

Programming Project / C++ – Table Tennis Match Management System–

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I. Task Description

Student 1 is responsible for the internal data management of the system:

- Managing the list of players and matches.
- Handling match result updates and computing win/loss statistics.
- Reading from and writing to persistent files (`players.csv`, `matches.csv`).

Student 2 is responsible for user interaction and command line argument interface:

- Designing how commands are input through the terminal.
- Parsing and validating user input format.
- Displaying formatted output for history and leaderboard.

II. Data Structures Used by the Team

The system uses the following classes:

- **Player**
 - Attributes: `string name`, `int wins`, `int losses`

- **Match**
 - Attributes: `string p1name, string p2name, int p1score, int p2score`
- **MatchManager**
 - Composition of `vector<Player>` and `vector<Match>`

III. File Structure

The following files will be used:

- **players.csv**
 - Format: `<PlayerName>, <Wins>, <Losses>`
- **matches.csv**
 - Format: `<Player1>, <Player2>, <Score1>, <Score2>`

These files are automatically read and updated by the program.

IV. Interacting with Executables

The application will offer the following options:

Add a match result:

```
/app add_match "Player1 21/17 Player2"
```

This will:

- Record a match with Player1 scoring 21, and Player2 scoring 17.
- Update the win/loss records.
- Save it to `matches.csv` and update `players.csv`.

Display the leaderboard:

```
/app leaderboard
```

This will print a list of all players sorted by:

1. Most wins
2. Fewest losses (if wins are tied)

View a player's match history:

```
/app history Player1
```

This will print:

- Every match involving Player1
- Each match's score and opponent
- Total wins and losses