piper J-3 Cub w/skis
 - ▶ A2A Piper J-3 Cub w/tundras
- ▶ Beechcraft
- ▶ I.W.E.B.
- ▶ Lockheed
- ▶ Maule
- ▶ Mooney
- ▶ Piper
- ▶ Republic
 - ▶ Republic P-47D-20 Thunderbolt
 - ▶ Republic P-47D-22 Thunderbolt
 - 63rd FS
 - 78th FG
 - Red Tail
 - Wurger
 - ▶ Republic P-47D-23 Thunderbolt
 - ▶ Republic Thunderbolt Mk1
- ▶ Robinson

Favorites

A2A Piper J 3 Cub w/tundras




A2A Piper J 3 Cub w/
tundras KA-




A2A Piper J 3 Cub w/
tundras Yellow

Republic P-47D-20 Thunderbolt




Republic P-47D-20
Thunderbolt Ivy Gal 501

Republic P-47D-22 Thunderbolt



Republic P-47D-22
Thunderbolt 63rd FS



Republic P-47D-22
Thunderbolt 78th FG

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SOAR



SOAR web-
app



Fly_a_Plane_Progress.xml



SOAR > Upload

Upload Your Progress

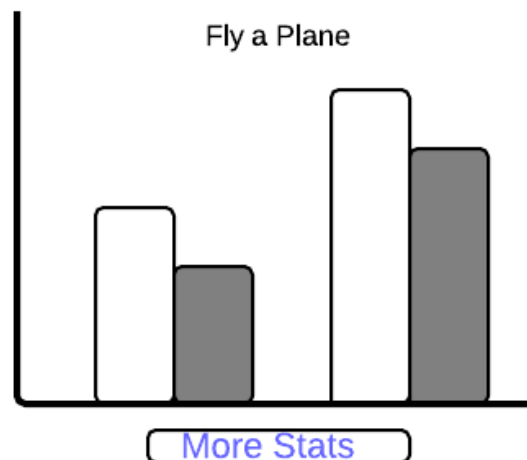
File



You just completed the
"Fly a Plane"
course.

Check out the graph to the
right to see your stats

Sample Chart



Us and them

- Our solution
 - Grade repository + progress analysis
- What's out there?
 - TinCan
 - Only covers progress analysis
 - Sponsor doesn't want to use it
 - Moodle.org
 - Doesn't address current analysis
 - Only covers grade repository

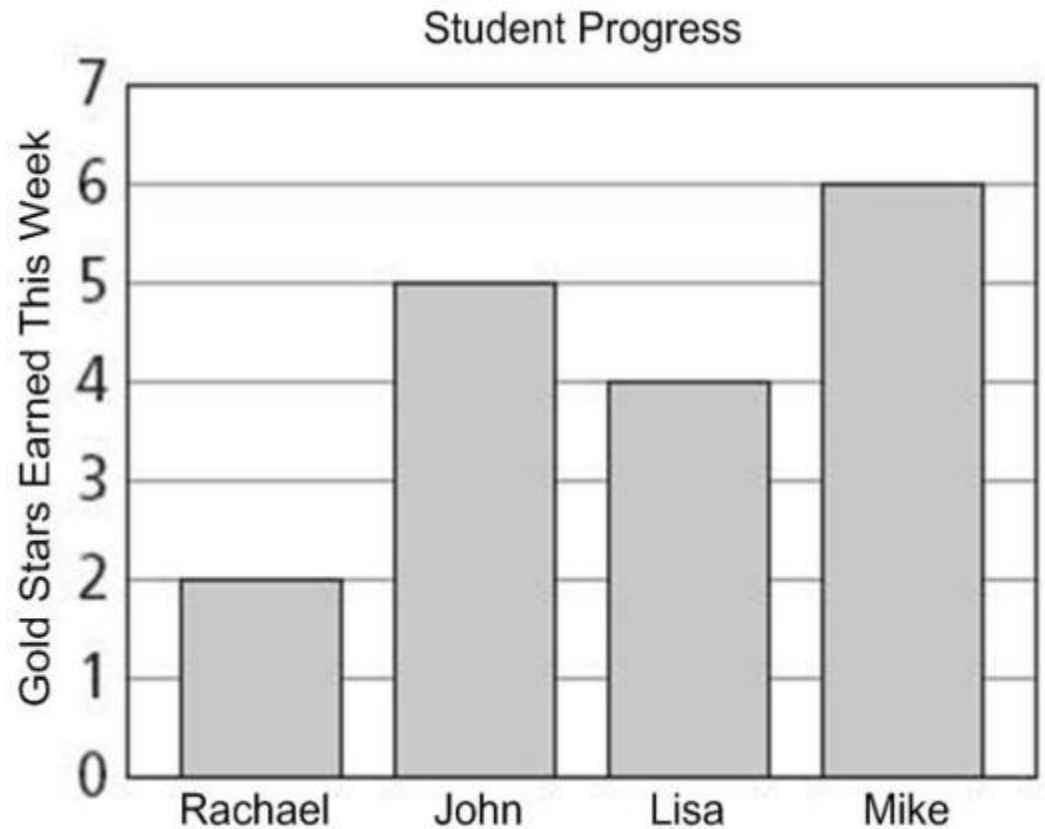
Key Requirements

User Management

- User levels
 - System administrator
 - Institution administrator
 - Instructors
 - Student
- Login
- Register
- Session control

Dashboard

- Course selection
- Upload progress
- View progress



Data Management and Analysis

- Users upload an encrypted XML file
- Parsed and save to database
- Determines student statistics

Non-functional Requirements

- Backupability
 - Backing up student's grades
- Supportability
 - Administrator support to help clients
- Portability (limited)
 - Access on multiple devices

Development

Software Lifecycle

- Mix of both
- Waterfall
 - Following capstone structure
- Agile approach
 - Little sponsor guidance

Development Tools

- Task management environment
 - todoist
- Repository management
 - github
- Local environment setup
 - wamp

7 days: Todoist x markim/SOAR x WAMPSEVER Homepage x

https://todoist.com/app?v=204#agenda/7__days

TD

Inbox

Today 5

Next 7 days 3

Projects Labels Filters

SOAR Site 6

+ Add Project

7 days

2 days ago Mon Feb 24 2014

- Landing page SOAR Site
- Institution Contact page SOAR Site
- Template design SOAR Site

Today Wed Feb 26 2014

- Login page SOAR Site
- Register page SOAR Site

Tomorrow Thu Feb 27

Friday Feb 28

- Execute SQL SOAR Site

Saturday Mar 1

Sunday Mar 2

Monday Mar 3

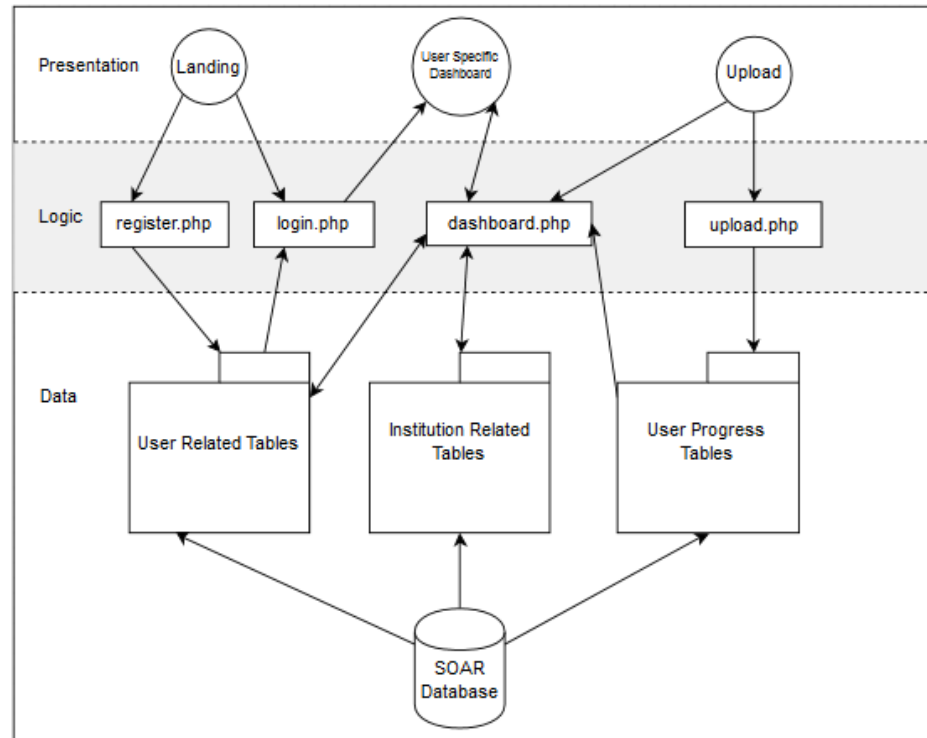
Tuesday Mar 4

Architecture

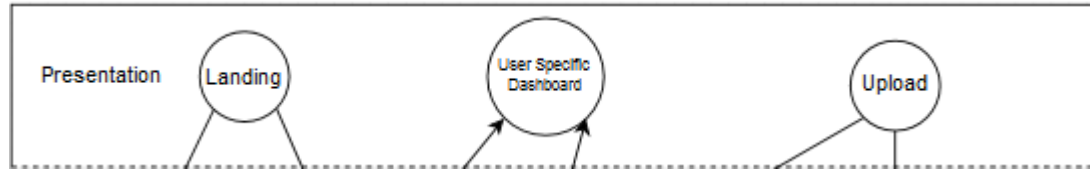
Architecture Overview

Simple Three-Tiered architecture

- Presentation
 - Web site display
- Logic
 - PHP scripts
- Data
 - Tables in database

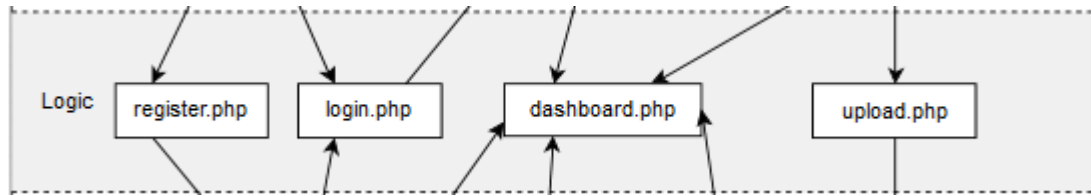


Presentation Tier



- Landing
 - Description, institution contact, login, register
- Dashboard
 - Based on user-level
 - Management functionality
- Upload
 - Students upload progress

Logic Tier



- Register
 - Adds to database
- Login
 - Checks database, adds new session
- Dashboard
 - User-specific functionality
- Upload
 - Parses XML

Data Tier

- User Tables

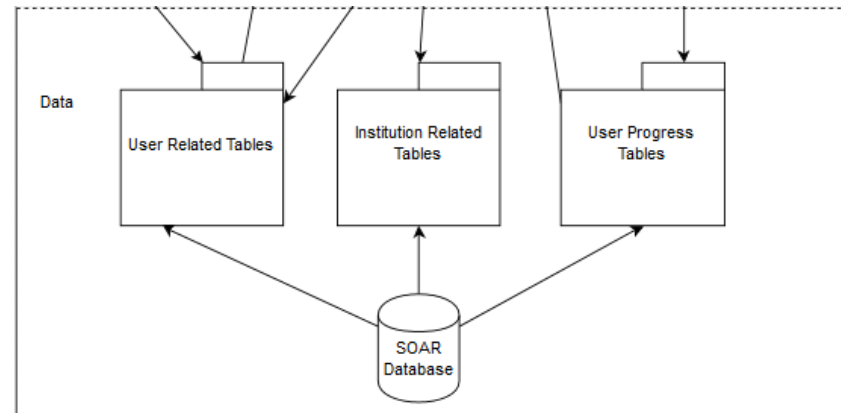
- Stores user and session information

- Institution Tables

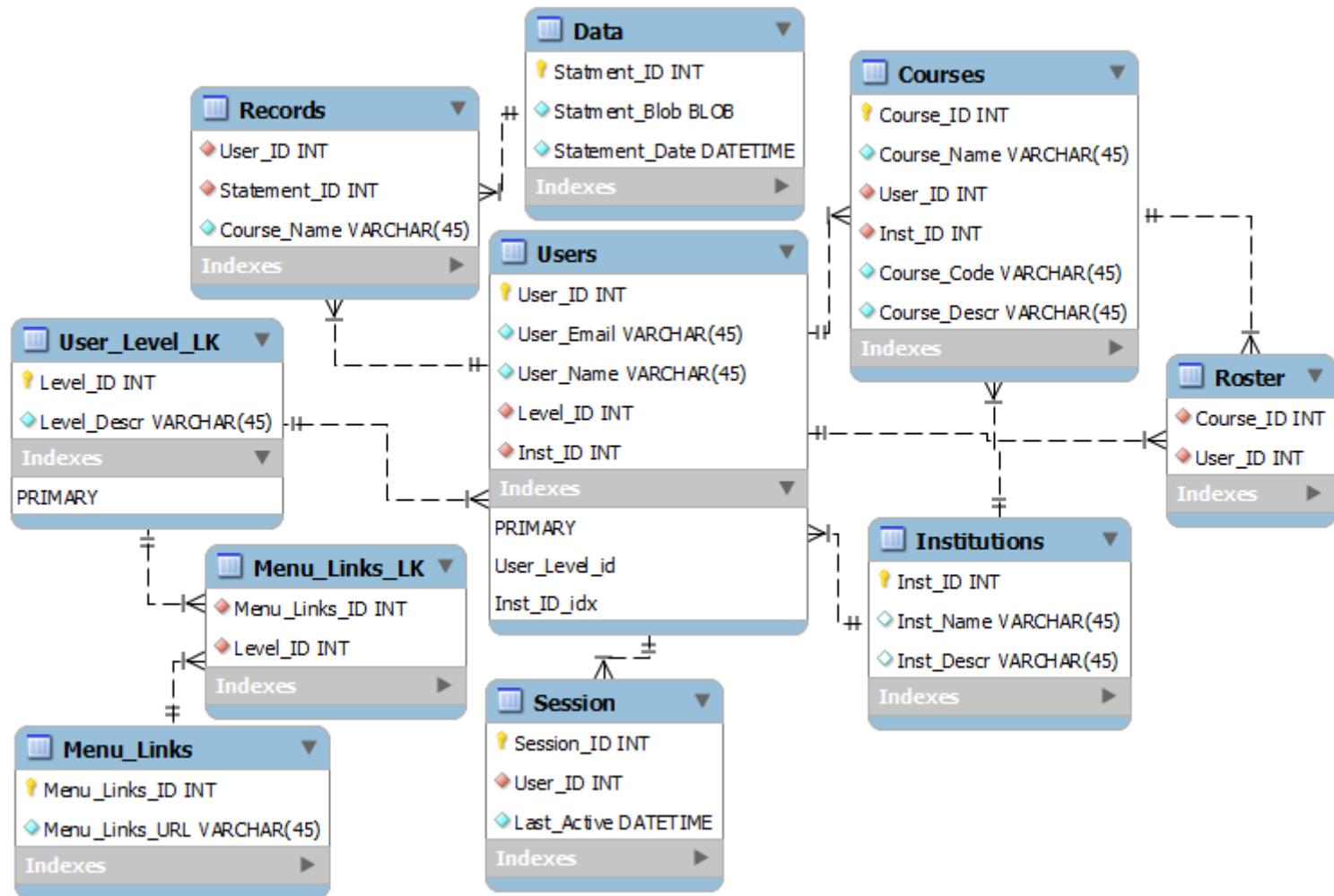
- Covers courses, rosters, and institutions

- User Progress

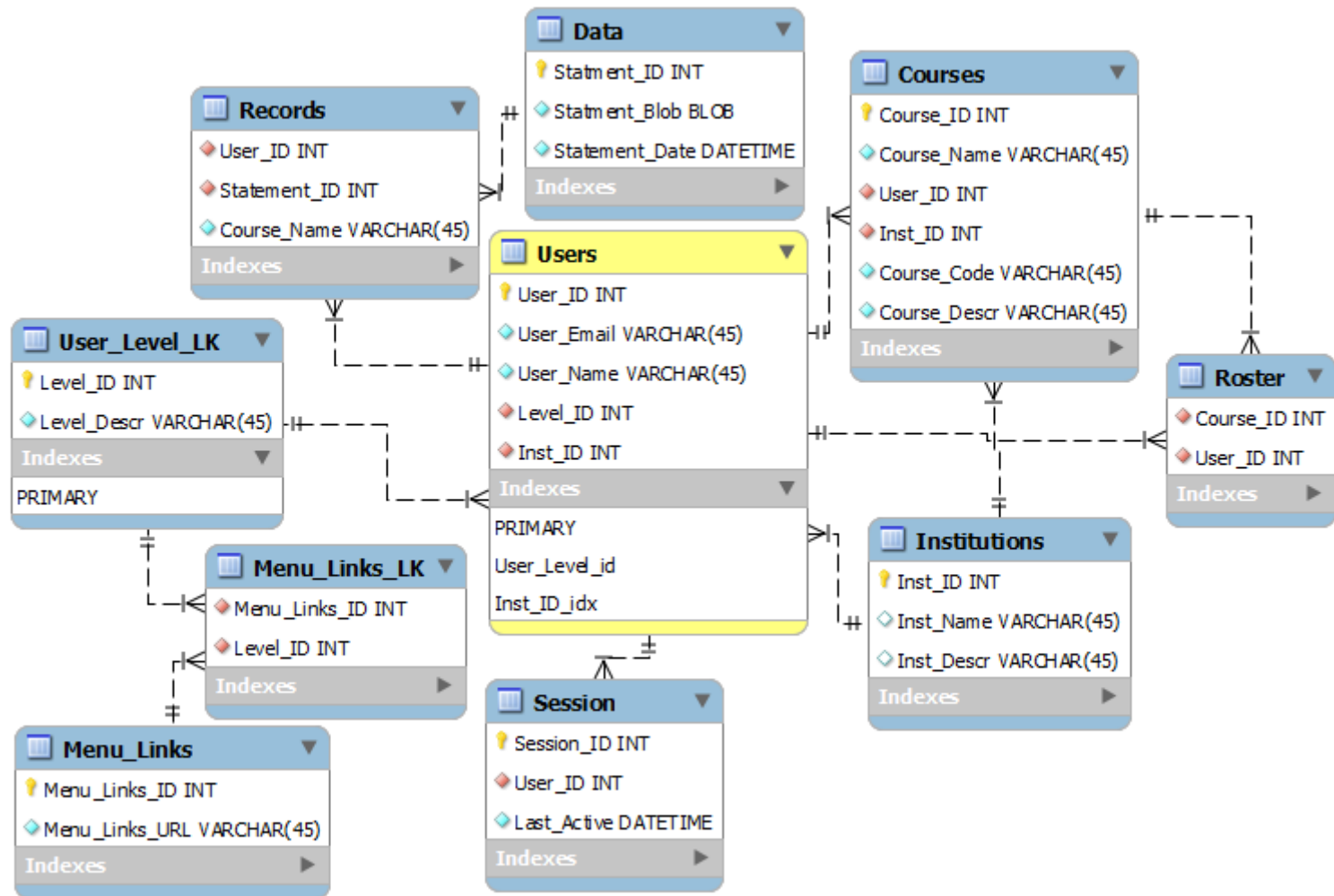
- Stores data from user progress



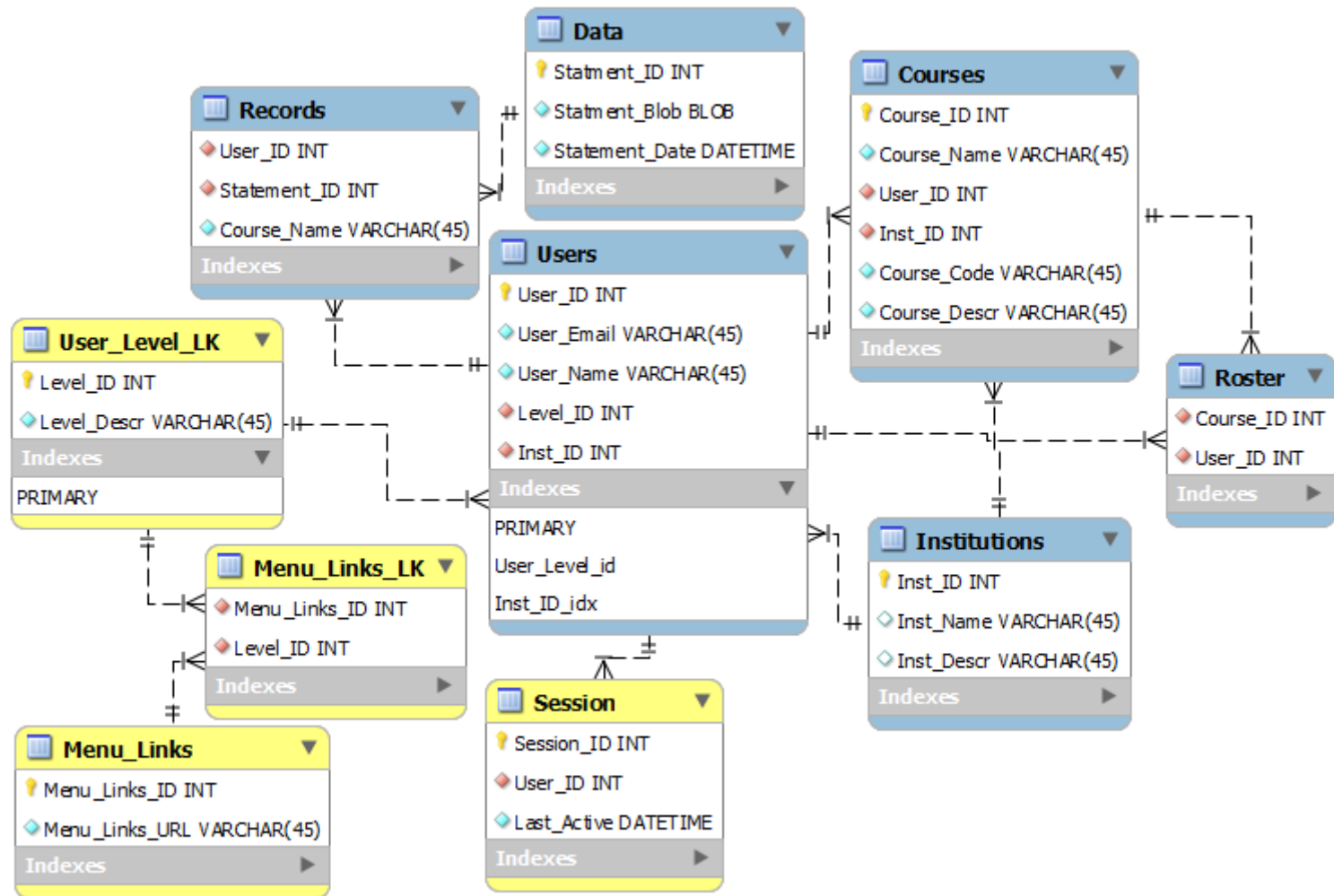
Database Diagram



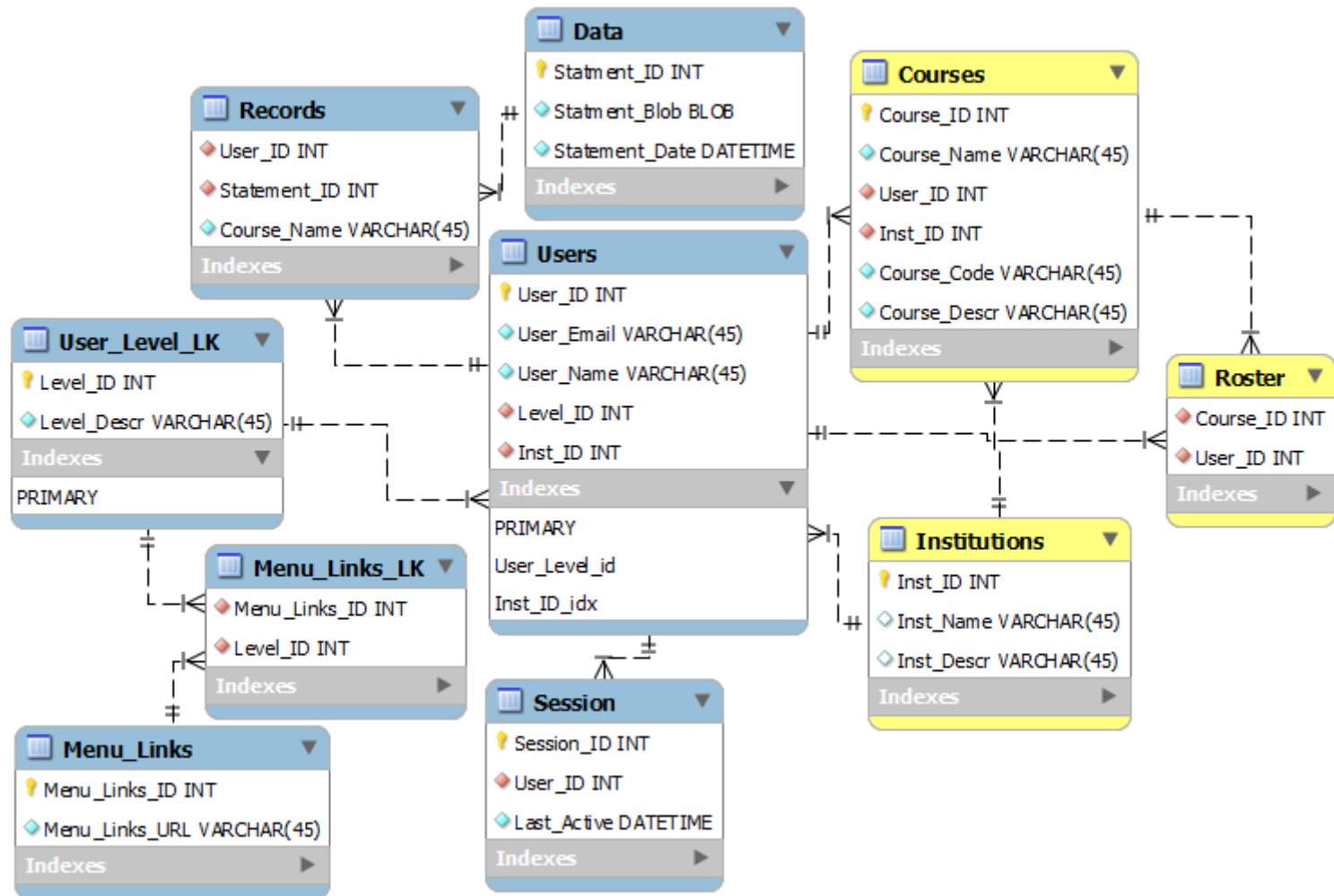
Revolves Around Users



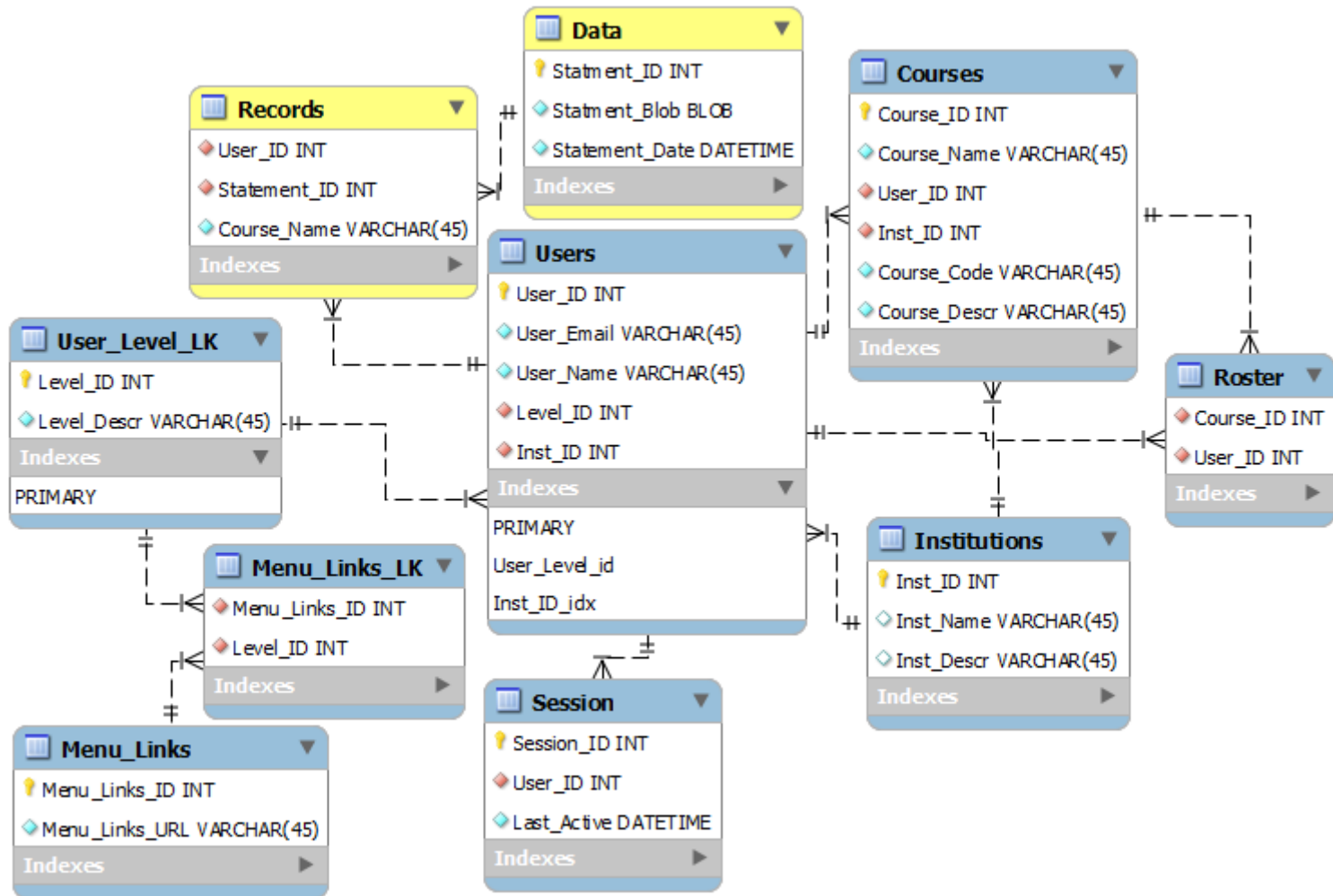
Session, Levels, Menus



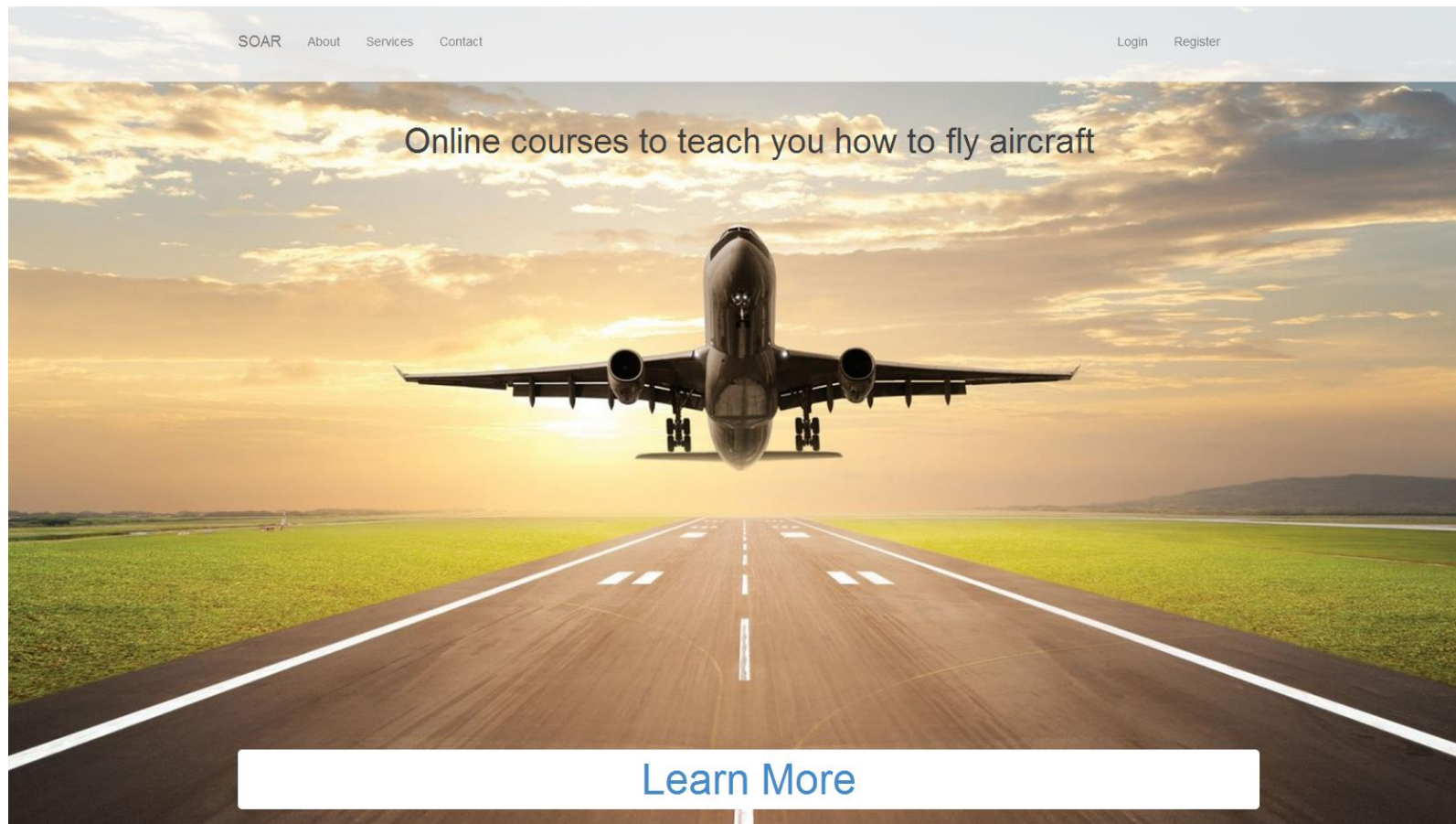
Courses and Institutions



Data



Implementation



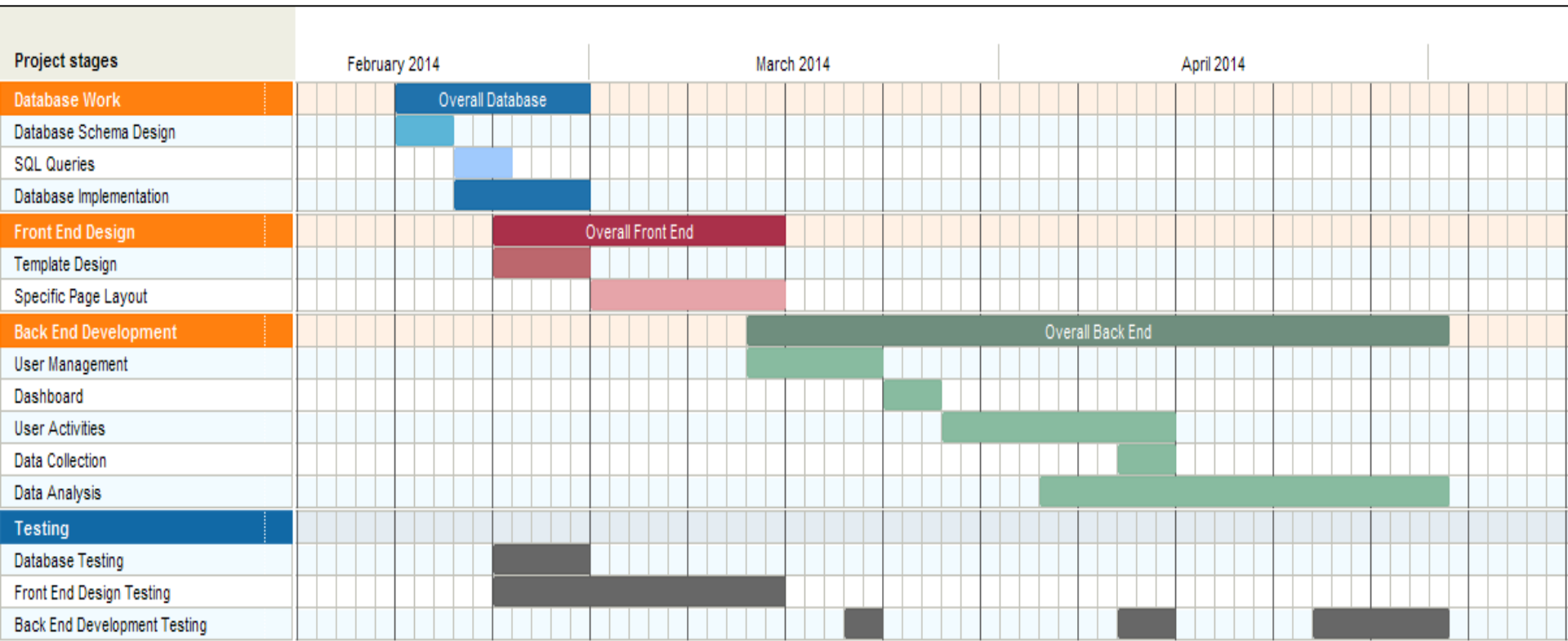
Sponsor Challenges

- Constantly changing requirements
- Developer communication
- Lack of SOAR desktop

Risks

Risk	Mitigation
Data loss	Daily backups
Bad XML file	<ul style="list-style-type: none"><li data-bbox="1014 692 1367 735">● Format testing<li data-bbox="1014 806 1619 906">● Capture error and report to developer
Inaccurate reporting	Unit testing
Lack of aviation knowledge	Study aviation terms and aviation training practices

Schedule



Conclusion

- Sponsor wants to monetize aviation training
- We create the bridge between training and improvement based on analysis
- Empowering students to succeed in aviation

Thank you

QUESTIONS AND COMMENTS