

## The client application:

The client application will be called “GradeClient” and receives 2 parameters in the command line:

- **GradeClient** *hostname port*
  - *hostname* – name of the grade server (e.g.localhost)
  - *port* – port on which the grade server is listening.

The client application consists of 2 processes: **command line interpreter** and **communication process**. The command line interpreter receives commands from the user and the communication process handles communication with the server. The two processes communicate using an unnamed pipe.

When the application starts the command line interpreter prints the prompt “> ” and waits for commands from the user (the prompt is printed after each command), while the communication process connects to the server and promotes to it user commands.

Users can send one of the following commands:

- **Login id password** : The user (student or TA) tries to login to the grade server with the given id and password. If login succeeds the application will print “Welcome Student *id*” or “Welcome TA *id*” accordingly. Otherwise, it will print “Wrong user information”. Login will succeed even if a user with the same details is logged on from another client. It will fail only in the following cases:
  - There is a user already logged in from this client.
  - The id doesn’t exist in the server.
  - The password is incorrect.

The following commands (except Exit) are allowed only if a user is logged in. Otherwise, the message “Not logged in” will be printed. You may assume that command length including the parameters doesn’t exceed 256 chars.

- **ReadGrade** : Print the grade of the logged in student. The operation can be done only by a student. If the operation was requested by a TA then the message “Missing argument” will be printed.
- **ReadGrade id**: Print the grade of the specified id. The operation can be done only by a TA. If there is no student with the given id then the message “Invalid id” will be printed. If the operation was requested by a student then the message “Action not allowed” will be printed.

- **GradeList** : Print a list of all the grades in the server. The operation can be done only by a TA. If the operation was requested by a student then the message “Action not allowed” will be printed. The list will be ordered in an ascending id order, and will be printed in the following format:

*id: grade*

*id: grade*

...

- **UpdateGrade *id grade*** : Update The grade of *id* in the server. If there was no such id in the server then it will be added. The operation can be done only by a TA. If the operation was requested by a student then the message “Action not allowed” will be printed.
- **Logout** : The user will be disconnected from the grade server. The operation will fail if no user is logged in. If logout succeeds the application will print “Good bye *id*”. Otherwise, it will print “Not logged in”.

Note: a Logout command does not terminate the connection with the server. It only means that this user logged out.

- **Exit** : The client application will exit (both processes will finish). If a user was connected, the application will logout before it exits.

If the command is not one of the above the application will print “Wrong Input”.

Examples:

GradeClient localhost 12345

> Login 234567890 student1

Welcome Student 234567890

> ReadGrade

74

> UpdateGrade 234567890 98

Action not allowed

> Logout

Good bye 234567890

> Hi

Wrong Input

> ReadGrade 234567890

Not logged in

> Login 011223344 TA1

Welcome TA 011223344

> fd

Wrong Input

> UpdateGrade 234567890 0

> ReadGrade 234567890

0

> GradeList

234567890: 0

123456789: 83

> Exit