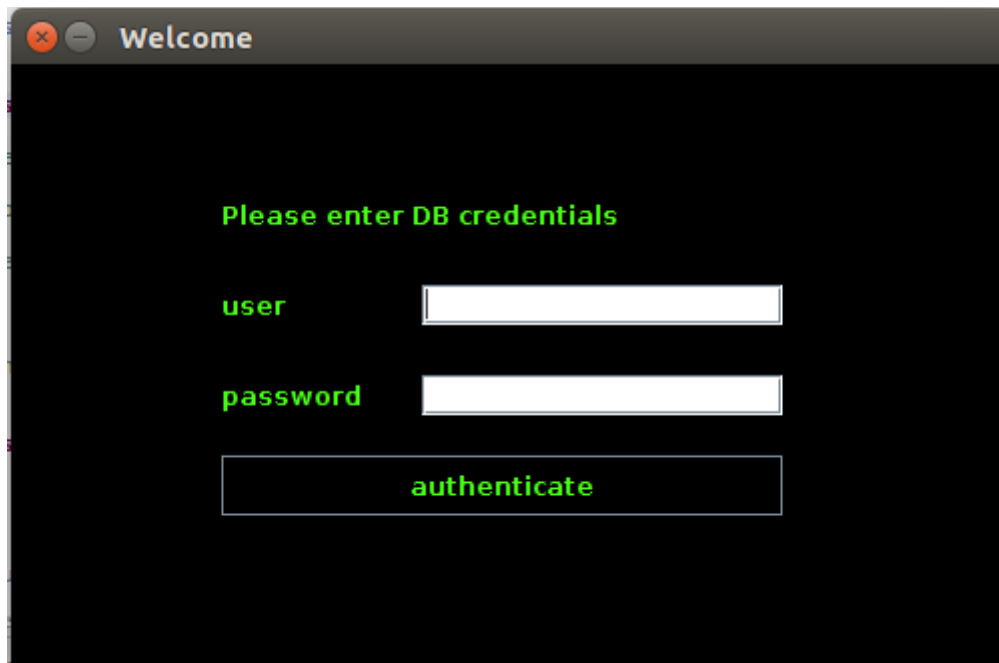


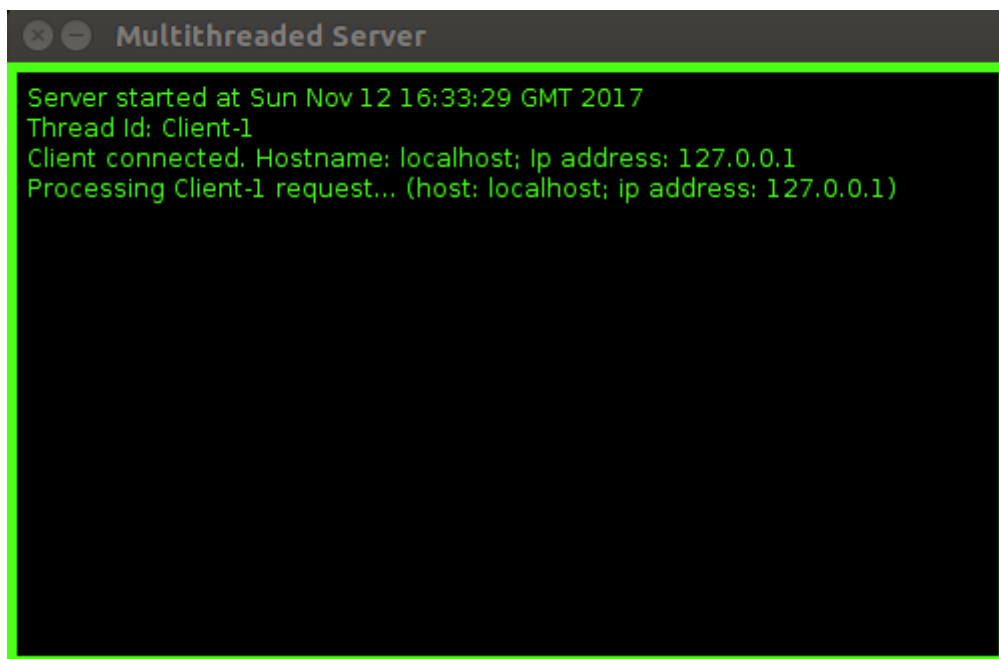
# Running the application

- Run MultiThreadedServerA2 first and enter DB authentication details (Figure 1)



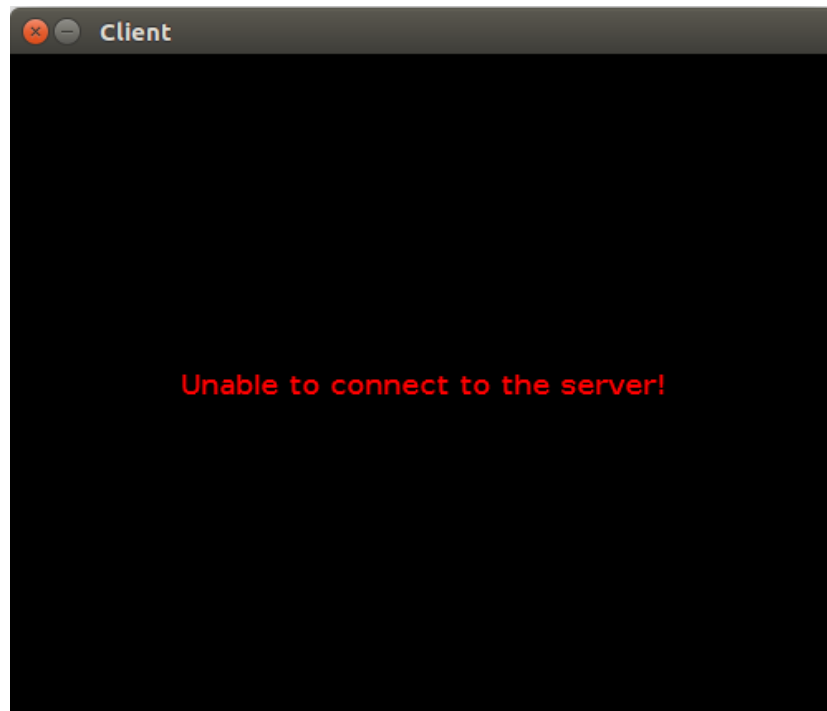
*Figure 1: authentication screen in server's UI*

- upon successful DB authentication, the actual server screen will show up. This screen will display information about client-server connections and requests (Figure 2)



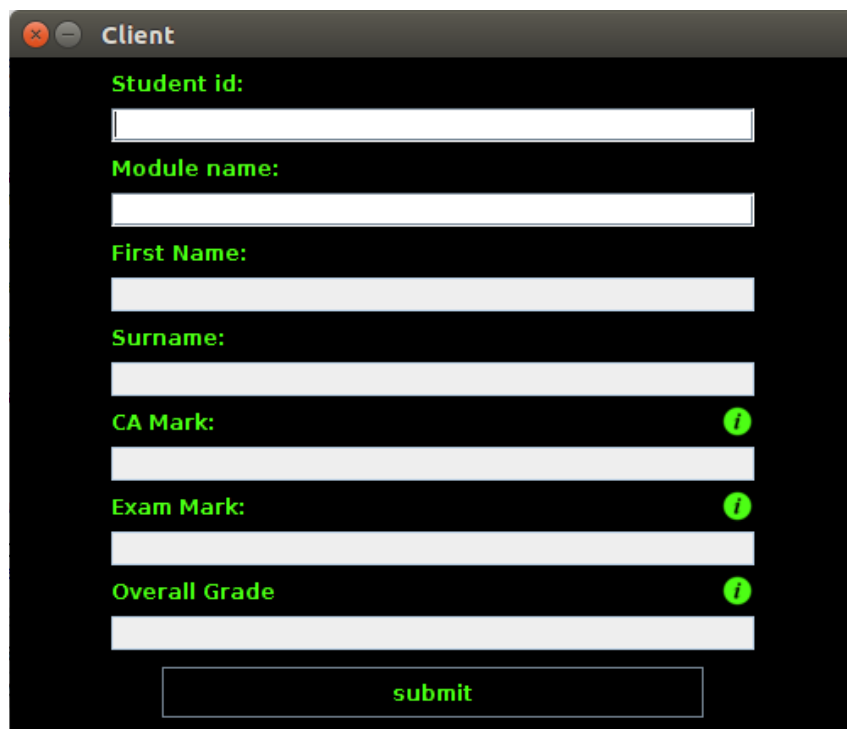
*Figure 2: running server's window*

- If the client starts first (without running server), following screen will show up (Figure 3)



*Figure 3: client's app started without server running*

- with running server run ClientA2, following window will be shown (Figure 4)

A screenshot of a window titled "Client" showing a form with input fields for Student id, Module name, First Name, Surname, CA Mark, Exam Mark, and Overall Grade, each with a green information icon to its right. A "submit" button is at the bottom.


*Figure 4: started client UI*

- last 5 text fields are disabled – input will only be changed by the app, when grades details are populated. When hovering over info icons (green “i” icons in Figure 5 on the right hand side), tooltips are displayed, which provide explanation on how the marks are calculated



*Figure 5: tooltips will be displayed, when hovering over 'i' icons*

- Student id and Module name are validated. If incorrect inputs are provided, labels will show up (Figure 6). Additionally, when submit button is pressed with invalid data, text fields with invalid input provided will be highlighted in red (Figure 7).

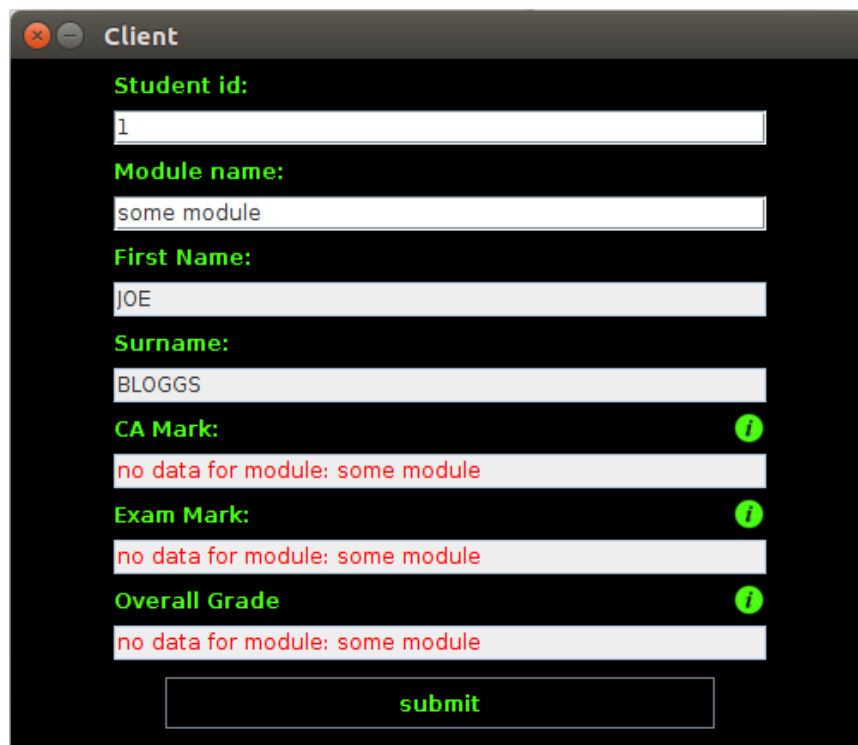


*Figure 6: invalid (or no) input warning labels*



*Figure 7: highlighted textfields with invalid input*

- When module name does not exist in the database, following info will be displayed (Figure 8):



**Client**

**Student id:**  
1

**Module name:**  
some module

**First Name:**  
JOE

**Surname:**  
BLOGGS

**CA Mark:** ⓘ  
no data for module: some module

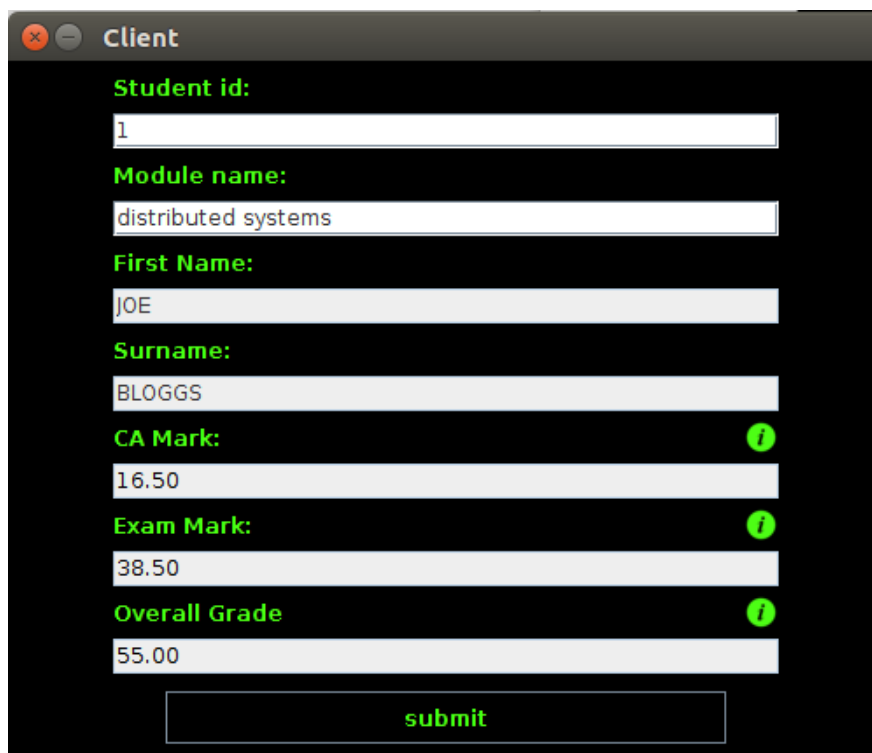
**Exam Mark:** ⓘ  
no data for module: some module

**Overall Grade** ⓘ  
no data for module: some module

**submit**

*Figure 8: no specified module in the database*

- when valid module is entered into textfield and student exists in the database, example data populated into client's UI will look like in Figure 9 below:



**Client**

**Student id:**  
1

**Module name:**  
distributed systems

**First Name:**  
JOE

**Surname:**  
BLOGGS

**CA Mark:** ⓘ  
16.50

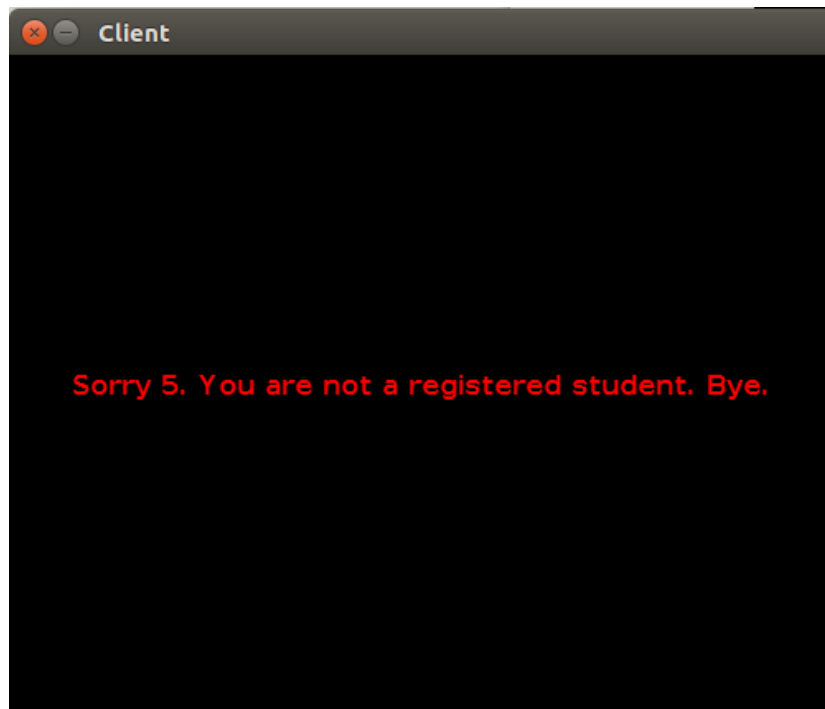
**Exam Mark:** ⓘ  
38.50

**Overall Grade** ⓘ  
55.00

**submit**

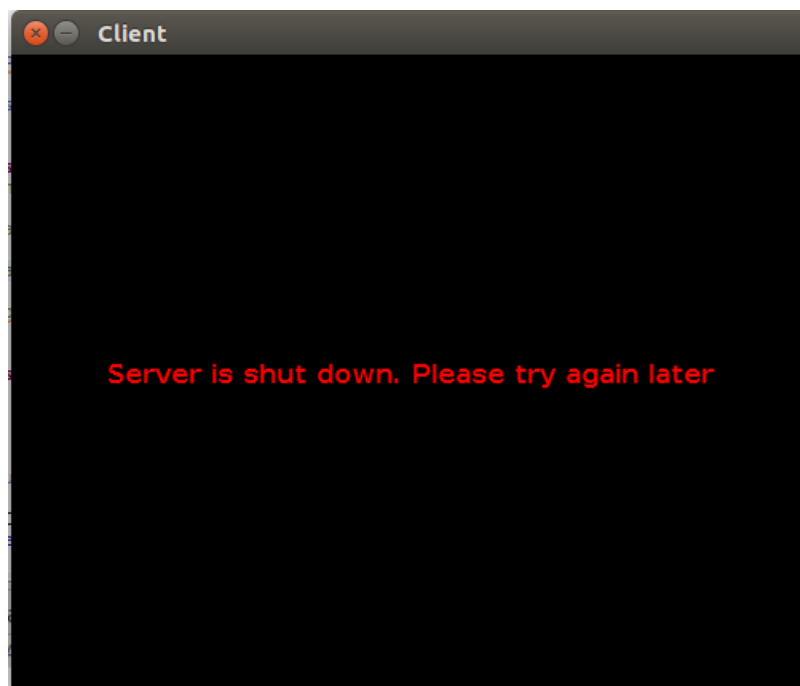
*Figure 9: displaying data for existing student and module*

- when student id passed to the server is not found in the database, the client will show up following message (no further request could be sent from this client window – Figure 10)



*Figure 10: passing invalid student's id results in displaying appropriate warning*

- when server is shut down and a request from the client is sent, following information will be displayed in the client's window (Figure 11 below)



*Figure 11: starting client app without server running*