

Abstract geometric lines in the top-left corner of the page, consisting of several overlapping, irregular polygons and lines that create a complex, layered effect.

EMPLOYEE SHIFT SCHEDULING SYSTEM

TEAM: MISHA PATEL & ANUJ NENE
DATE: NOVEMBER 25, 2025

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

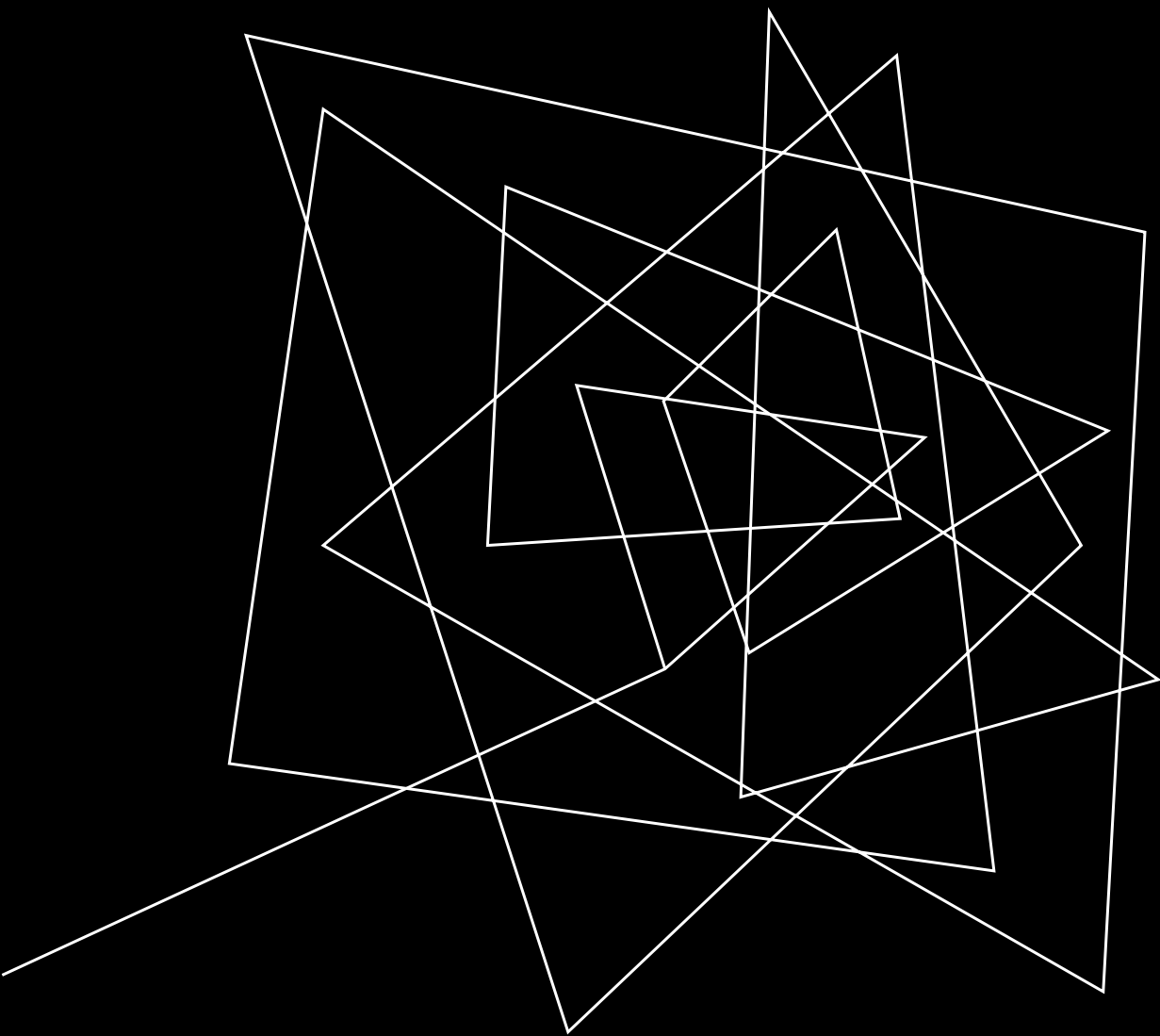
- Checking availability for each employee
- Avoiding double-booking
- Ensuring qualified staff

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

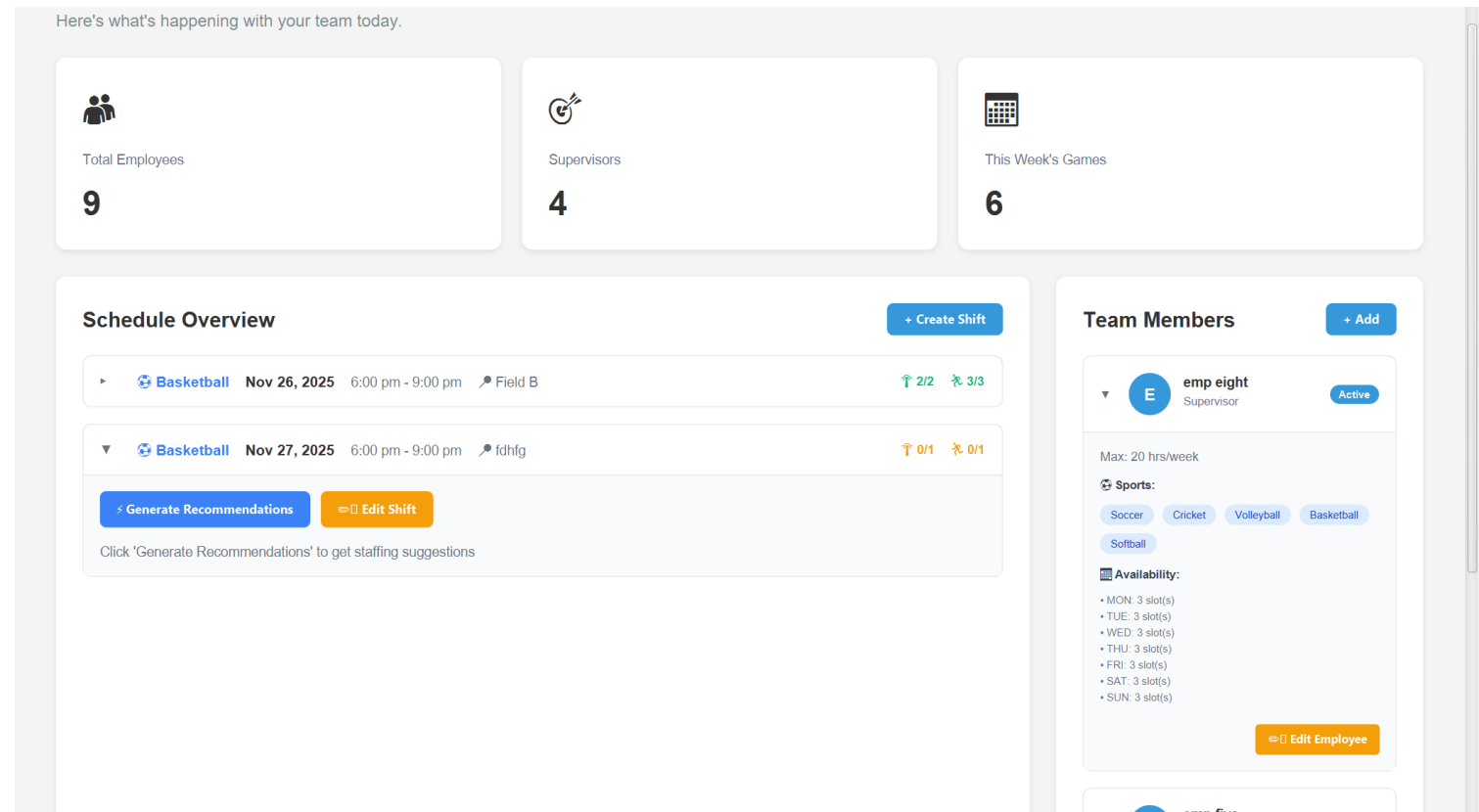
[Forgot password?](#)

LOGIN INTERFACE

ADMIN DASHBOARD

FEATURES VISIBLE:

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



Schedule a new game and staffing requirements


Schedule a new game and staffing requirements

Staffing Requirements

Cancel

Create Shift

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




Intramural Scheduling
 Schedule Management

[Dashboard](#)
[Schedule](#)
[Employees](#)

Schedule Dashboard


Manage game schedules and staff assignments

[Generate All Recommendations](#)
[+ Create Shift](#)




0

Total Shifts




0

Fully Staffed



0



Needs Staff




0

Unassigned

November 2025


Basketball

Wed, Nov 12

6:00 pm - 9:00 pm


Field A

0/4 Positions Filled

Generate Recommendations

Supervisors: 1

Referees: 3


Basketball

Mon, Nov 24

6:30 am - 9:00 am


Field A

0/2 Positions Filled

Generate Recommendations

Supervisors: 1

Referees: 1


Cricket

Mon, Nov 24

7:30 am - 9:00 am

Field A

0/3 Positions Filled

Generate Recommendations

Supervisors: 1

Referees: 2



EMPLOYEE MANAGEMENT

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

EMPLOYEE MANAGEMENT

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

Add New Employee

Enter employee name, availability, and sports

Employee Information

Maximum Hours Per Week: 20 hours

☐ Supervisor Eligible

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

Select All

Weekdays

Weekends

Clear

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

2. Mobile App

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

3. Advanced Analytics

- Predictive scheduling
- Performance metrics
- Cost analysis

4. Integration

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

A series of white, thin, overlapping geometric lines on a black background, forming various polygons and intersecting points, primarily located on the left side of the slide.

THANK YOU