Fatin - Project Portfolio

PROJECT: TA-Tracker

Overview

TA-Tracker is a productivity tool made for NUS School of Computing Teaching Assistants (TAs). Rather than using several excel spreadsheets or notes, **TA-Tracker** enables TAs to manage their students and track teaching duties in a single, convenient-to-use platform . The application is mainly written in **Java** and spans a considerable **20k Lines of Code**. With a rigorous system of checks and tests put in place, users can be assured that the codebase is well-maintained, and that the code quality is consistently high. A comprehensive set of guides are also provided to ensure a smooth on-boarding process for both users and contributors alike.

Summary of contributions

As the main developer of the application's `User Interface` (UI), I play a crucial role in integrating the features my teammates create with the `UI`. During group discussions, I placed extra emphasis on guiding my teammates to engineer solutions that could be more easily assimilated into the `UI`, to ensure that their work becomes user-visible. As a result, my team was able to morph the given codebase from a trivial application into a polished product.

With the substantial amount of experience I gained while designing the application, I was available and prepared to help out with various tasks, like design considerations and debugging. As the most experienced `UI` developer in the team, I was highly involved in helping my teammates become more familiar with **JavaFX** and **CSS**. My role in the development of the project was especially crucial, as I enabled my teammates to be able to display all the hard work that they have put into the development of their respective features to the users. My major contributions are as follows:

Updated the User Interface

The `UI` is at the heart of **TA-Tracker**, displaying the output of **TA-Tracker** to the user visually. As the main contributor to the `MainWindow` of the `UI`, I play an integral role in ensuring that the content is being displayed to the user correctly, while keeping the interface simple and informative. I changed the overall layout of **TA-Tracker** by adding tabs and icons (#120 , #182 , #227), and by creating all the `ListPanels` and their respective `ListCards` (#120 , #182 , #204).

I also took care to ensure that the information displayed was integrated with the *BackEnd* whenever my teammates made new contributions to the application, such as adding new fields (#322) or commands (#330). A `Total Earnings` label in the `Claims Tab` was also added to improve user experience, as money makes the world go round (#243 , #322).

Enabled highlighting of applied filters

As **TA-Tracker** was initially based on **AB3**, the `UI` at the beginning of the project looked plain and dull. Instead of indiscriminately adding colours to **TA-Tracker**, I favoured a different approach, and enabled the relevant `ListCells` in the `Student Tab` and `Claims Tab` to be highlighted whenever `filter` commands were entered (#210 , #227 , #235 , #238). This not only made a huge improvement in the visual differences between **TA-Tracker** and **AB3**, but also enabled users to better focus on the information displayed.

This contribution also required extensive debugging and improvements to the inner workings of the `FilterCommand`, which was a rather challenging command to implement (#243 , #314 , #322). In the `Session Tab`, highlighting the `ListCells` was a less favourable option, since there was only one `ListPanel` to display. I overcame this challenge by creating a `filter header` (#322).

Implemented relevant commands to improve User Experience

Goto Command : To achieve the goal of making TA-Tracker a *keyboard-only application*, I implemented the `GoToCommand` to allow users to switch between tabs via the command-line rather than clicking on the tab-headers (#189).

In a similar spirit, I enabled **switching to relevant tabs for all commands**, to better the user experience. This allows new information to be displayed instantaneously upon entering a command (#189 , #210 , #212). This involved creating an `enum` for `UI` handling in `CommandResult` (#189 , #212) and as a result, the painstaking process of updating the entire code-base.

SetRate Command : The hourly pay rate for all the displayed `Earnings` was initially set to $40, which is the rate at which the majority of TAs are being paid. Based on feedback from the PE Dry-Run, I created a command to change this value due to the possibility of changes being made to the hourly pay rate. (#321)

Other UI Improvements

I also contributed to the development of `HelpWindow` and `StatisticsWindow` (#227 , #235) by fixing sizing issues and adding `ScrollPanes`. Moreover, I included the option to close both windows by pressing the **ESC** key to achieve the goal of making TA-Tracker a *keyboard-only application* (#236).

Added extensive automated tests

I made thorough **JUnit** tests for the `StudentCommand`, `StudentCommandParser`, and `Student` as well as its relevant `fields`. (#340 , #341 , #347)

Improved overall code quality

- Packaged all `Commands`, `Parsers`, `Models` and `UI` components (#143 , #212)
- General quality fixes to the entire code-base based on **Codacy** reports (#350 , #351)

- Created `enum` classes for `SessionType` and `GroupType` (#120 , #182)

Other contributions

- Created a skeleton for the `StudentDeleteCommand` (#113)
- Removed the requirement for compulsory `Phone` and `Email` fields in `StudentAddCommand` (#146)
- Managed the project by commenting on critical pull requests (various)

Here is the code that I have written for this product: [All commits] [RepoSense]

Contributions to the User Guide

Given below are sections I contributed to the User Guide. They showcase my ability to write documentation targeting end-users.

Command Format

(Contributed by Fatin and Gabriel)

This section shows you how all the commands in this guide have been formatted.

Format	Meaning	Example
`lower_case/` Any lower case letters, followed by a forward slash	These are **prefixes**. They are used to separate the different parameters of a command.	These are prefixes: `n/`, `d/`, `t/` Note that prefixes **cannot have spaces**: `n /` is **not a prefix**, and will not be recognized.

`UPPER_CASE`
 	
Words in upper case
	These are **parameters**.
	
	You will need to supply parameters in order to complete certain commands.
		You can create a **student** with the name **John Doe** using the `student add` command.
		
		Suppose the `student add` command looks like this:
		`student add n/NAME`
		
		Simply replace `NAME` with `John Doe` to create the student **John Doe**:
		`student add n/John Doe`

Format	**Meaning**	**Example**
`[UPPER_CASE]` Words in upper case, surrounded by square brackets	These are **optional parameters**. Certain commands can be used without these parameters.	Suppose a command contains **two parameters** next to each other: `n/NAME [t/TAG]` The **first parameter** `NAME` is **compulsory**. The **second parameter** `TAG` is **optional**. Since a `TAG` is **optional**, you will be able to use the command with these **inputs**: • `n/John Doe t/Fast learner`, or • `n/John Doe`

`UPPER_CASE…`
 	
`[UPPER_CASE]…`
 	
An ellipsis `…` following any words in upper case
	These are parameters that can be used **multiple times** or **none at all**.	The following parameter can be used **multiple times**:
		`t/TAG…`
		
		This means that it can be:
		• **Left empty** (i.e. 0 times):
		`t/`
		• **Used one time** (i.e. 1 time):
		`t/friend`
		• **Used multiple times** (i.e. 2 or more times):
		`t/friend t/family`

Layout

(Contributed by Fatin)

This section gives you a brief overview of the layout of the **TA-Tracker**.

TA-Tracker is divided into three `tabs` representing the different **Views**:

- The **Student View** under the `student tab`,
- The **Session View** under the `session tab`, and
- The **Claims View** under the `claims tab`

When you switch to a `tab`, that `tab` will be highlighted in orange.

Furthermore, when you enter a new command, you will be automatically switched to the relevant `tab` so that you can instantly see the result of the command.

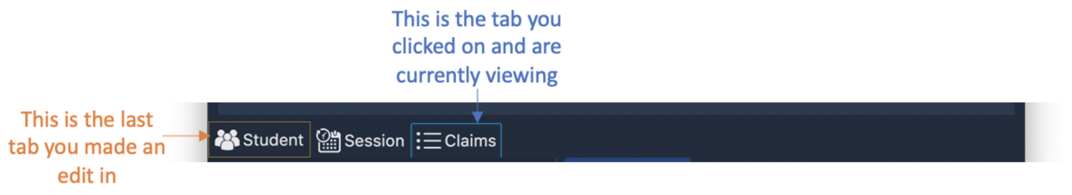
NOTE

- You can **select** a `tab` to show a different **View**. This `tab` will be highlighted in **blue**.
- If you are **switched** to a `tab` when you **enter a command**, that `tab` will be highlighted in **orange**.

  This should help you easily remember where you last made a change in **TA-Tracker**.
- You will sometimes see the `tabs` highlighted in both **orange** and **blue**.

  The **orange** `tab` will remain highlighted even if you select another `tab`.
- You may notice that the **orange** and **blue** highlights for the `tabs` are **not the same size**.

  This is to **prevent** the highlights from **overlapping** each other, allowing you to see them better.


This is the tab you clicked on and are currently viewing
This is the last tab you made an edit in
Student
Session
Claims

This shows what happens when you last made a change in the `student tab` and then clicked on the `claims tab`.

Claims View

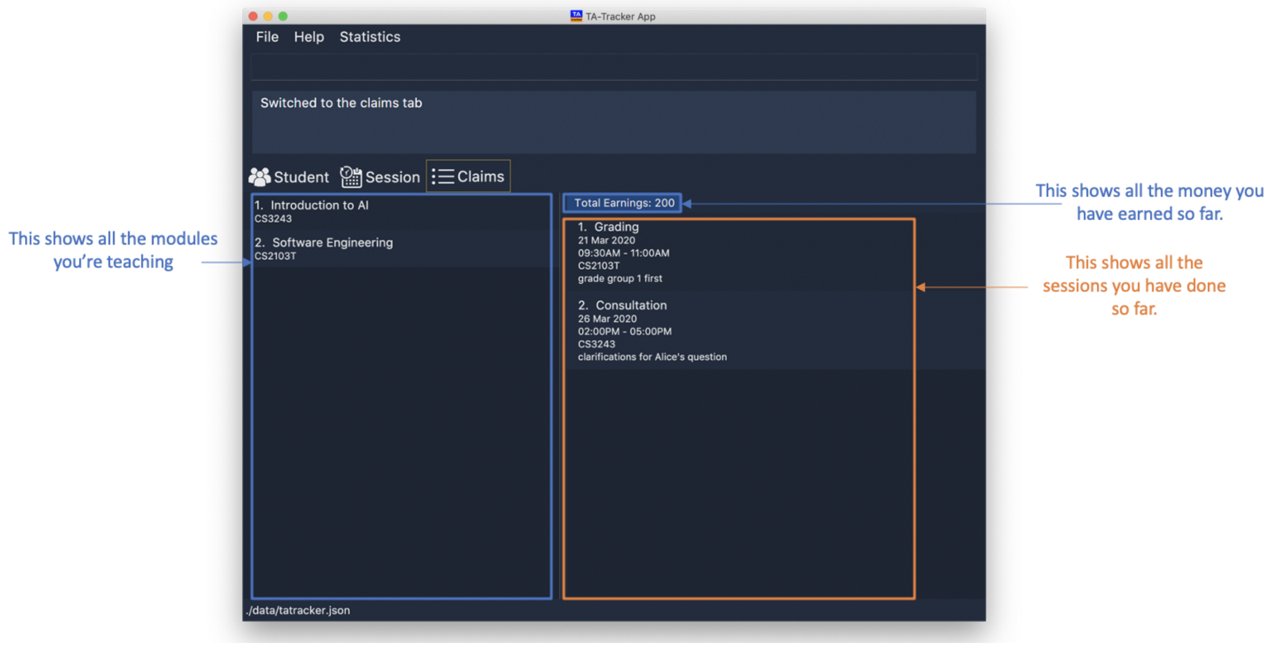
(Contributed by Fatin)

Under the `claims tab`, the **Claims View** contains a list of all the claimable teaching duties you have completed so far.

The purpose of this view is to allow a you to keep track of all your claims so you can easily enter it into the TSS claims form at the end of the semester.

The **Claims View** has been divided into two columns.

1. The first column shows you a **list of all the modules** that you are a teaching assistant for.
2. The second column shows you a **list of all the sessions** that you have **marked as done**.



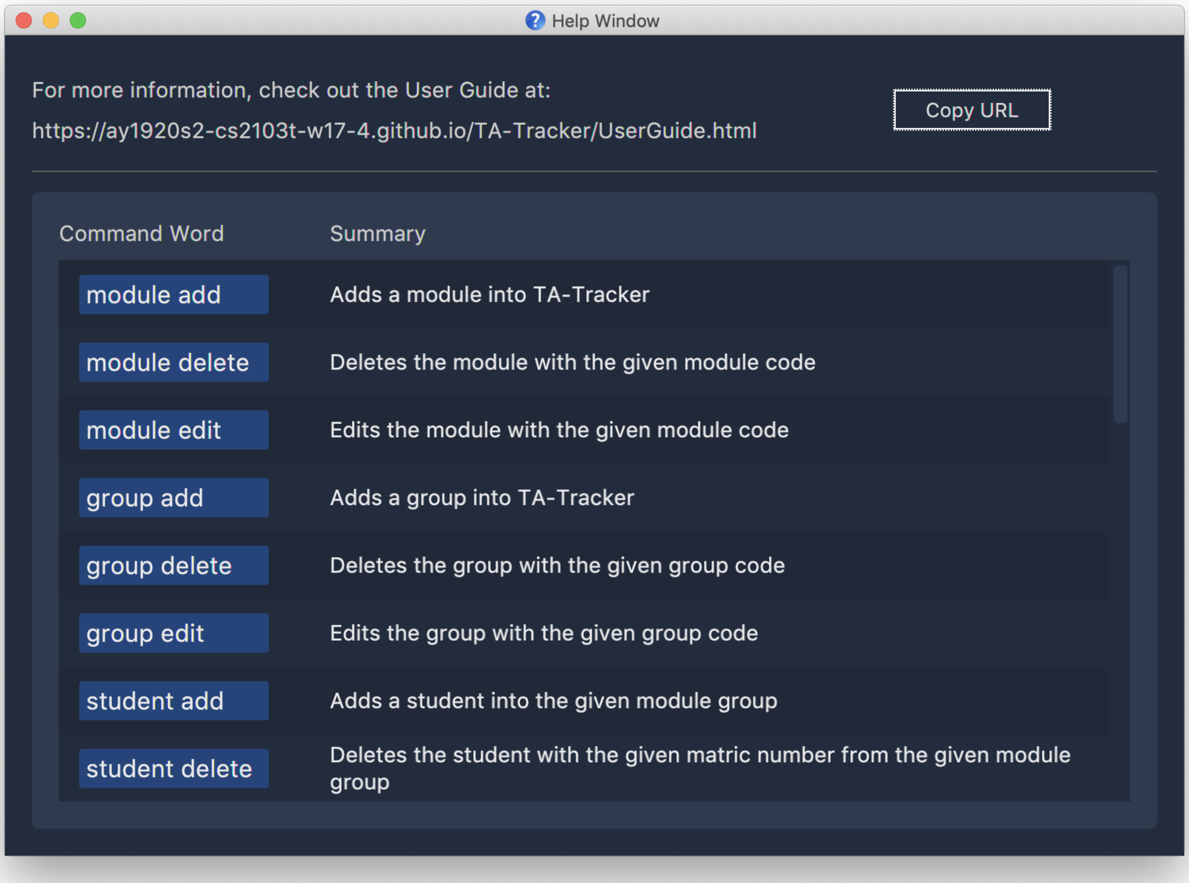
This is an example of what the Claims View might look like.

Viewing help : `help`

(Contributed by Fatin)

You can open the `help window` with this command. You can close the `help window` by pressing the kbd:[ESC] key on your keyboard.

Format: `help`



For more information, check out the User Guide at:
https://ay1920s2-cs2103t-w17-4.github.io/TA-Tracker/UserGuide.html

Command Word	Summary
module add	Adds a module into TA-Tracker
module delete	Deletes the module with the given module code
module edit	Edits the module with the given module code
group add	Adds a group into TA-Tracker
group delete	Deletes the group with the given group code
group edit	Edits the group with the given group code
student add	Adds a student into the given module group
student delete	Deletes the student with the given matric number from the given module group

This is what the `help` window looks like.

Switching tabs : `goto`

(Contributed by Fatin)

You can switch to different `tabs` with this command to show their associated **view**.

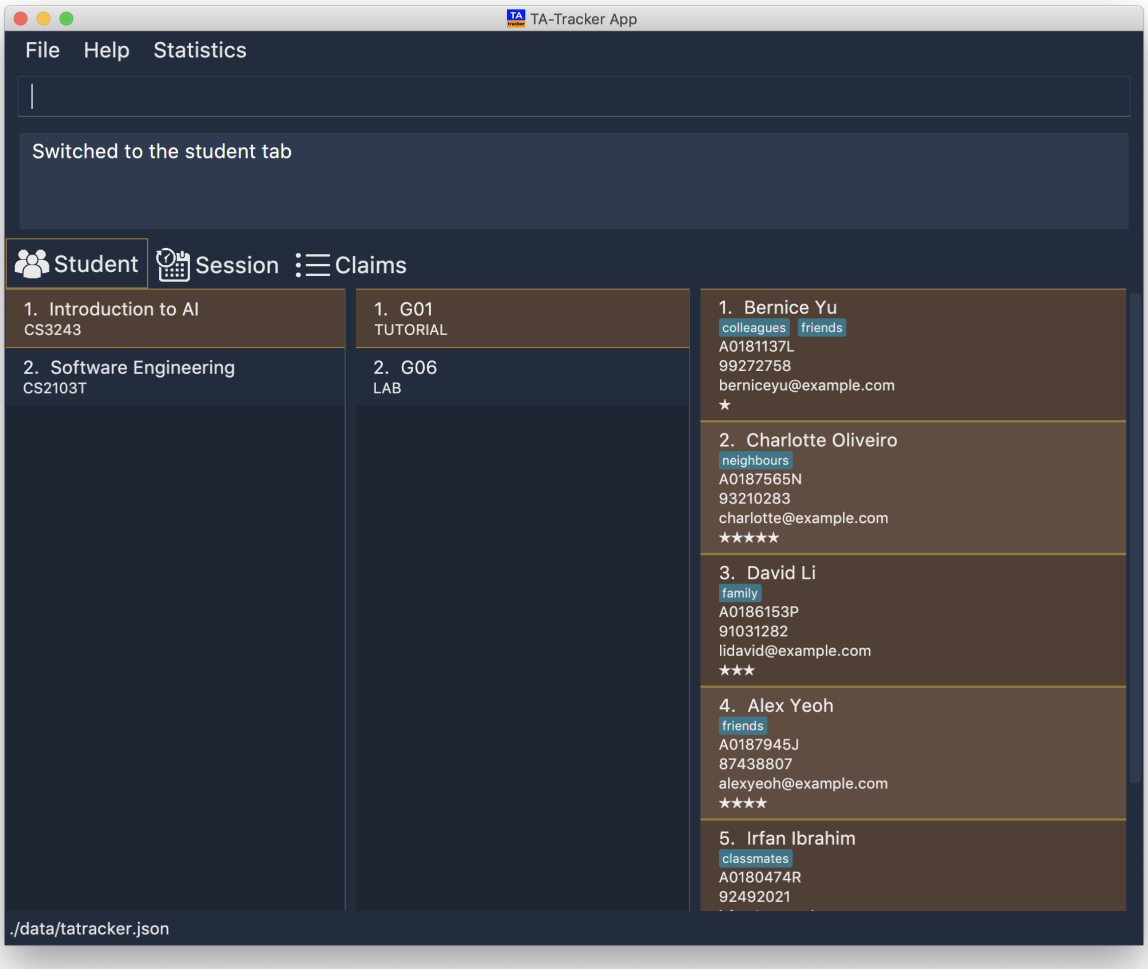
Format: `goto TAB_NAME`

NOTE

- You cannot switch to a `tab` that does not exist in TA-Tracker

Example:

`goto student`



Switched to the student tab

1. Introduction to AI
CS3243

2. Software Engineering
CS2103T

1. G01
TUTORIAL

2. G06
LAB

1. Bernice Yu
colleagues friends
A0181137L
99272758
berniceyu@example.com
★

2. Charlotte Oliveiro
neighbours
A0187565N
93210283
charlotte@example.com
★★★★★

3. David Li
family
A0186153P
91031282
lidavid@example.com
★★★

4. Alex Yeoh
friends
A0187945J
87438807
alexyeoh@example.com
★★★★

5. Irfan Ibrahim
classmates
A0180474R
92492021

./data/tatracker.json

This command takes you to the `student tab`.

Changing the hourly rate : `setrate`

(Contributed by Fatin)

Sets the hourly rate for the total income and claim computation.

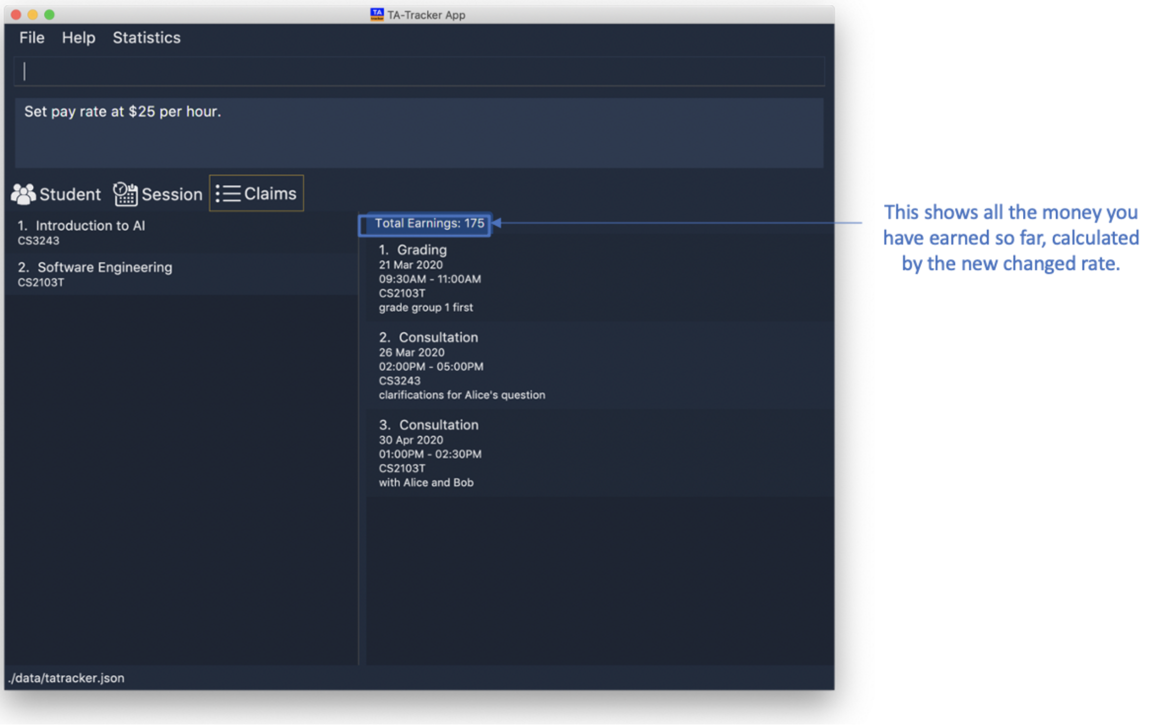
Format: `setrate RATE`

NOTE

- If you don't specify a rate, it is set at $40 by default (the rate at which most SOC TAs are being paid per hour).
- `RATE` is the amount you want to change the hourly rate to, this value will be used to calulate the `Total Earnings` label in the `Claims Tab` as well as the `Statistics Window`.
- The `RATE` must be a positive integer.

Examples:

- `setrate 25`


Set pay rate at $25 per hour.

1. Introduction to AI
CS3243

2. Software Engineering
CS2103T

Total Earnings: 175

1. Grading
21 Mar 2020
09:30AM - 11:00AM
CS2103T
grade group 1 first

2. Consultation
26 Mar 2020
02:00PM - 05:00PM
CS3243
clarifications for Alice's question

3. Consultation
30 Apr 2020
01:00PM - 02:30PM
CS2103T
with Alice and Bob

./data/tatracker.json

This shows all the money you have earned so far, calculated by the new changed rate.

Sets the current hourly rate to $25.

Contributions to the Developer Guide

Given below are sections I contributed to the Developer Guide. They showcase my ability to write technical documentation and the technical depth of my contributions to the project.

UI component

(Contributed by Fatin)

The *Class Diagram* below shows how the `UI` components interact with each other.

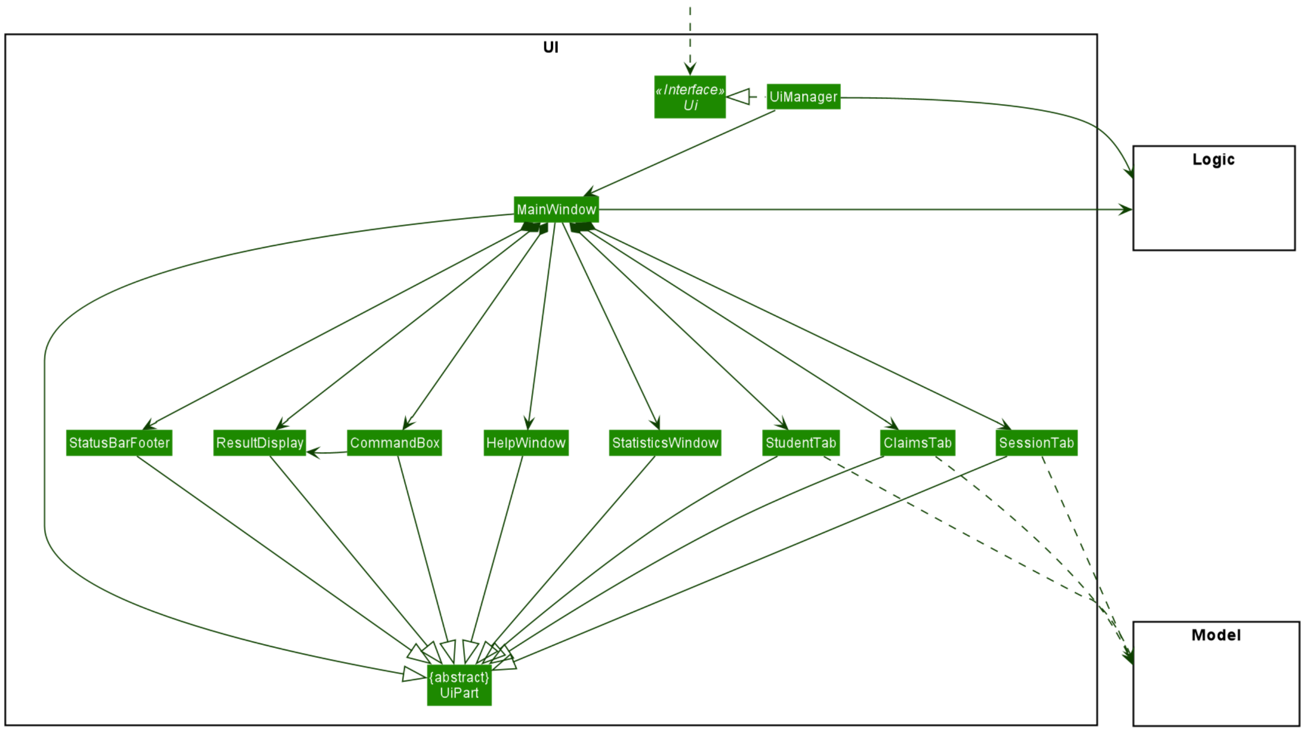


Figure 1. Structure of the UI Component

API: `Ui.java`

The UI consists of a `MainWindow` that is made up of parts e.g. `CommandBox`, `ResultDisplay`, `StudentTab`, `StatusBarFooter` etc. The UI also contains 2 more windows, namely:

1. the `HelpWindow` and
2. the `StatisticsWindow`

The `UI` component uses **JavaFx** UI framework. The layout of these UI parts is defined in matching `.fxml` files that are in the `src/main/resources/view` folder. For example, the layout of the `MainWindow` is specified in `MainWindow.fxml`

The `UI` component,

- Executes user commands using the `Logic` component.
- Listens for changes to `Model` data so that the UI can be updated with the modified data.

Tabs

The *Class Diagram* below shows how the components in the `Student Tab` interact with each other.

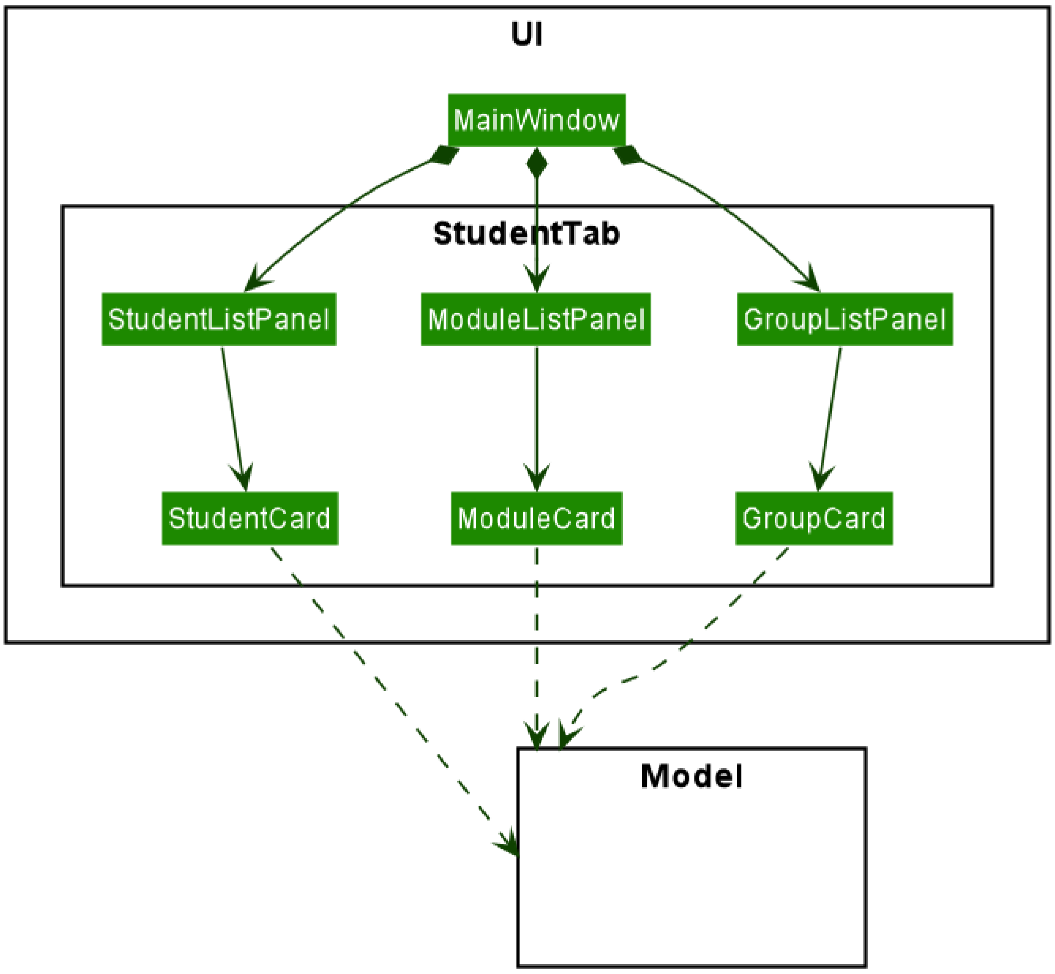


Figure 2. Structure of the Student Tab Component

NOTE All the `ListPanels` and `Cards` inherit from the abstract `UiPart` class.

The UI contains 3 `tabs`:

1. The `Student Tab`
2. The `Session Tab`
3. The `Claims Tab`

Each of these tabs consist of one or more List Panels (e.g. `StudentListPanel`) and its respective Card (e.g. `StudentCard`). In each List Panel, the `Graphics` component of each of the List Cells is defined by the respective Card.

The other 2 `Tabs` follow the same structure as the *Class Diagram* above.

Model component

(Contributed by Fatin)

The following *Class Diagram* shows how the different `Model` components interact with each other.

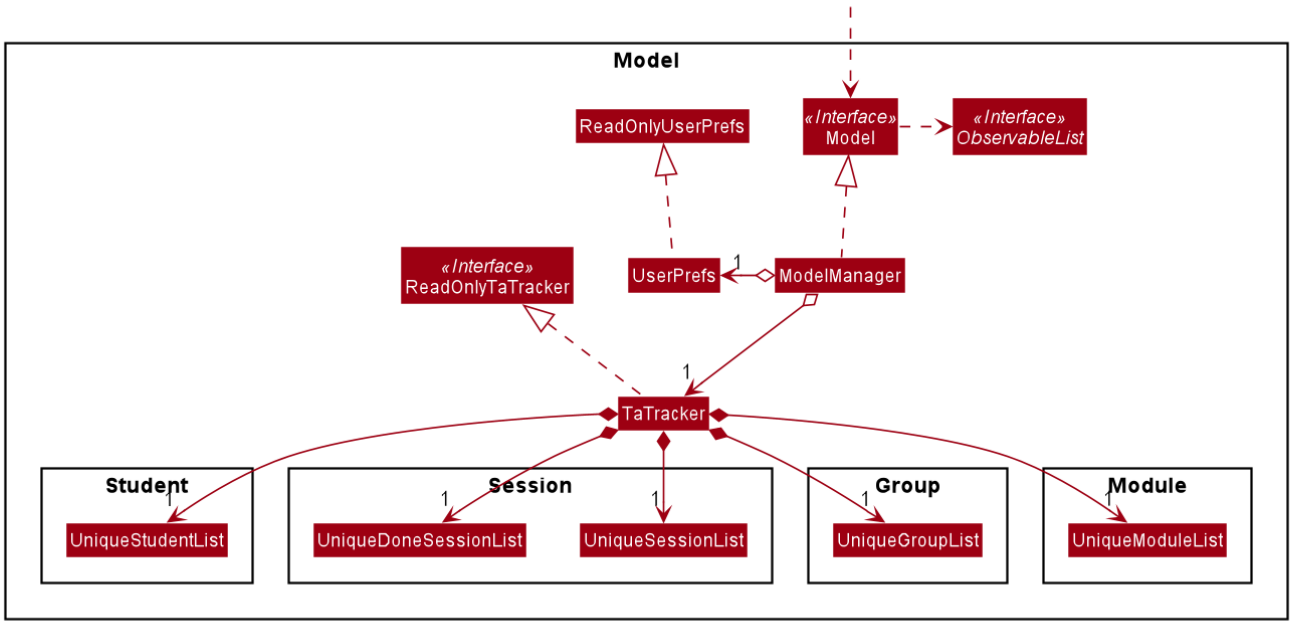


Figure 3. Structure of the Model Component

API: `Model.java`

The `Model`,

- Stores a `UserPref` object that represents the user’s preferences
- Stores the TA-Tracker data
- Exposes 5 unmodifiable `ObservableList<>` objects:
  1. `filteredStudentList`, which contains all the `Students` in the TA-Tracker
  2. `filteredSessionList`, which contains all the `Sessions` in the TA-Tracker that have **not** been marked as done
  3. `filteredDoneSessionList`, which contains all the `Sessions` in the TA-Tracker that **have been marked as done**
  4. `filteredModuleList`, which contains all the `Modules` in the TA-Tracker
  5. `filteredGroupList`, which contains all the `Groups` in the TA-Tracker
- These lists can be 'observed' e.g. the UI can be bound to this list so that the UI automatically updates when the data in the list change
- Does not depend on any of the other three components

The following *Class Diagram* shows the relationship between the different classes in the `Model` component.

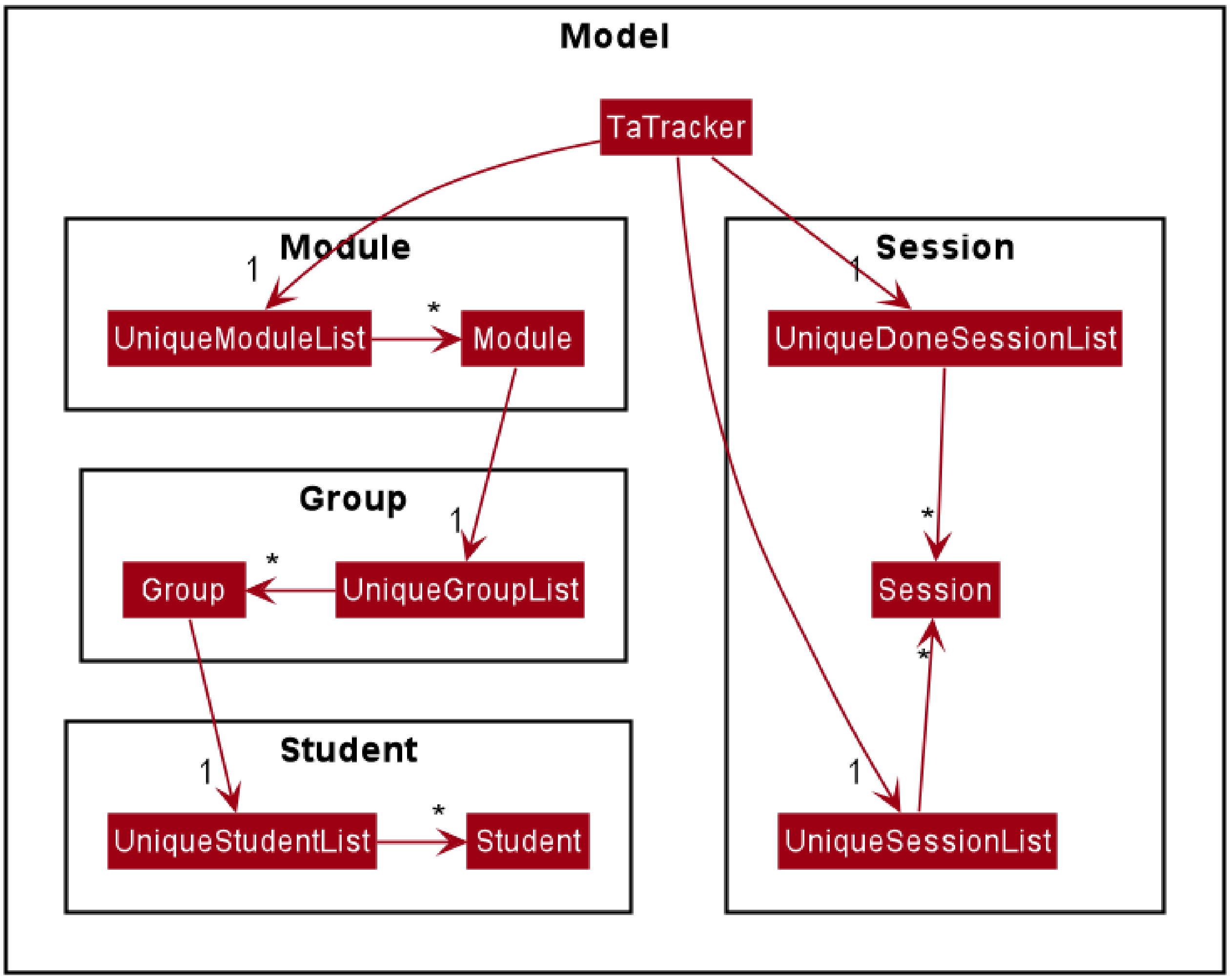


Figure 4. Model Components - Class Diagram

Example of Model Usage

The following *Object Diagram* shows an example of the relationship between the different `Model` objects. This example is based on the state of TA-Tracker when it is first run (without any user data).

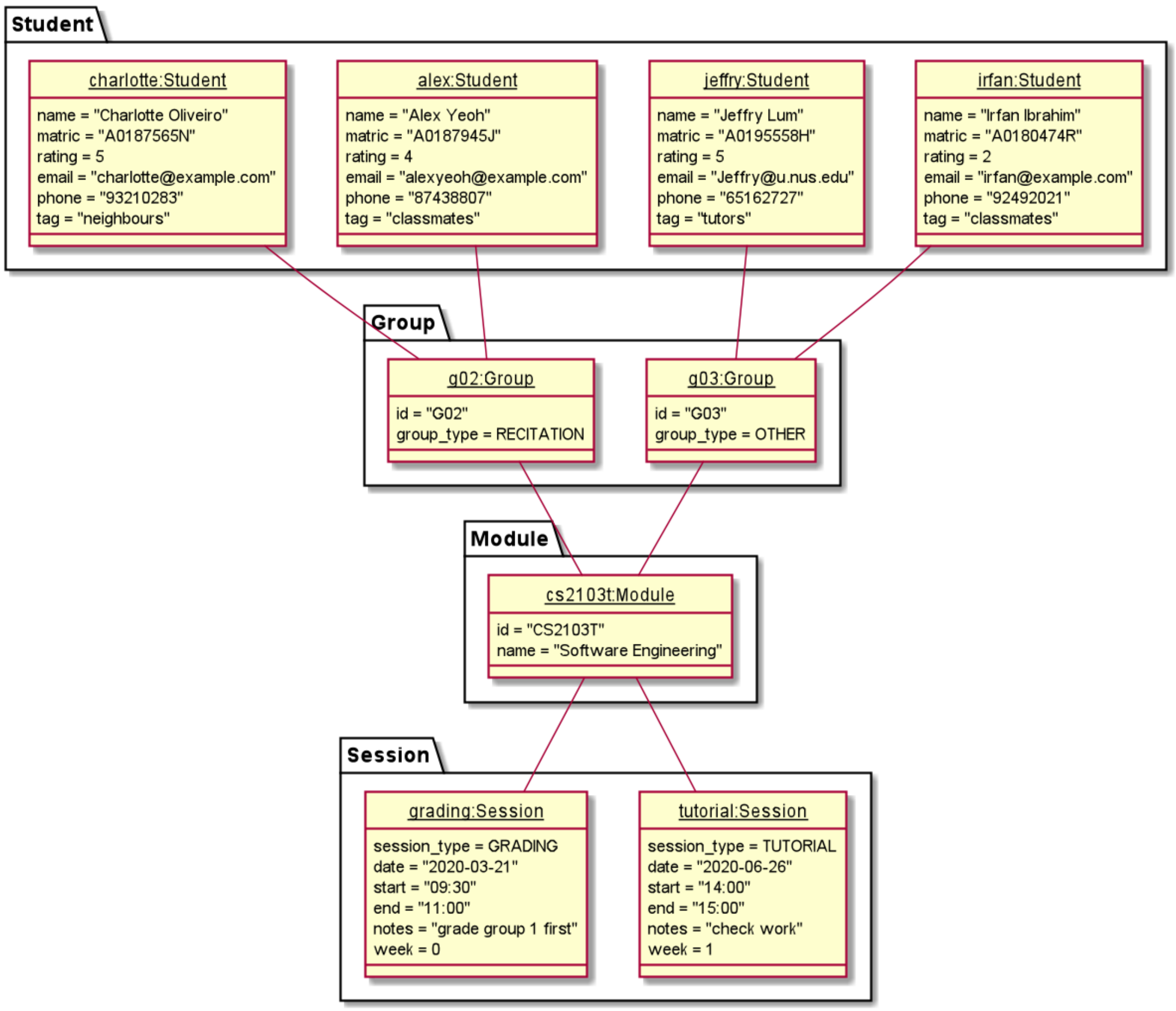


Figure 5. Model Components - Object Diagram

Goto Command

(Contributed by Fatin)

Description

The `goto` command has been implemented to allow users to programmatically switch through the `tabs` using the command line, rather than clicking on the tab headers.

The command can be utilised by entering `goto TAB_NAME`. `TAB_NAME` is a compulsory parameter for the user.

Implementation

This section describes the implementation of the `goto` command.

The following *Sequence Diagram* shows the interactions between the `Logic` and `UI` components of the TA-Tracker when the user enters the command `goto claims`.

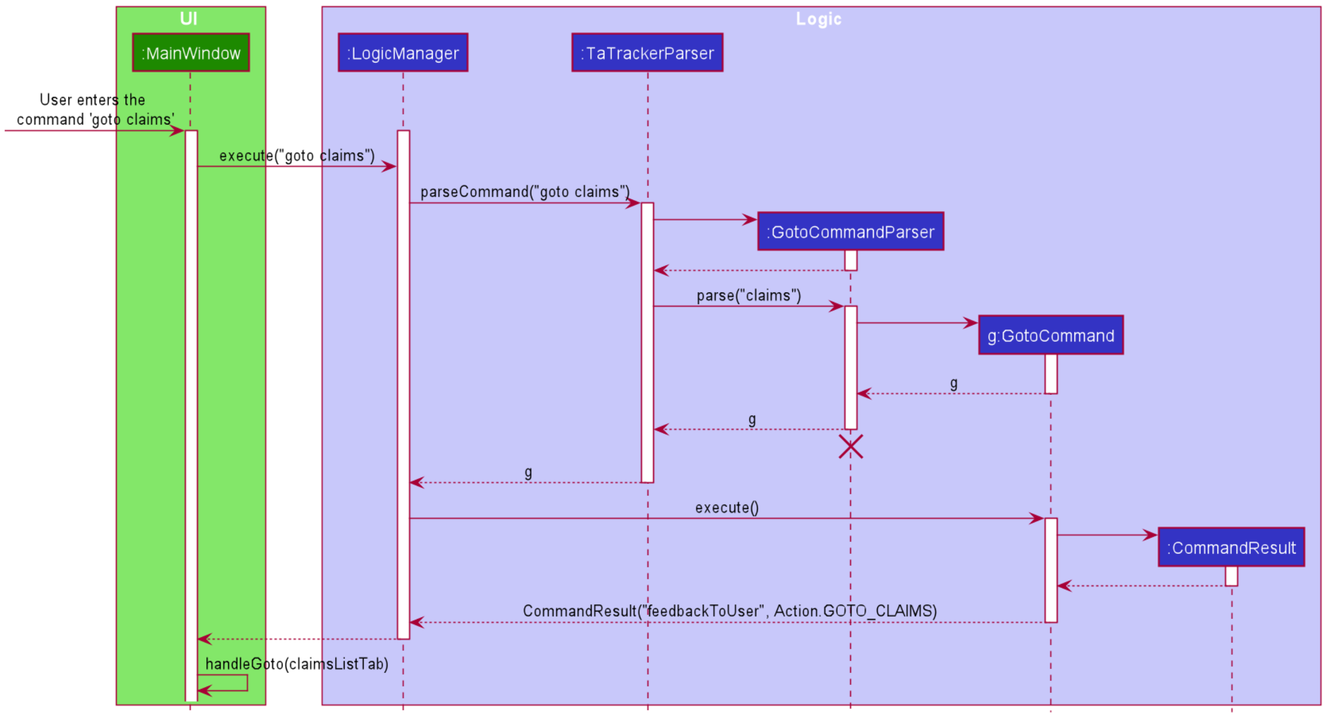


Figure 6. Sequence Diagram for Goto Claims Command

Given below is an example scenario where the user enters a command to switch to the `Claims Tab`.

1. The user command is passed through the `LogicManager` to `TaTrackerParser`. `TaTrackerParser` checks the input arguments and identify the String keywords.
2. The `TaTrackerParser` sees that the command is a `GotoCommand` and passes the command to the `GotoCommandParser`.
3. The `GotoCommandParser` creates a `GotoCommand` object with the relevant keywords.
4. `LogicManager` calls `GotoCommand#execute()`.
5. The `GotoCommand` object checks whether any of the keywords given by the user matches the existing tab headers.
   a. If it does, the `GotoCommand` returns a `CommandResult` with a success message and an enum specifying how MainWindow should handle the next action.
   b. If it doesn't, an exception is thrown.
6. `MainWindow` calls the handleGoto() method to select the `ClaimsTab` in the `TabPane`, completing the tab-switching process.

The following *Class Diagram* shows how different classes are related in the functioning of a `Student` Object.

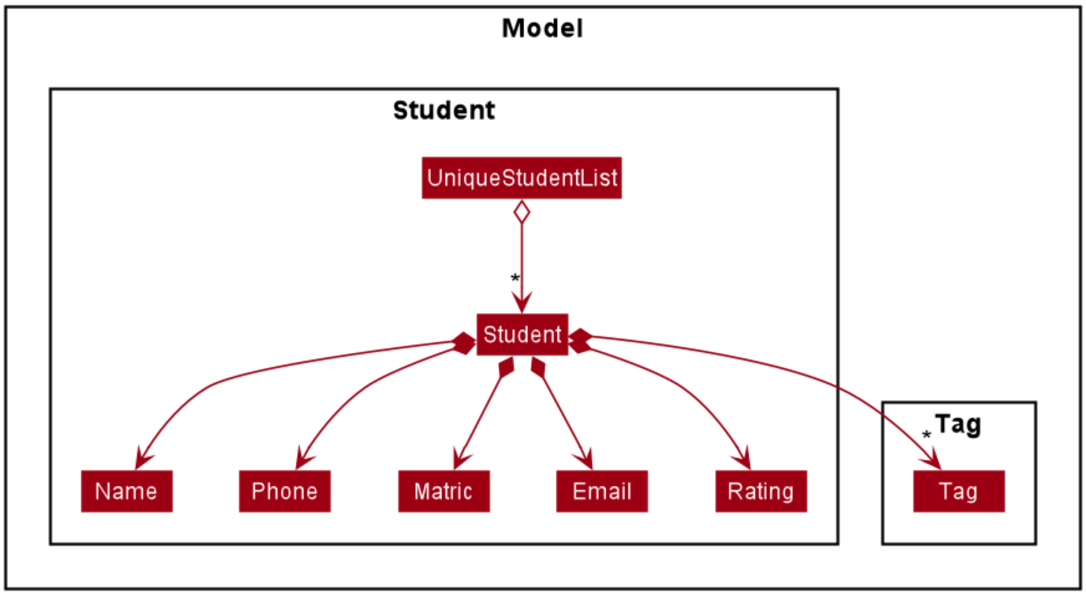


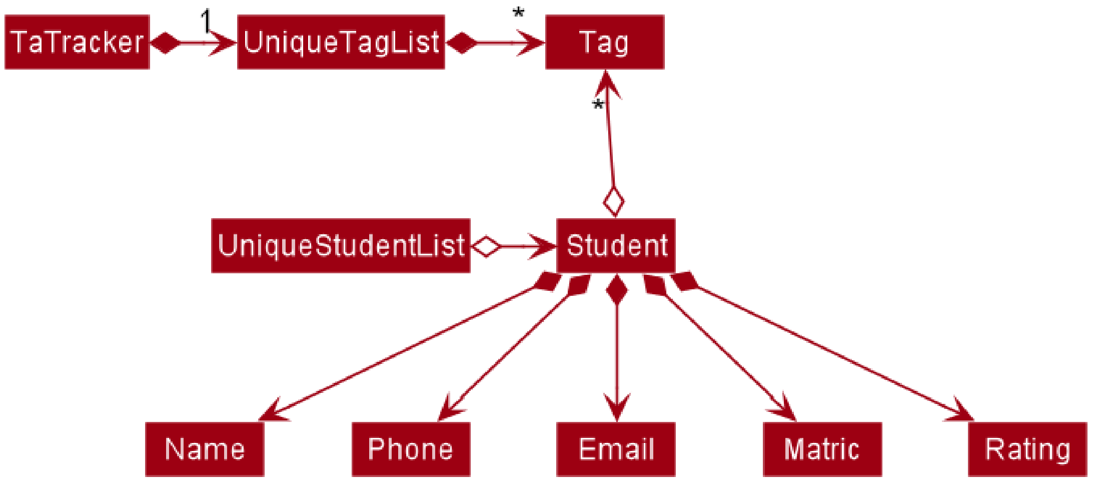
Figure 7. Structure of the Student Component

API: `Student.java`

The other models (`Module`, `Group` and `Session`) have been implemented in a similar manner. The main difference is that the other models do not have any `Tags`.

NOTE

As a more `OOP` model, we can store a `Tag` list in `TaTracker`, which `Student` can reference. This would allow `TaTracker` to only require one `Tag` object per unique `Tag`, instead of each `Student` needing their own `Tag` object. An example of what such a model may look like is given below.



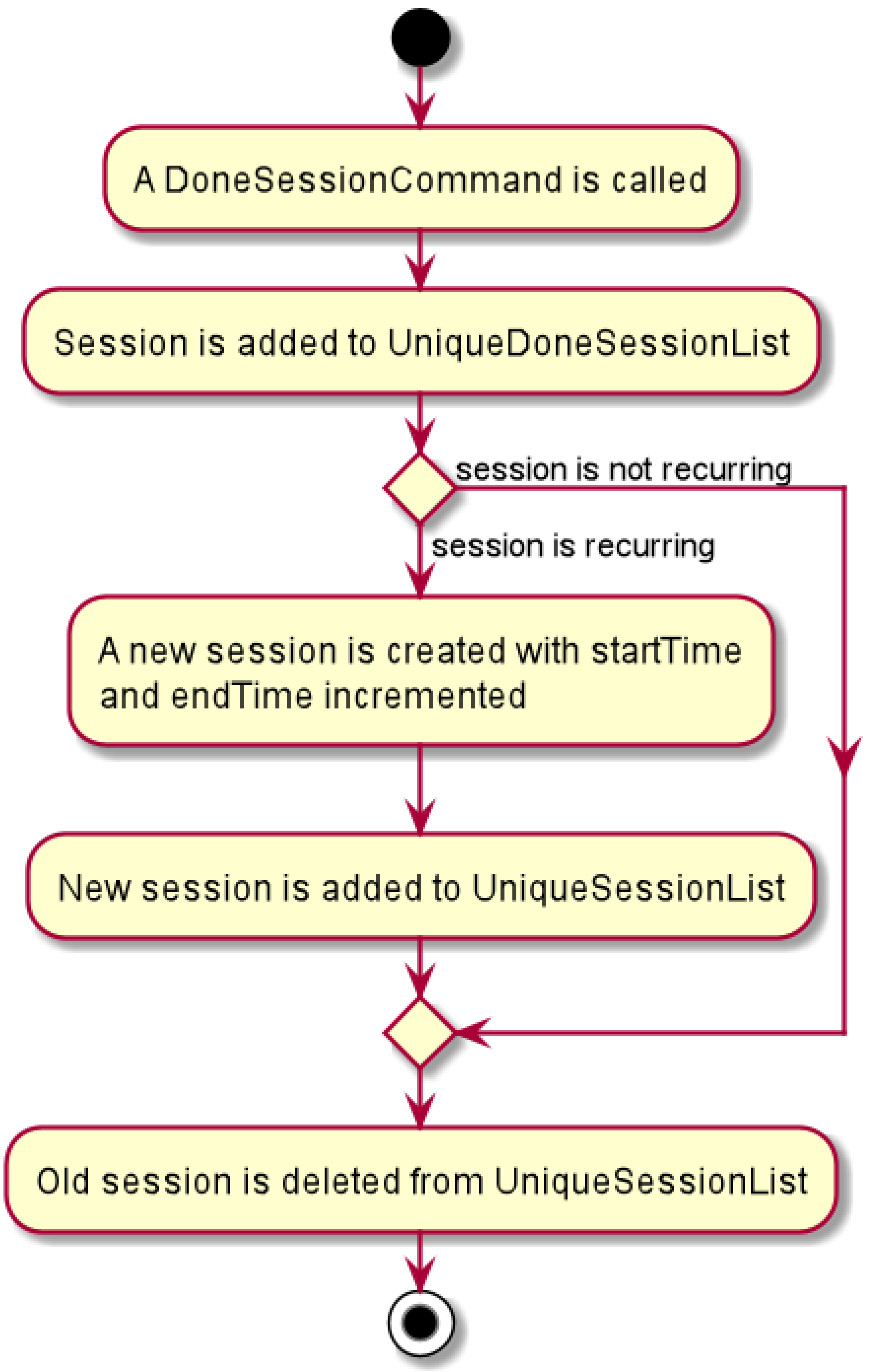

A DoneSessionCommand is called
Session is added to UniqueDoneSessionList
session is not recurring
session is recurring
A new session is created with startTime and endTime incremented
New session is added to UniqueSessionList
Old session is deleted from UniqueSessionList

Figure 8. Session Done- Activity Diagram

NOTE The above diagram assumes that a valid index has been input into the TA-Tracker during the done session command.

Claims View

(Contributed by Fatin)

Claims View refers to the view that contains a list of all the sessions that have been done.

Model Framework

The following *Class Diagram* shows how different classes are related in the functioning of the **Claims View**.

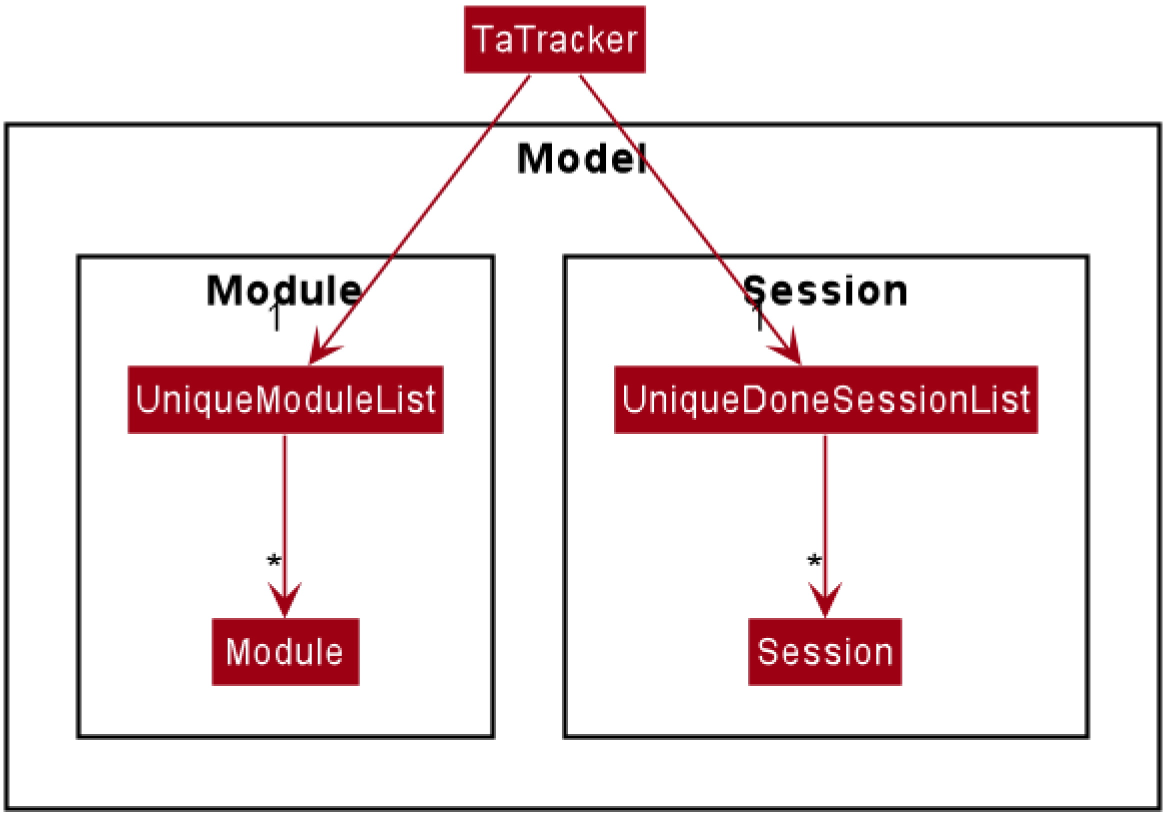


Figure 9. Claims View - Class Diagram

The TaTracker model class contains a UniqueDoneSessionList which keeps track of all the **sessions that have been marked as done**. Each of the sessions must belong to a Module in the UniqueModuleList.

Set Rate Command

Given below is an example scenario where the user enters the command `setrate 50`.

1. The user command is passed through the `LogicManager` to `TaTrackerParser`.
2. `TaTrackerParser` checks the input arguments and identify the String keywords.
3. The `TaTrackerParser` sees that the command is a type of SetRate and passes the command to the `SetRateCommandParser`.
4. The `SetRateCommandParser` object checks that the given `RATE` input by the user is a valid integer. If it is, the `SetRateCommandParser` creates a `SetRateCommand` object with the relevant integer.
5. `LogicManager` calls `SetRateCommand` 's execute method.
6. `MainWindow` updates the `TotalEarnings` label in the `ClaimsTab` and the `StatisticsWindow`