1.TOOLS AND TECHNOLOGY

1) Frontend: We are Planning to use EJS because It allows for dynamic rendering of HTML templates with embedded JavaScript code, React.js because it provides a powerful toolset for building reusable UI components. This enables us to create complex user interfaces with ease, improve the performance of web applications and javascript and CSS.

2) Backend: We are planning to use Node.js because of its high performance, scalability, JavaScript-based architecture, express.js because it provides a robust framework for building scalable and maintainable web applications. Additionally, using NPM packages allows us to easily incorporate third-party libraries and tools to enhance our project's functionality.

3) Database: We are planning to use open source NoSQL database MongoDB because of its flexibility and scalability. It offers a document-based data model that allows for easy storage and retrieval of complex data structures.

4) IDE: We are planning to use Visual Studio Code as our IDE because of its open-source nature, cross-platform support, and rich extension ecosystem, which provides a flexible and customizable environment.

2. EFFORT ESTIMATION USING USE CASE SIZE POINT

2.1 Unadjusted Use-Case Weight (UUCW)

Use-Case Complexity	Number of Transactions	Use-Case Weight
Simple	≤3	5
Average	4 to 7	10
Complex	>7	15

Use-Case Name	Number of Transactions	Category
Register	1	Simple
Login	2	Simple
Club member		
Forgot password	2	Simple
Manage resources	1	Simple
Update standings/rank list	1	Simple
Event scheduling	1	Simple
Attendance tracking	1	Simple
Club Convener		

Volunteer hours tracking	1	Simple
Manage budget and funds	1	Simple
User		
View resources	2	Simple
View standings/rank list	2	Simple
Event register	3	Simple
Event de-register	3	Simple
View event list	2	Simple
Search event	1	Simple
View profile	1	Simple
feedback	1	Simple

Use-Case Complexity	Weight	Number of Use-Cases	Product
Simple	5	17	85
Average	10	0	0
Complex	15	0	0
Unadjusted Use-Case Weight (UUCW)			85

2.2 Unadjusted Actor Weight (UAW)

Actor Complexity	Example	Actor Weight
Simple	A System with defined API	1
Average	A System interacting through a Protocol	2
Complex	A User interacting through GUI	3

Actor Complexity	Example	Actor Weight
Simple	A System with defined API	1
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Complex	A User interacting through GUI	3

Actor Name	Category	Weight
Club member	Complex	3
Club convener	Complex	3
User	Complex	3
Unadjusted Actor Weight (UAW)		9

2.3 Unadjusted Use Case Point (UUCP)

Unadjusted Use Case Point (UUCP) = Unadjusted Actor Weight(UUCW) + Unadjusted Use Case Weight(UAW)
∴ UUCP = UUCW +UAW
∴ UUCP = 85 + 9
∴ UUCP = 94

2.4 Technical Complexity Factor (TCF)

Factor	Description	Weight (W)	Rated Value (0 to 5) (RV)	Impact (I = W × RV)
T1	Distributed System	2.0	4	8
T2	Response time or throughput performance objectives	1.0	5	5
T3	End user efficiency	1.0	4	4
T4	Complex internal processing	1.0	4	4
T5	Code must be reusable	1.0	4	4
T6	Easy to install	.5	1	0.5
T7	Easy to use	.5	4	2
T8	Portable	2.0	3	6
T9	Easy to change	1.0	4	4
T10	Concurrent	1.0	5	5
T11	Includes special security objectives	1.0	5	5

T12	Provides direct access for third parties	1.0	2	2
T13	Special user training facilities are required	1.0	0	0
Total Technical Factor (TFactor)				49.5

Technical Complexity Factor can be calculated as follows:

TCF = 0.6 + (0.01 × TFactor)

∴ TCF = 0.6 + (0.01 × 49.5)

∴ TCF = 0.6 + 0.495

∴ **TCF = 1.095**

2.5 Environmental Complexity Factor (EF)

Factor	Description	Weight (W)	Rated Value (0 to 5) (RV)	Impact (I = W × RV)
F1	Familiar with the project model that is used	1.5	4	6
F2	Application experience	.5	3	1.5
F3	Object-oriented experience	1.0	4	4
F4	Lead analyst capability	.5	4	2
F5	Motivation	1.0	4	4
F6	Stable requirements	2.0	4	8
F7	Part-time staff	-1.0	0	0

F8	**Difficult programming language**	**-1.0**	**2**	**-2**
Total Environment Factor (EFactor)				**23.5**

Environmental Factor can be calculated as follows:

EF = 1.4 + (-0.03 × EFactor)

∴ EF = 1.4 + (-0.03 × 23.5)

∴ EF = 1.4 - 0.705

∴ EF = 0.695

Factor	Description	Weight
UUCP	**Unadjusted Use Case Point**	**94**
TCF	**Technical Complexity Factor**	**1.095**
EF	**Environmentral Factor**	**0.695**

Adjusted Use Case points can be calculated as follows:

UCP = UUCP × TCF × EF

∴ UCP = 94 × 1.095 × 0.695

∴ UCP = 71.53635

Total Working Hours can be calculated as follows:

Total Working Hours = UCP × Working Hours/UCP

Working Hours/UCP = 10

∴ Total Working Hours = 71.53635 × 10

∴ Total Working Hours = 715.4 Hours