



EMPLOYEE SHIFT SCHEDULING SYSTEM

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KEY FEATURES:

- Automated shift scheduling
- Conflict detection
- Employee management
- Time-off tracking
- Analytics & reporting

WHAT IS THIS APPLICATION?

- Desktop application for managing employee schedules in intramural sports programs
- Automates scheduling process and prevents conflicts
- Handles employee availability, time-off requests, and hour tracking
- Provides analytics and reporting for administrators

PROBLEM STATEMENT

1. Manual Scheduling is Time-Consuming

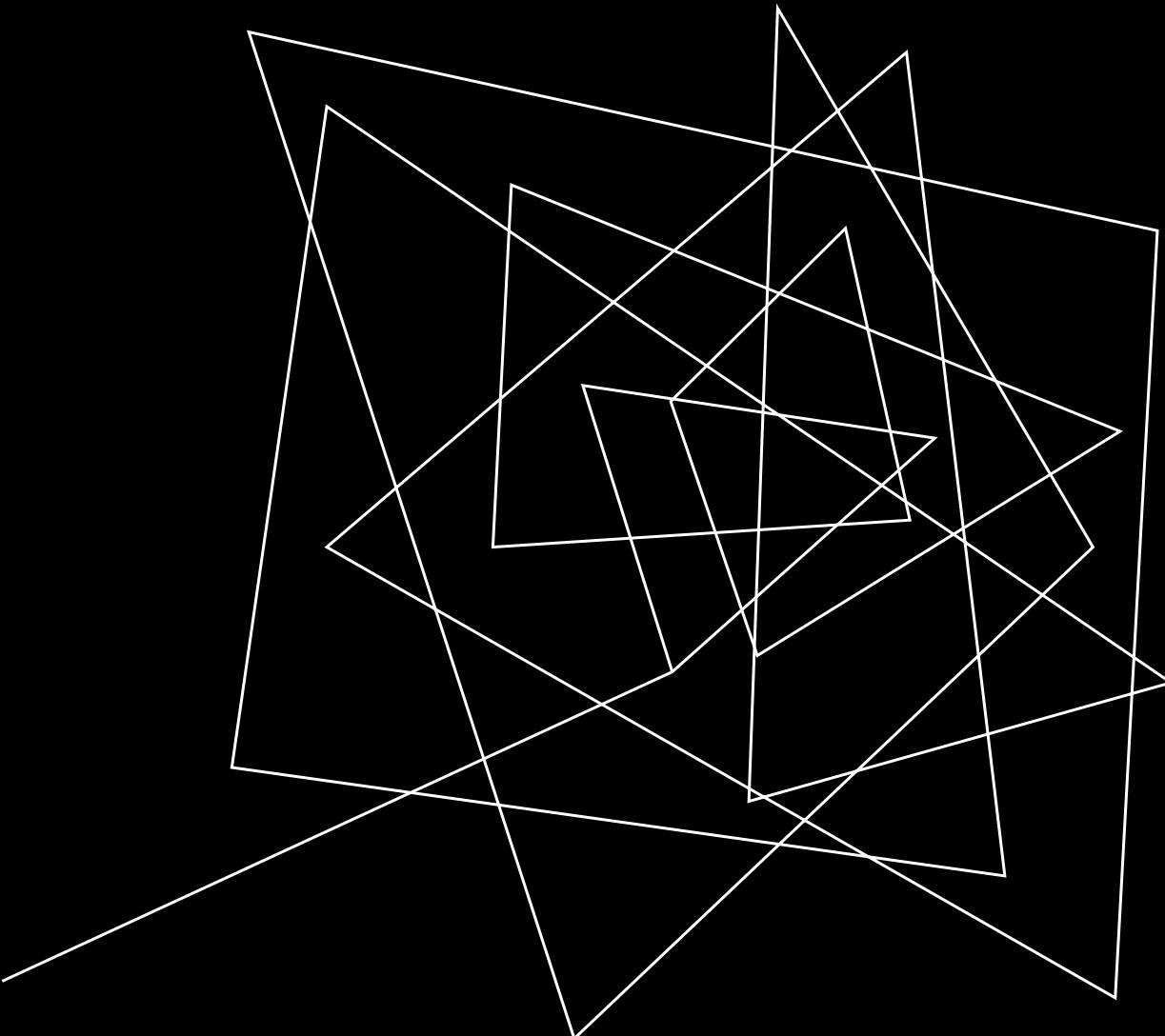
- Checking availability for each employee
- Avoiding double-booking
- Ensuring qualified staff

2. Human Errors

- Scheduling conflicts
- Forgetting time-off requests
- Overworking employees

3. No Centralized System

- Scattered information
- Poor communication
- Difficult to track hours



TECHNOLOGY USED

FRONTEND:

- JAVA 21 - CORE PROGRAMMING LANGUAGE
- JAVAFX 21 - RICH DESKTOP UI FRAMEWORK
- CSS - CUSTOM STYLING

BACKEND:

- SQL SERVER - DATABASE MANAGEMENT
- JDBC - DATABASE CONNECTIVITY
- BCRYPT - PASSWORD ENCRYPTION

BUILD & TOOLS:

- MAVEN - DEPENDENCY MANAGEMENT
- POWERSHELL - BUILD SCRIPTS
- VS CODE - DEVELOPMENT ENVIRONMENT

EXTERNAL LIBRARIES:

- MSSQL-JDBC.JAR - MICROSOFT SQL SERVER JDBC DRIVER
- BCRYPT.JAR - PASSWORD HASHING



INTELLIGENT SCHEDULING ALGORITHM

Hard Constraints

- Employee availability
- No double-booking
- Under max weekly hours
- Sport expertise match
- Time-off respected

Soft Preferences

- Higher expertise preferred
- Even workload distribution
- Preferred time slots
- Balance assignments

Employee Scheduling S...

Intramural Sports Program

Username:

admin

Password:

.....|

LOGIN

[Forgot password?](#)

LOGIN INTERFACE

ADMIN DASHBOARD

FEATURES VISIBLE:

1. - UPCOMING SHIFTS
2. - TEAM STATISTICS
3. - ACTIVE EMPLOYEES
4. - RECENT ACTIVITIES

The dashboard features a top header with the text "Here's what's happening with your team today." Below this are three summary cards:

- Total Employees:** 9
- Supervisors:** 4
- This Week's Games:** 6

Below these cards is a **Schedule Overview** section. It displays two shift entries:

- Basketball** Nov 26, 2025 6:00 pm - 9:00 pm Field B: 2/2 available, 3/3 total.
- Basketball** Nov 27, 2025 6:00 pm - 9:00 pm fdhfg: 0/1 available, 0/1 total.

Buttons for "Generate Recommendations" and "Edit Shift" are present. A note below the shifts says "Click 'Generate Recommendations' to get staffing suggestions".

To the right is a **Team Members** section. It lists two employees:

- emp eight** (Supervisor, Active): Sports: Soccer, Cricket, Volleyball, Basketball; Softball. Availability: MON: 3 slot(s), TUE: 3 slot(s), WED: 3 slot(s), THU: 3 slot(s), FRI: 3 slot(s), SAT: 3 slot(s), SUN: 3 slot(s). Edit Employee button.
- emp five**: Edit Employee button.

Create New Shift

Schedule a new game and staffing requirements

Shift Details

Sport*

Date*

Start Time*

End Time*

Location*

Staffing Requirements

Supervisors Needed

Referees Needed

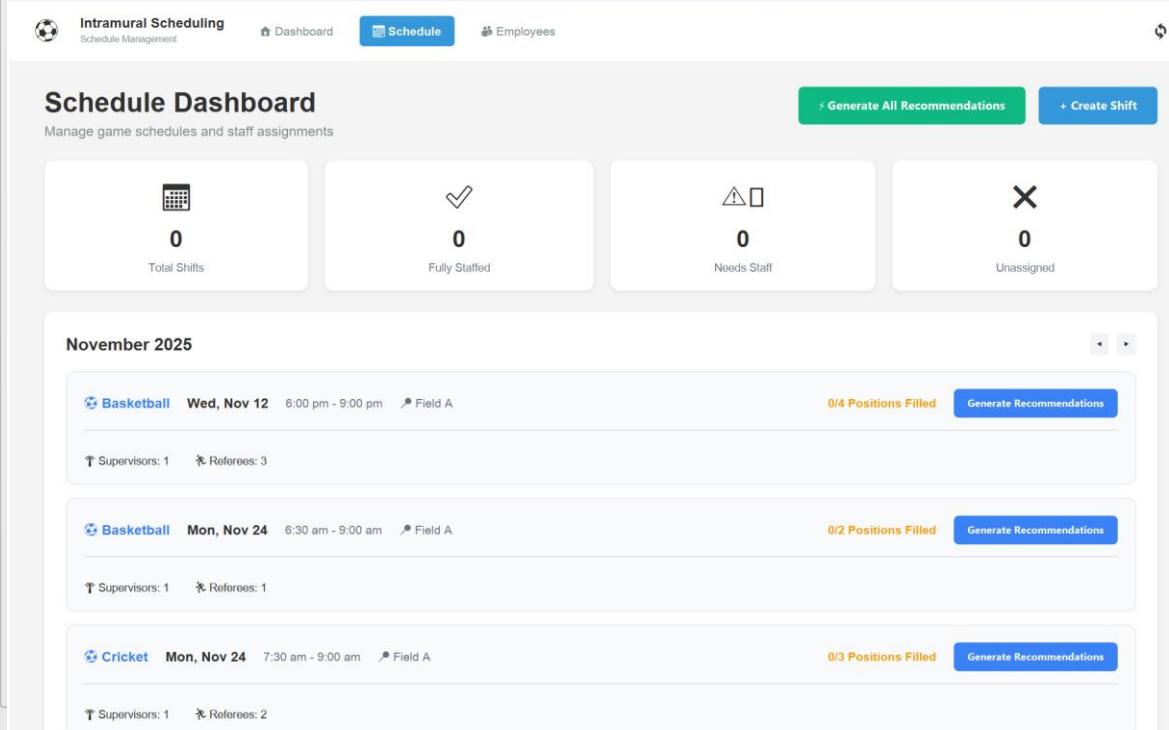
  

Cancel

Create Shift

SHIFT SCHEDULING

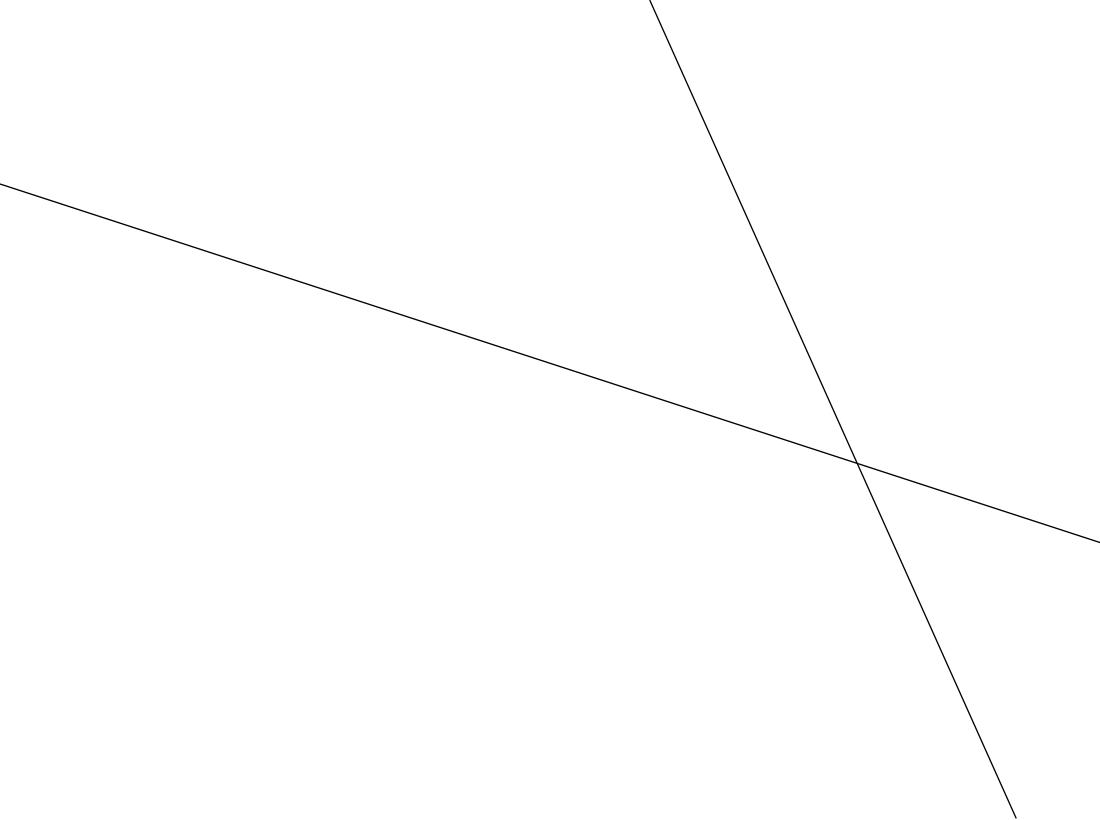
- Date picker (with validation)
- Time selection
- Sport dropdown
- Location field
- Staffing requirements (refs, supervisors)
- Validation in action



The screenshot shows the 'Schedule Dashboard' under 'Intramural Scheduling'. It displays four key metrics: 'Total Shifts' (0), 'Fully Staffed' (0), 'Needs Staff' (0), and 'Unassigned' (0). Below this, a calendar for November 2025 lists three games with their details and staffing status:

- Basketball** on **Wed, Nov 12** from **6:00 pm - 9:00 pm** at **Field A**. **0/4 Positions Filled**. **Generate Recommendations**.
- Basketball** on **Mon, Nov 24** from **6:30 am - 9:00 am** at **Field A**. **0/2 Positions Filled**. **Generate Recommendations**.
- Cricket** on **Mon, Nov 24** from **7:30 am - 9:00 am** at **Field A**. **0/3 Positions Filled**. **Generate Recommendations**.

Each game row includes a 'Supervisors: 1' and 'Referees: X' indicator.



EMPLOYEE MANAGEMENT

- Employee listing
- Search/filter functionality
- Add new employee form
- Name validation
- Sport expertise selection
- Active/inactive status

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Add New Employee

Enter employee name, availability, and sports

Employee Information

Name: Doe
Maximum Hours Per Week: 20 hours
 Supervisor Eligible

Weekly Availability (6:00 PM - 12:00 AM)

Select All Weekdays Weekends Clear

Day	Time	Hours
Monday	6:00 PM - 12:00 AM	(6 hours)
Tuesday	6:00 PM - 12:00 AM	(6 hours)
Wednesday	6:00 PM - 12:00 AM	(6 hours)
Thursday	6:00 PM - 12:00 AM	(6 hours)
Friday	6:00 PM - 12:00 AM	(6 hours)
Saturday	6:00 PM - 12:00 AM	(6 hours)
Sunday	6:00 PM - 12:00 AM	(6 hours)

Sports Employee Can Officiate

Basketball Cricket Soccer Softball Volleyball

Cancel Add Employee

Intramural Scheduling Employee Management

Dashboard Schedule Employees

All Employees

+ Add Employee

Total: 9 Active: 9 Inactive: 0 Supervisors: 4

emp eight Supervisor Active Max: 20 hrs/week	emp five Supervisor Active Max: 20 hrs/week	4 g Staff Active Max: 20 hrs/week
emp nine Staff Active Max: 20 hrs/week	emp one Staff Active Max: 20 hrs/week	emp seven Staff Active Max: 20 hrs/week
emp six Supervisor Active Max: 20 hrs/week	emp three Supervisor Active Max: 20 hrs/week	emp two Staff Active Max: 20 hrs/week

RUNNING THE APPLICATION

Prerequisites:

- Java 21 or higher
- SQL Server installed
- JavaFX SDK 21
- Database created and configured

Step 1: Setup Database

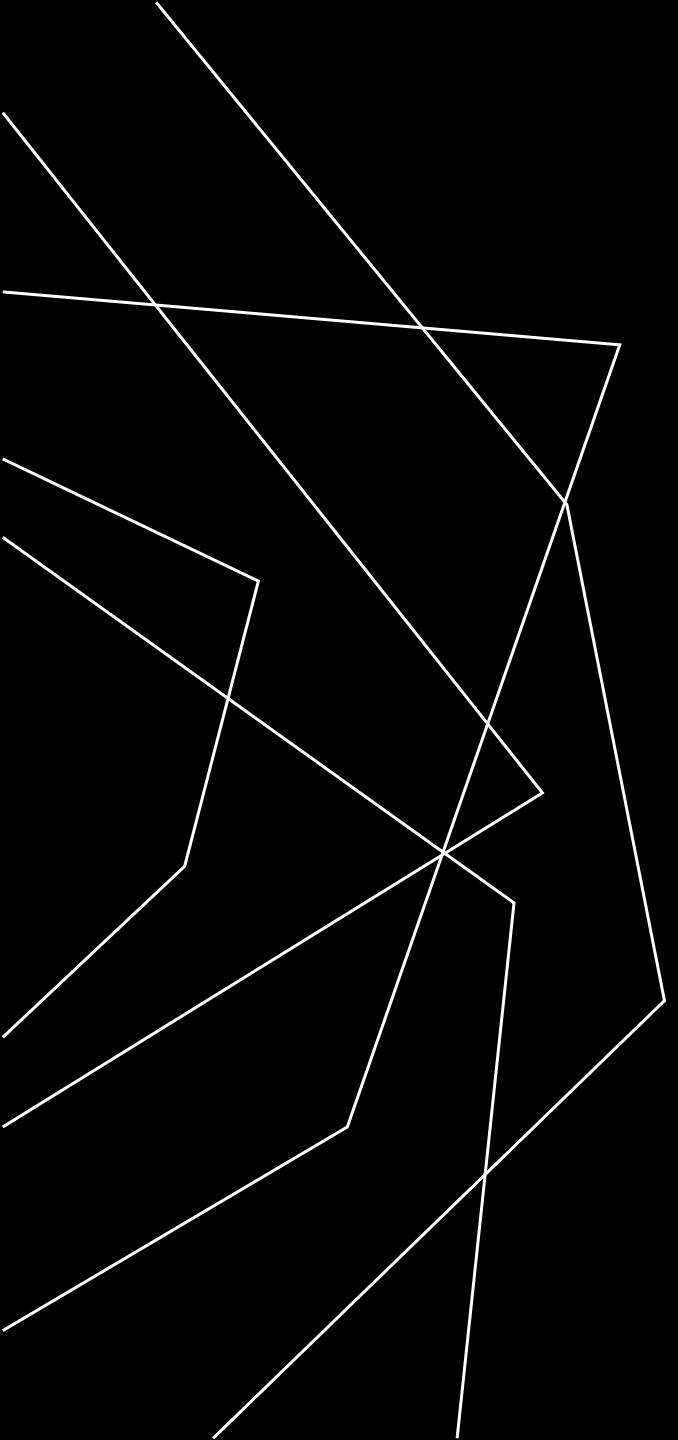
- CREATE DATABASE SchedulingSystem;
- Run schema.sql

Step 2: Configure Connection

- Edit: resources/config/application.properties
- db.url=jdbc:sqlserver://localhost:1433;.
- db.username=your_username
- db.password=your_password

Step 3: Run Application

- powershell
- .\run_login.ps1



CODE ORGANIZATION

com.intramural.scheduling/

- └── model/ - Data classes (9 files)
- └── dao/ - Database layer (7 files)
- └── service/ - Business logic (7 files)
- └── controller/ - UI controllers (6 files)
- └── view/ - JavaFX screens (6 files)
- └── util/ - Helper classes (3 files)
- └── exception/ - Custom exceptions (5 files)

FUTURE SCOPE

1. Email Notifications

- Shift reminders
- Schedule changes
- Time-off approvals

3. Advanced Analytics

- Predictive scheduling
- Performance metrics
- Cost analysis

2. Mobile App

- React Native/Flutter version
- Push notifications
- Quick availability updates

4. Integration

- Calendar export (iCal)
- Payroll system integration
- Third-party APIs



THANK YOU