

# FOOTBALL BUILDER WEB APPLICATION

BY ABDIRIZAK OSMAN



# PROJECT BRIEF



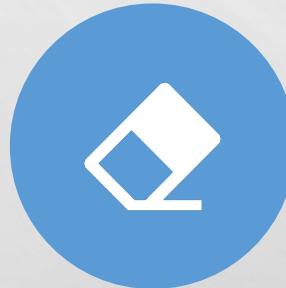
**Created a landing page  
for GOALS user  
experience**



**Users can submit a form,  
adding team name and  
player's details**



**Designed for assisting  
with planning football 5 a  
side tournaments**



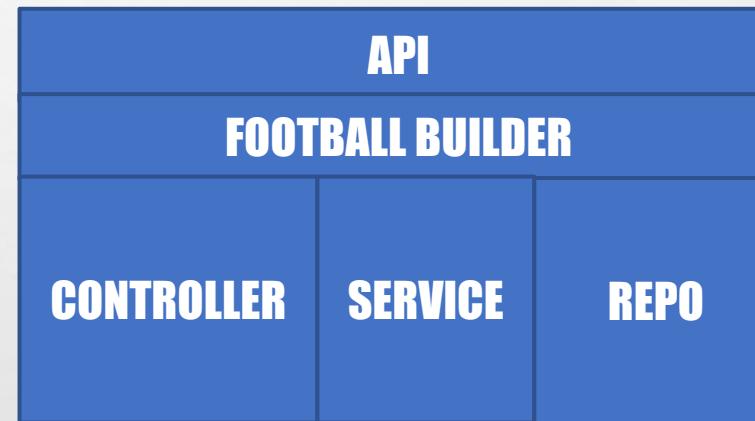
**User can create, edit,  
update and delete  
entries**

# CONCEPT PROJECT APPROACH

- **CRUD FUNCTIONALITY - MVP**
- **PROJECT MANAGEMENT – DEVELOP A ROADMAP USING A JIRA KANBAN BOARD WITH 3 SPRINTS**
- **BREAK DOWN TASKS IN TO EPICS, USER STORIES AND SUB TASKS**
- **CONSIDER PRIORITY OF TASKS USING MOSCOW**
- **REVIEW**

# THREE-TIER ARCHITECTURE

- PRESENTATION LAYER – FRONT END
- BUSINESS LAYER - API
- DATA LAYER - DATABASE



football_team	
id	BIGINT
position	VARCHAR(255)
first_name	VARCHAR(255)
last_name	VARCHAR(255)
team_name	VARCHAR(255)
Indexes	

# TECHNOLOGY USED

- VERSION CONTROL SYSTEM: GIT
- SOURCE CODE MANAGEMENT: GITHUB
- KANBAN BOARD: JIRA
- DATABASE MANAGEMENT SYSTEM: MYSQL SERVER (LOCAL)
- BACK-END PROGRAMMING LANGUAGE: JAVA
- API DEVELOPMENT PLATFORM: SPRING BOOT
- FRONT-END WEB TECHNOLOGIES: HTML, CSS, JAVASCRIPT
- BUILD TOOL: MAVEN
- UNIT TESTING: JUNIT, MOCKITO

# JIRA KANBAN BOARD SPRINT PLAN

## Sprint 1

Date: 15/08/22 09:00  
– 18:00

- PLANNING AND DESIGNING PROJECT
- WORKFLOW SET UP

## Sprint 2

Date: 16/08/22 09:00  
– 14:00, 17/08/22

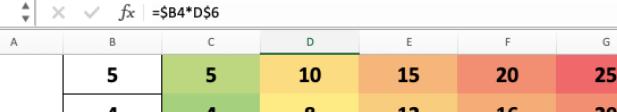
- Focus on MVP tasks
- Main crud functionality
- API development
- Front end development

## Sprint 3

Date: 16/08/22 09:00  
– 14:00, 17/08/22

- Integration and unit testing
- Final documentation: diagrams, presentation

# RISK ASSESSMENT



A screenshot of Microsoft Excel showing a risk matrix. The matrix has 'Severity' on the rows and 'Likelihood' on the columns. The cells are color-coded based on their value. The 'Severity' rows are labeled 1 through 5, and the 'Likelihood' columns are labeled A through H. The matrix values are as follows:

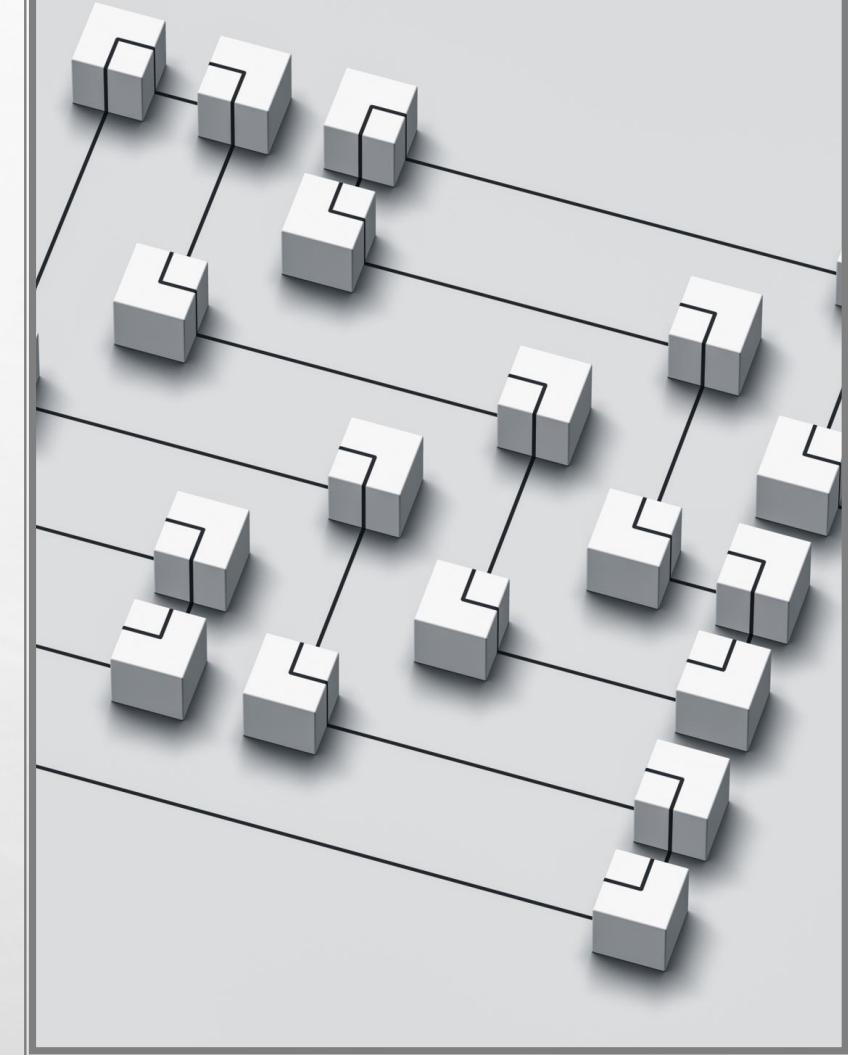
	A	B	C	D	E	F	G	H
1	5	5	10	15	20	25		
2	4	4	8	12	16	20		
3	3	3	6	9	12	15		
4	2	2	4	6	8	10		
5	1	1	2	3	4	5		
6		1	2	3	4	5		
7				Likelihood				
8								

The formula `=$B4*D$6` is visible in the formula bar, indicating the relative and absolute referencing used in the matrix.

Find a place with stable connection and conduct work for the week at this location to avoid										
Row	Risk ID	Risks		Initial Risk Level	Overall Risk Level	Response		Control Measures	Final Review	
		Cause	Effect			Likelihood	Severity			
1	1	Minimum Product not delivered	There is a lack of planning and has a limited programming experience. The code may not execute desired functions. Therefore unable to deliver an	3	5	15	Mitigate	Developer should use the coursework and the trainers help if any issues arise.		
2	2	Product does not meet the minimum requirements	Not reading the project specification thoroughly and not prioritising the features to deliver the MVP.	1	5	5	Mitigate	Highlight the main MVP user stories, and ensure the project spec is analysed and used for guidance.		
3		Requests blocked by CDRS	CRUD functionality	4	5	20	Mitigate	Add permission to enable cross origin requests on the API's controller class, include error response.		
4	3	Poor time management	Time management was a big risk highlighted during last project, as the project presentation was done last min, documentation marks are important	3	5	15	Mitigate	Use the Jira board as a structure and follow the time management plan set out. Highlight progress tracking.		
5	4	Loss of WiFi connection	Loss of internet can reduce productivity, as the project requires version control history, the API tools also require internet access.	3	5	15	Avoid	Find a place with stable connection and conduct work for the week at this location to avoid the possibility of a connection loss all together.		
6	5	Unplanned absence	Absence due to unforeseen circumstances such as illness, could prevent the completion of the project	2	4	8	Accept	Absence due to unforeseen illness are critical and should be reported to the academy.		
7	6	Hardware Failure	Hardware failure can occur as a result of many reasons, and can have detrimental effects on the completion of the project as a result of data loss..	4	5	20	Mitigate	Ensure laptop is charged appropriately, and shut off the laptop appropriately after work is saved remotely and locally. Also ensure work is pushed regularly keeping a good version control history on Github.		
8	7	Product fails to meet 80% testing coverage	Testing proved to be challenging in my last project, as I had put in more time than allocated, causing my project presentation to be rushed. Debugging can slow down progress and lead to low testing coverage.	3	5	15	Mitigate	Ensure Jira board is used to measure time allocated, and request support from trainer when debugging.		
9	8	Extreme Weather Warning - Heatwave	Extreme weather conditions can affect health, and lead to poor productivity.	1	5	5	Mitigate	Ensure to take regular breaks, to avoid exhaustion. Make sure to drink enough water to avoid dehydration, and have a fan nearby if weather is hot.		

# CONTINUOUS INTEGRATION

- **VERSION CONTROL SYSTEM:**
- **SET UP REMOTE REPOSITORY USING FEATURE BRANCH MODEL**
- **REGULARLY PUSHED COMMITS AS DATA LOSS PRECAUTION**
- **FBM MODEL – FEATURE BRANCH MODEL WAS USED TO ENSURE CODE IS READY FOR DEPLOYMENT WHEN PUSHED TO MAIN**



# TESTING

## INTEGRATION TESTING



```

public void testCreate() {
    // Create an object for saving
    FootballTeam entry = new FootballTeam("Uxbridge", "Abdul", "Omar", "Striker");

    // Create an object for the result
    FootballTeam result = new FootballTeam(1L, "Uxbridge", "Abdul", "Omar", "Striker");

    Mockito.when(repo.saveAndFlush(entry)).thenReturn(result);
    assertEquals(result, service.create(entry));
}

@Test
public void testGetAll() {
    // Create an object for saving
    List<FootballTeam> result = new ArrayList<>();
    result.add(new FootballTeam(1L, "Uxbridge", "Abdul", "Omar", "Striker"));

    Mockito.when(repo.findAll()).thenReturn(result);
    assertEquals(result, service.getAll());
}

@Test
public void getByIdTest() {
    long id = 1;
    // Create an object for saving
    FootballTeam result = new FootballTeam(1L, "Uxbridge", "Abdul", "Omar", "Striker");
    Optional<FootballTeam> resultI = Optional.of(result);
    Mockito.when(repo.findById(id)).thenReturn(resultI);
    assertEquals(result, service.getID(id));
}

@Test
public void testGetTeamName() {
    String teamName = "HayesFc";
    // Create an object for saving
    List<FootballTeam> result = new ArrayList<>();
    result.add(new FootballTeam(1L, "HayesFc", "Abdul", "Omar", "Striker"));

    Mockito.when(repo.findFootballTeamByteamName(teamName)).thenReturn(result);
    assertEquals(result, service.getByName(teamName));
}

// Create an object for the result
FootballTeam entry = new FootballTeam(1L, "Hayes", "Ak", "Osman", "LB");
String entryAsJSON = mapper.writeValueAsString(entry);

// Create an object for checking the result
FootballTeam result = new FootballTeam(1L, "Hayes", "Ak", "Osman", "LB");
String resultAsJSON = mapper.writeValueAsString(result);

Mockito.when(service.create(entry)).thenReturn(result);
mvc.perform(post("/team/create").contentType(MediaType.APPLICATION_JSON).content(entryAsJSON))
    .andExpect(content().json(resultAsJSON));
}

@Test
void readAllTest() throws Exception {
    // Create a list to check the output of readAll
    List<FootballTeam> result = new ArrayList<>();
    // Add the single entry to the list
    result.add(new FootballTeam(1L, "Hayes", "Ak", "Osman", "LB"));

    Mockito.when(service.getAll()).thenReturn(result);
    // converts the list to a JSON (As api responds in JSON)
    String resultAsJSON = mapper.writeValueAsString(result);
    mvc.perform(get("/team/getAll").contentType(MediaType.APPLICATION_JSON))
        .andExpect(content().json(resultAsJSON));
}

@Test
public void updateTest() throws Exception {
    Long id = 1L;
    FootballTeam update = new FootballTeam(1L, "Hayes", "Ak", "Osman", "LB");
    String updateJSON = mapper.writeValueAsString(update);

    FootballTeam expected = new FootballTeam(1L, "Hayes", "Ak", "Osman", "LB");
    String expectedJSON = mapper.writeValueAsString(expected);

    Mockito.when(service.update(id, update)).thenReturn(expected);
    mvc.perform(put("/team/update/1").contentType(MediaType.APPLICATION_JSON).content(updateJSON))
        .andExpect(content().json(expectedJSON));
}

```

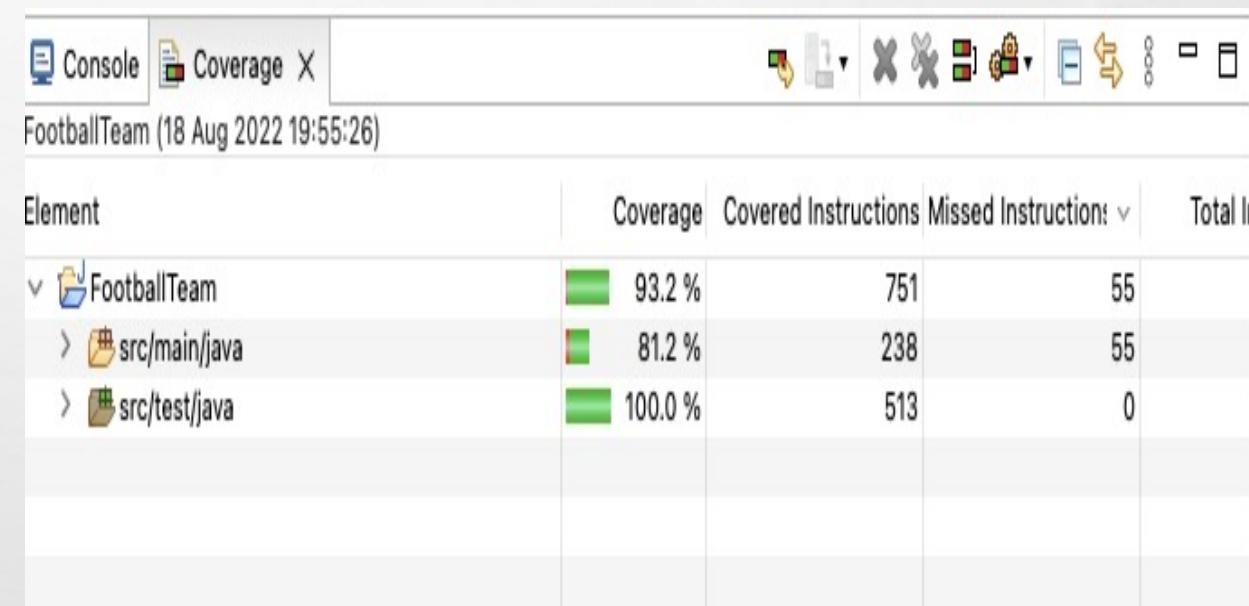
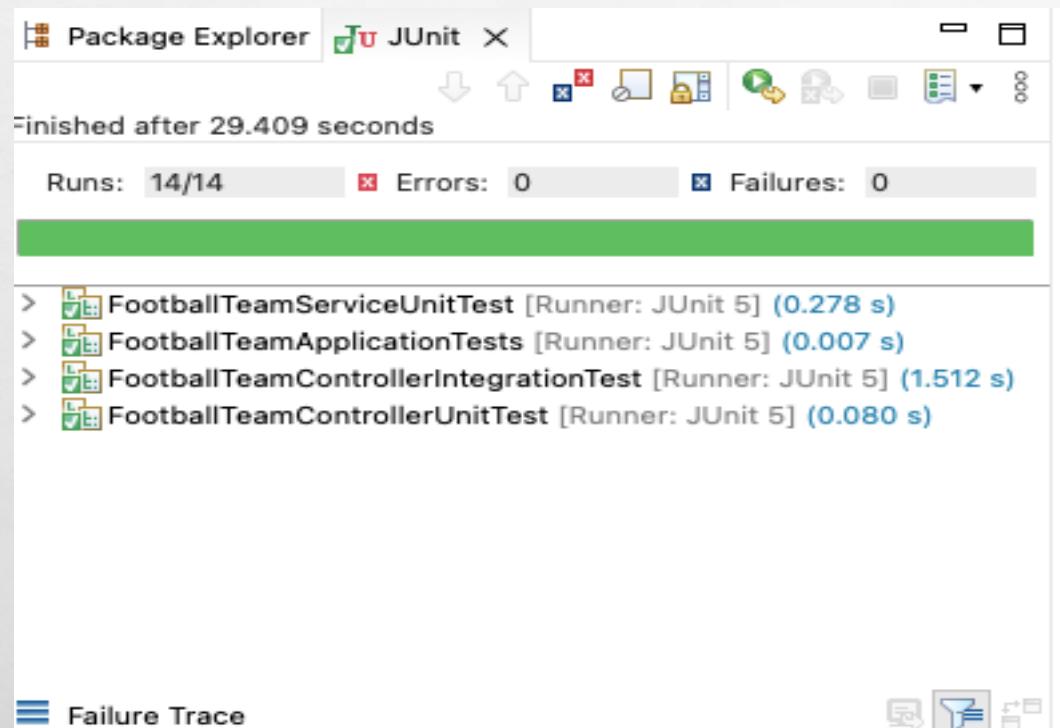
## UNIT TESTING

### CONTROLLER

### SERVICE



# TESTING COVERAGE: ACHIEVED 81%



# DEMO

- **CRUD FUNCTIONALITY – PRESENTATION LAYER**

# SPRINT 1

Epic X

Issues without epic

> ■ Presentation layer

> ■ Business Layer

> ■ Data layer

> ■ Documentation

+ Create Epic

+ Create issue

▼ FUL Sprint 1 15 Aug – 15 Aug (9 issues) 34 0 0 Complete sprint

FUL-5 As a developer, I must create ... DOCUMENTATION 3 ▲ TO DO 0 0

FUL-6 As a developer, I must set up ... DOCUMENTATION 2 ▲ TO DO 0 0

FUL-4 As a developer, I must create... DOCUMENTATION 3 ▲ TO DO 0 0

FUL-9 As a developer, I must create a M... DATA LAYER 5 ▲ TO DO 0 0

FUL-20 As a developer, I must deter... DOCUMENTATION 5 ▲ TO DO 0 0

FUL-13 As a developer, I should be ... DOCUMENTATION 3 ▲ TO DO 0 0

FUL-21 As a developer, I must creat... DOCUMENTATION 3 ▲ TO DO 0 0

FUL-22 As a developer, I must d... PRESENTATION LAYER 5 ▲ TO DO 0 0

FUL-23 As a developer, I must have ... BUSINESS LAYER 5 ▲ TO DO 0 0

Child issues Order by ▾ ... +

100% Done

FUL-31 Create user stories fro... 0 0 DONE ▼

FUL-32 create a story point sy... 0 0 DONE ▼

FUL-33 create a priority label ... 0 0 DONE ▼

FUL-34 create epics 0 0 DONE ▼

# SPRINT 2

**Epic** X

Issues without epic

> ■ Presentation layer

> ■ Business Layer

> ■ Data layer

> ■ Documentation

+ Create Epic

▼ **FUL Sprint 2 16 Aug – 17 Aug (8 issues)** 39 0 0 Complete sprint

<input checked="" type="checkbox"/>	FUL-14 As a user, I must be able to c...	BUSINESS LAYER	6	↗	TO DO	<span style="color: gray;">●</span>
<input checked="" type="checkbox"/>	FUL-15 As a user, I must be able to r...	BUSINESS LAYER	6	↗	TO DO	<span style="color: gray;">●</span>
<input checked="" type="checkbox"/>	FUL-17 As a user, I must be able upd...	BUSINESS LAYER	6	↗	TO DO	<span style="color: gray;">●</span>
<input checked="" type="checkbox"/>	FUL-18 As a user, I must be able to s...	BUSINESS LAYER	6	↗	TO DO	<span style="color: gray;">●</span>
<input checked="" type="checkbox"/>	FUL-16 As a user, I must be able to d...	BUSINESS LAYER	6	↗	TO DO	<span style="color: gray;">●</span>
<input checked="" type="checkbox"/>	FUL-24 As a developer I want to cre...	BUSINESS LAYER	4	↗	TO DO	<span style="color: gray;">●</span>
<input checked="" type="checkbox"/>	FUL-7 As a developer, I must have a relat...	DATA LAYER	2	↗	TO DO	<span style="color: gray;">●</span>
<input checked="" type="checkbox"/>	FUL-21 As a developer, I must creat...	DOCUMENTATION	3	↗	TO DO	<span style="color: gray;">●</span>

# SPRINT3

▼ FUL Sprint 3 17 Aug – 18 Aug (10 issues)

Issue	Description	Layer	Priority	Status	Assignee	...
<input checked="" type="checkbox"/> FUL-12	As a developer, I must have a ...	BUSINESS LAYER	5			
<input checked="" type="checkbox"/> FUL-11	As a developer, I must ha...	PRESENTATION LAYER	5			
<input checked="" type="checkbox"/> FUL-19	As a developer, I must ha...	PRESENTATION LAYER	5			
<input checked="" type="checkbox"/> FUL-25	As a developer, I must have ...	DOCUMENTATION	3			
<input checked="" type="checkbox"/> FUL-10	As a developer, I must have a H2 r...	DATA LAYER	4			
<input checked="" type="checkbox"/> FUL-26	As a developer, I want to com...	BUSINESS LAYER	2			
<input checked="" type="checkbox"/> FUL-27	As a developer, I want to do i...	BUSINESS LAYER	5			
<input checked="" type="checkbox"/> FUL-28	As a developer, I want to do u...	BUSINESS LAYER	5			
<input checked="" type="checkbox"/> FUL-29	As a developer, I want to inc...	DOCUMENTATION	2			
<input checked="" type="checkbox"/> FUL-30	As a developer I want a swag...	BUSINESS LAYER	2			

+ Create issue

Child issues

Order by

100% Done

Issue	Description	Assignee	Status	
	FUL-35	use the project spec a...		
	FUL-36	include screenshots of...		
	FUL-37	Give a demo of crud fu...		
	FUL-38	<u>add brief descript...</u>		

# CONCLUSION

- PLANNING AND TIME CONSTRAINT: I REALLY ENJOYED USING JIRA TO STRUCTURE THE PROJECT AND COMPLETE TASKS. FINISHED PROJECT DAY BEFORE DEADLINE!
- KNOWLEDGE GAINED FROM WEB DEVELOPMENT: CSS/BOOTSTRAP, JAVASCRIPT, SPRING BOOT
- FUTURE IMPLEMENTATIONS: DEVELOP THE APPLICATION FRONT END TO MAKE IT MORE USER FRIENDLY, CREATE A LOGIN FOR USERS

**HAPPY TO  
TAKE ANY  
QUESTIONS**

- **SPECIAL THANK YOU TO MY TUTORS;, ANOUSH LOWTON AND EDWARD , WHO HAVE BEEN VERY SUPPORTIVE**