



Group Assignment 3

T-103-STST, Discrete Mathematics for Engineers
Reykjavík University — Department of Computer Science, Reykjavík, Iceland

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Deadline: Thursday, October 30th, 2025, at 23:59

Group members (2–3 students):

Instructions

Fill your answers in the provided boxes. You may print and handwrite (then scan) or edit the L^AT_EX and compile to PDF. **Assignments not using this template will not be graded.**

Group size: 2–3 students. Submit exactly one PDF for the group.

Group Policy

- *No group yet?* Please reach out to me or post on Piazza to find group (a private post is fine).
- *Working alone:* If you wish to work individually, you must obtain prior approval **unless you already have it**. Email me or post a private note on Piazza explaining why. Retroactive approvals may be denied.
- *Academic integrity:* Discuss within your group, but do not share written solutions or L^AT_EX files with other groups. Cite any external sources you consulted.

Requirement List

0.1 Functional Requirements

Nr	Functional requirements	User group	Priority	Completed
1	The user can login as organizer	Organizer	A	
2	The user can register as a player	Player	A	
3	The user can login as a player	Player	A	
4	The user can enter as a spectator without signing in	General	A	
5	Organizer can create a tournament	Organizer	A	
6	Organizer can add a team to a tournament	Organizer	A	
7	When a team captain leaves a team, he assigns a team member to be the new captain	Team Captain	A	
8	The Organizer archives tournaments when they finish	Organizer	A	
10	Organizer can publish a tournament	Organizer	A	
11	Organizer can input match results	Organizer	A	
12	Player can create a team	Player	A	
13	Player becomes team captain	Player	A	
14	Player can leave a team	Player	A	
15	Team captain can add a player to his team	Team Captain	A	
16	Team captain can remove a player from his team	Team Captain	A	
17	Team captain can leave his team	Team Captain	A	
18	The user can view tournament	General	A	
19	The user can view tournament schedule	General	A	
20	The user can view all teams	General	A	
21	The user can view all players	General	A	
22	Organizer can manage tournament	Organizer	A	
23	Organizer can create a club	Organizer	B	
24	When the organizer creates a tournament, he chooses between double elimination and normal	Organizer	B	
25	Teams are assigned to a club on creation	Team Captain	B	
26	The user can view all clubs	Player	B	
27	Organizer can modify time of a tournament before it has started	Organizer	B	
28	Organizer can delete a tournament before it has been published	Organizer	C	
29	Organizer can edit clubs	Organizer	C	
30	Team captains can transfer his authority to a player in the team	Team Captain	C	
31	Team captain can change what club the team is associated with	Team Captain	C	
32	Organizer can cancel an ongoing tournament	Organizer	C	
33	Team captain can add ascii art to his team	Team Captain	C	
34	Organizer can edit specific match scheduling	Organizer	C	
35	The user can type in shortcuts for windows to travel to specific window	General	C	

0.2 Non-functional Requirements

Nr	Non-Functional requirements	User group	Priority	Completed
1	System automatically shuffles and arranges teams in a tournament match, based on quantity of teams and time frame	System	A	
2	When team captain leaves a team if he is alone then the team is archived	System	A	
3	Each Player can only be in one team at the same time	System	A	
4	The system should not crash due to invalid data	System	A	
5	The player personal data should not be visible to the spectator	System	A	
6	Only the team captain can modify the team	System	A	
7	Only the organizer can create tournaments	System	A	
8	Code must follow Python type hinting everywhere	System	A	
9	Code must follow snake caseing naming convention	System	A	
10	Name and Username should be the lenght of 3-30	System	A	
11	Tournament have must have 16 teams	System	A	
12	Player, Team, Tournament, Servers, Matches, Clubs generate UUID when stored in file	System	A	
13	The user can see a breadcrumb navigation	System	B	
14	Only the organizer can modify clubs	System	B	
15	Give users options to cancel while inputting information	System	B	
16	Tournament can have more than 16 teams	System	B	
17	The Club Name will be printed in its color	System	C	
18	Show tournaments brackets visually	System	C	

Use Cases

User logs in as organizer	
Number	1
Priority	A
Precondition	
Base flow	<p>3. User logs in.</p> <p>4. Inputs details for the organizer.</p> <ul style="list-style-type: none"> • Organizer username
Alternative flow	
Post condition	User is now an Organizer and can create and manage tournaments.
Actors	User/Organizer

Organizer adds team to tournament	
Number	6
Priority	A
Precondition	Organizer has already created a tournament.
Base flow	
Alternative flow	
Post condition	1. Organizer selects tournament.
Actors	<p>2. Organizer selects View Teams.</p> <p>3. Organizer selects add team.</p> <p>4. Organizer inputs team name.</p> <ul style="list-style-type: none"> • No team has been made, a player needs to make a team, use case(10). • The team doesn't have enough players, the team captain needs to add players to his team, use case(11).
	That team is now apart of the tournament.
	Organizer

User registers as player	
Number	2
Priority	A
Precondition	
Base flow	<p>6. User selects Sign up.</p> <p>7. User inputs his information.</p> <ul style="list-style-type: none"> • Full name • Date of birth • Address • Phone • Email • Link • Handle
Alternative flow	<p>8. User is now registered as a player.</p> <p>9. User is now logged in.</p> <ul style="list-style-type: none"> • User tries to sign up with an existing account. User needs to login to his account. See use case(3)
Post condition	User is now a player and cannot be registered as a player again.
Actors	User becomes a player.

Organizer removes a team from a tournament	
Number	7
Priority	A
Precondition	A team has been added to the tournament.
Base flow	
Alternative flow	
Post condition	1. Organizer selects tournament.
Actors	<p>2. Organizer selects view team.</p> <p>3. Organizer selects remove team.</p> <p>4. Organizer inputs team name.</p>
	That team is no longer apart of the tournament.
	Organizer

A player logs in	
Number	3
Priority	A
Precondition	
Base flow	<p>1. A player logs in.</p> <p>2. Player inputs his handle.</p> <p>3. Player is now logged in.</p>
Alternative flow	<ul style="list-style-type: none"> • User doesn't have a player account. User needs to sign up as a player. Use case(2)
Post condition	The player is now logged in and can access what the players can access.
Actors	Player

Organizer starts a tournament	
Number	8
Priority	A
Precondition	The tournament needs to have enough teams.
Base flow	
Alternative flow	
Post condition	1. Organizer selects a tournament.
Actors	<p>2. Organizer selects Start tournament.</p> <ul style="list-style-type: none"> • Tournament doesn't have enough teams in it, organizer needs to add teams to the tournament, use case(6).
	Organizer

User enters as spectator	
Number	4
Priority	A
Precondition	
Base flow	<p>1. The user selects the Spectator option.</p> <p>2. Now the user is a spectator.</p>
Alternative flow	
Post condition	The user is now a spectator and can view details from the tournament (schedule, match results, clubs, teams and players).
Actors	User

Organizer inputs result of a match	
Number	9
Priority	A
Precondition	A tournament has to have been created and a match has to be completed.
Base flow	
Alternative flow	
Post condition	1. Organizer selects input results.
Actors	<p>2. Organizer selects match to input results.</p> <p>3. Organizer inputs result of match.</p>
	Results of a specific match have been made so the winner of that match goes to the next round.
	Organizer

Organizer can create a tournament	
Number	5
Priority	A
Precondition	Logged in as organizer, use case(1)
Base flow	<p>4. Organizer selects Create Tournament.</p> <p>5. Organizer inputs information.</p> <ul style="list-style-type: none"> • Start date • End date • Unique name • Venue • Contact email • Contact number
Alternative flow	6. Organizer has created a tournament.
Post condition	Organizer has now access to a new unique tournament.
Actors	Organizer

Player creates a team	
Number	10
Priority	A
Precondition	Player needs to be logged in.
Base flow	
Alternative flow	
Post condition	1. Player selects create team.
Actors	<p>2. Player inputs team information.</p> <ul style="list-style-type: none"> • Team name • Club
	3. Player is now team captain of the newly created team.
	<ul style="list-style-type: none"> • Player is already apart of a team, player needs to leave team, use case(13).
	Player is now apart of a team and is the team captain.
	Player

Team captain adds a player to his team	
Number	11
Priority	A
Precondition	Player must have created a team, use case(10).
Base flow	<ol style="list-style-type: none"> 1. Captain selects view team. 2. Captain selects Add player to team. 3. Captain inputs Player handle. 4. That player is now apart of the team. <ul style="list-style-type: none"> • A player is already in another team. That player needs to leave his team, see case(13), then the Captain can add that player to his team.
Alternative flow	
Post condition	Team captain has now added a player to his team.
Actors	Team captain, player

Any user can see tournament schedule	
Number	16
Priority	A
Precondition	
Base flow	<ol style="list-style-type: none"> 1. User selects a tournament. 2. User selects Schedule. 3. User is now viewing the schedule of a tournament.
Alternative flow	
Post condition	User can view the schedule of the next round of that tournament (or whole tournament, date).
Actors	Any user

Team captain removes a player from his team.	
Number	12
Priority	A
Precondition	
Base flow	<ol style="list-style-type: none"> 1. Captain selects View team. 2. Captain selects Remove player. 3. Captain inputs player handle. 4. Player has been removed from the team.
Alternative flow	<ul style="list-style-type: none"> • That player leaves the team himself, use case(13).
Post condition	Team no longer has That player in their team
Actors	Team captain, player

Any user can view teams	
Number	17
Priority	A
Precondition	
Base flow	<ol style="list-style-type: none"> 1. User selects teams (from main menu). 2. User is viewing a list of teams.
Alternative flow	<ul style="list-style-type: none"> • User can select a tournament, see use case(15), and in that menu select teams and then the user is viewing only the teams in that tournament.
Post condition	The user is viewing a list of teams that he can select from and see that teams information (players, statistics).
Actors	Any user

Player leaves his team	
Number	13
Priority	A
Precondition	Player needs to be in a team.
Base flow	<ol style="list-style-type: none"> 1. Player selects View team. 2. Player selects Leave team. 3. Player confirms leave action.
Alternative flow	<ul style="list-style-type: none"> • Team captain removes player from team, use case(12).
Post condition	The player is no longer apart of a team and can now be added to new teams or create his own.
Actors	Player

Any user can view players	
Number	18
Priority	A
Precondition	
Base flow	<ol style="list-style-type: none"> 1. User selects players (from main menu). 2. User is viewing a list of all registered players.
Alternative flow	<ul style="list-style-type: none"> • User can select a tournament see use case(15), and in that menu select players and then the user is viewing only the players in that tournament.
Post condition	<ul style="list-style-type: none"> • User selects a team, use case (17), and from the team menu the user can view a list of that teams players.
Actors	The user is viewing list of players that he can select from to see that players information (handle, statistics).
	Any user

Team captain leaving his team.	
Number	14
Priority	A
Precondition	Player needs to be a team captain.
Base flow	<ol style="list-style-type: none"> 1. Captain selects View team. 2. Captain selects Leave team. 3. Player confirms leave action. 4. Captain selects a player from the team to be the new team captain. 5. The captain has left the team.
Alternative flow	<ul style="list-style-type: none"> • If the team the Captain is leaving has no other players the team is archived, it still has its statistics (wins, etc.)
Post condition	The Captain is no longer a part of the team and is now has the status of just Player (not in team), and the player he selected has the status team Captain of that team.
Actors	Captain, player

Organizer can create clubs	
Number	19
Priority	B
Precondition	
Base flow	<ol style="list-style-type: none"> 3. Organizer selects View Clubs. 4. Organizer selects add club. 5. Organizer inputs information. <ul style="list-style-type: none"> • Name • Club color • Country
Alternative flow	
Post condition	
Actors	Organizer

Any user can see tournaments	
Number	15
Priority	A
Precondition	
Base flow	<ol style="list-style-type: none"> 1. User selects Tournaments. 2. User selects which tournament. 3. User is now viewing a specific tournament.
Alternative flow	<ul style="list-style-type: none"> • There are no tournaments available, the organizer needs to create a tournament, use case(5). • A tournament has not started, the organizer needs to start a tournament, use case(8).
Post condition	User can now look through that tournament.
Actors	Any user

Organizer can edit time frame of tournament	
Number	20
Priority	B
Precondition	Tournament has to be created and not started.
Base flow	<ol style="list-style-type: none"> 4. Organizer selects Edit Time Frame. 5. Organizer inputs new information. <ul style="list-style-type: none"> • Start date • End date
Alternative flow	
Post condition	
Actors	Organizer

Player edits their information.	
Number	21
Priority	B
Precondition	
Base flow	<p>1. Player selects Edit information.</p> <p>2. Player selects the information they want to edit.</p> <ul style="list-style-type: none"> • Email • Address • Link <p>3. Player has changed their information.</p>
Alternative flow	
Post condition	Player has updated their information.
Actors	Player

Organizer can cancel a tournament	
Number	24
Priority	C
Precondition	A tournament has to have been published.
Base flow	
Alternative flow	
Post condition	<p>1. Organizer selects a tournament.</p> <p>2. Organizer selects Cancel tournament.</p> <p>3. Tournament is now canceled.</p>
Actors	The tournament is cancelled, no records are kept, the statistics for the teams is reverted to the state before the tournament started.
	Organizer

Any user can view clubs	
Number	22
Priority	B
Precondition	
Base flow	<p>1. User selects clubs (from main menu)</p> <p>2. User is now viewing a list of clubs.</p>
Alternative flow	
Post condition	User can view all the clubs created, and can select any club to see that clubs teams.
Actors	Any user

Team captain can edit team name	
Number	25
Priority	C
Precondition	
Base flow	<p>1. Captain is logged in.</p> <p>2. From View Team menu Captain selects Change Team Name.</p> <p>3. Captain inputs the new team name (has to be unique).</p>
Alternative flow	
Post condition	Now that teams name has a new name, and new or other teams cannot use that name, but can use the previous team name.
Actors	Team captain

Organizer can delete a tournament	
Number	23
Priority	B
Precondition	A tournament hasn't been published.
Base flow	<p>1. Organizer selects a tournament, use case(15)</p> <p>2. In the tournament menu, organizer selects Delete.</p> <p>3. Organizer confirms deletion.</p>
Alternative flow	
Post condition	Now the tournament has been deleted and no records of it are left.
Actors	Organizer

Team captain can change the teams club	
Number	26
Priority	C
Precondition	
Base flow	<p>1. Team captain is logged in, and selects View Team.</p> <p>2. From View Team menu Captain selects Change Club.</p> <p>3. Captain has a list of the clubs and can select what his teams new club is.</p>
Alternative flow	
Post condition	Now the Captains team is in a new club, so the team is listened in the their new club and no longer in the old club.
Actors	Team captain