Team Information

Team ID	Group 30
Team Repo on GitHub	https://github.com/Azrael142857/COMP-3111-Project-ATU

Name (Member 1)	SHU Tian
GitHub ID	Azrael142857
Email ID	tshu@connect.ust.hk
Dev Branch	dev-input
Task Assignment	INPUT

Name (Member 2)	ZHANG Juntao
GitHub ID	JordanZh
Email ID	jzhangfq@connect.ust.hk
Dev Branch	dev-process
Task Assignment	PROCESS

Name (Member 3)	YANG Yuang
GitHub ID	yangyuangUST
Email ID	yyangdk@connect.ust.hk
Dev Branch ID	dev-output
Task Assignment	OUTPUT

Submitted by: _____Yang Yuang_____

Date of Submission: _____2022 Nov 20_____

Installation and Unit Testing (Important)

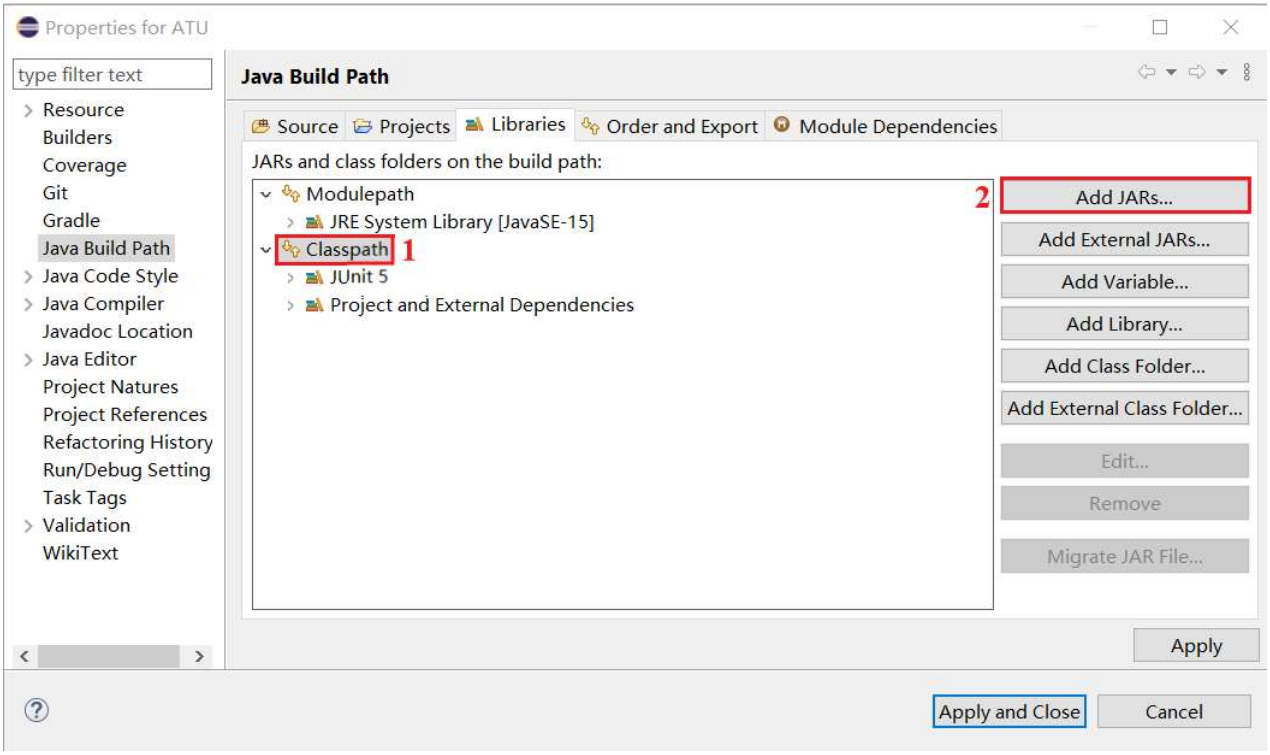
Installation

This is a gradle project built with Java. JavaFX and OpenCSV APIs are used, but it is already included in `build.gradle` and there's no need to install. To build the project, import the source code into Eclipse and click on `Gradle Tasks -> application -> run`.

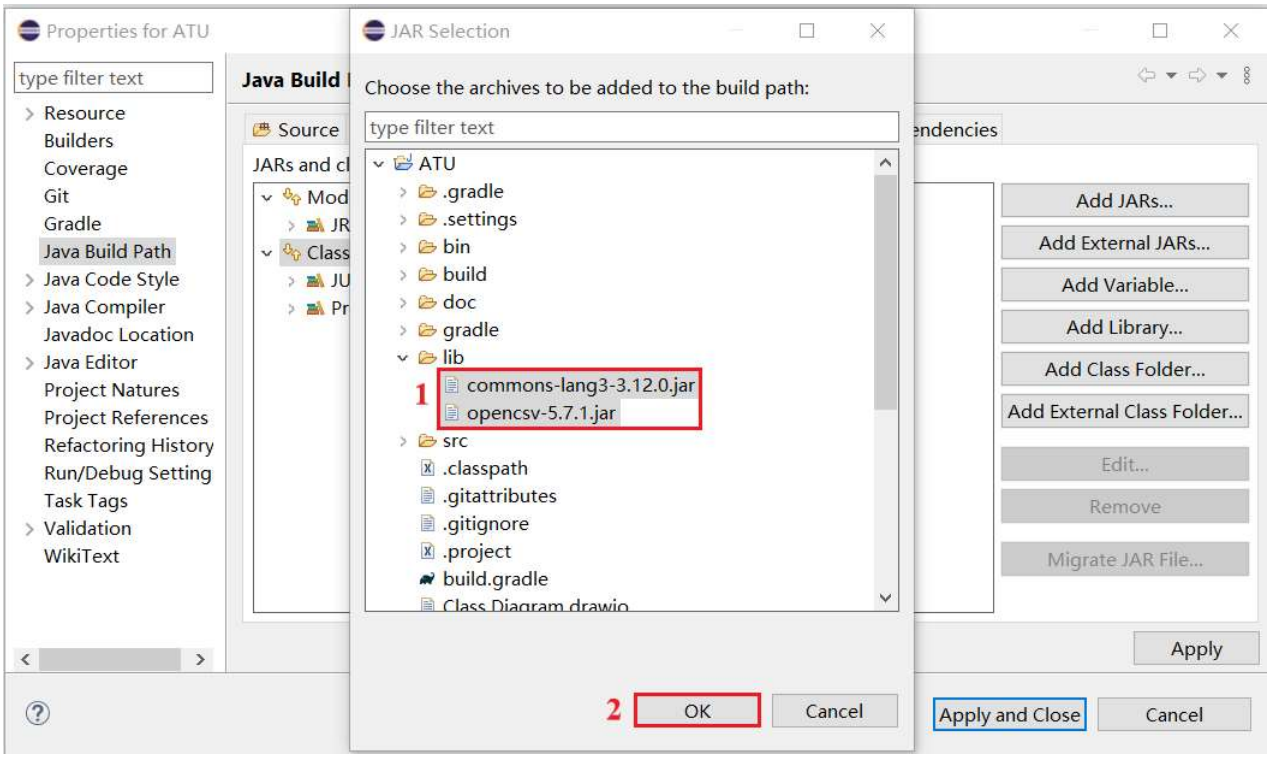
Unit Testing

Due to compatibility issues, the project can't perform Unit Testing on Mac OS.
As JavaFX and OpenCSV APIs are used, in order to perform Unit Testing, it is **required** to configure build path in Eclipse with following steps:

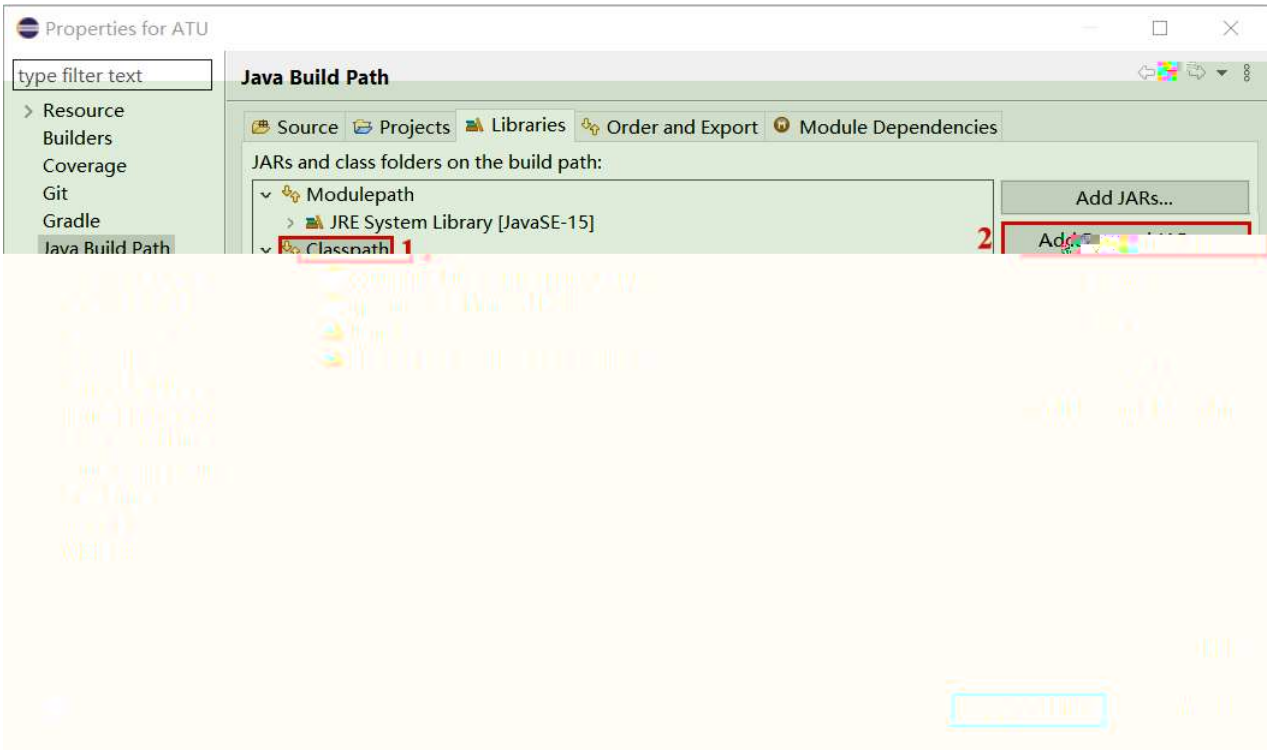
- Right click the project `ATU` in Project Explorer, then click `Build Path -> Configure Build Path...`.
- In `Libraries`, click `Classpath`, then select `Add JARs...`.



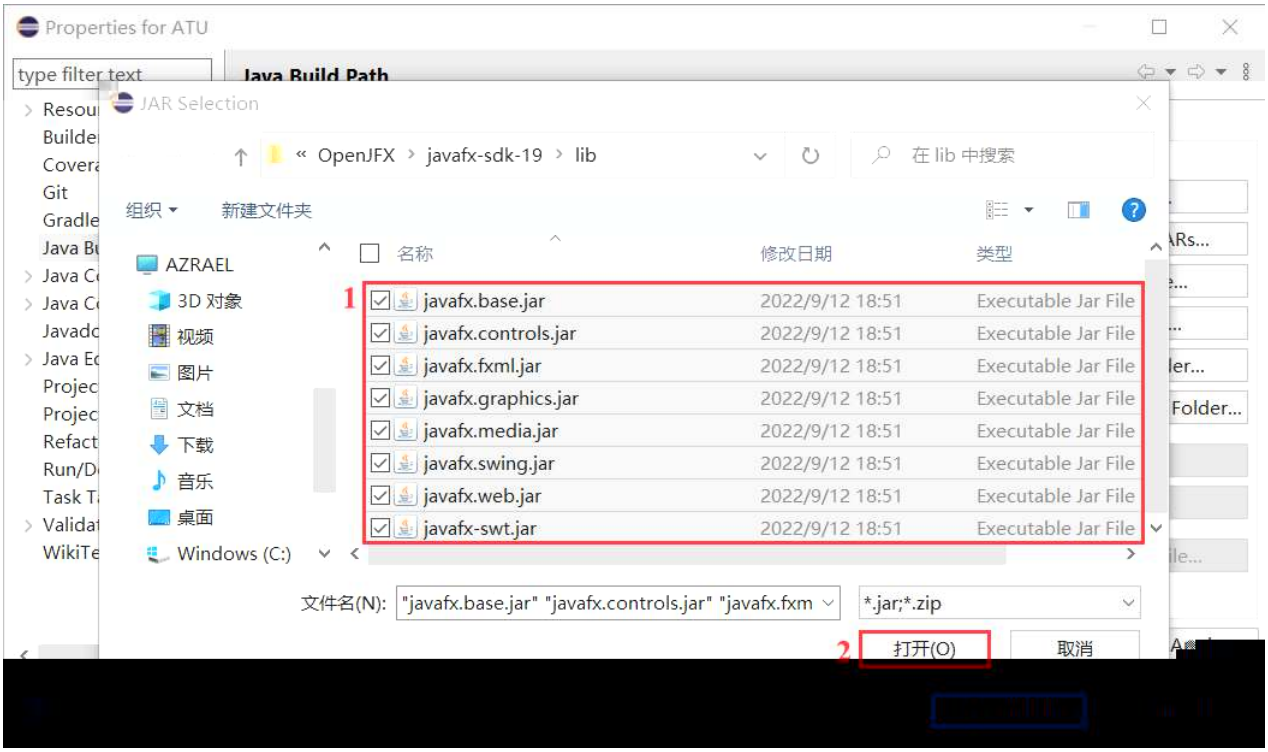
- Browse `ATU -> lib` and select both `commons-lang3-3.12.0.jar` and `opencsv-5.7.1.jar`, then click "OK".



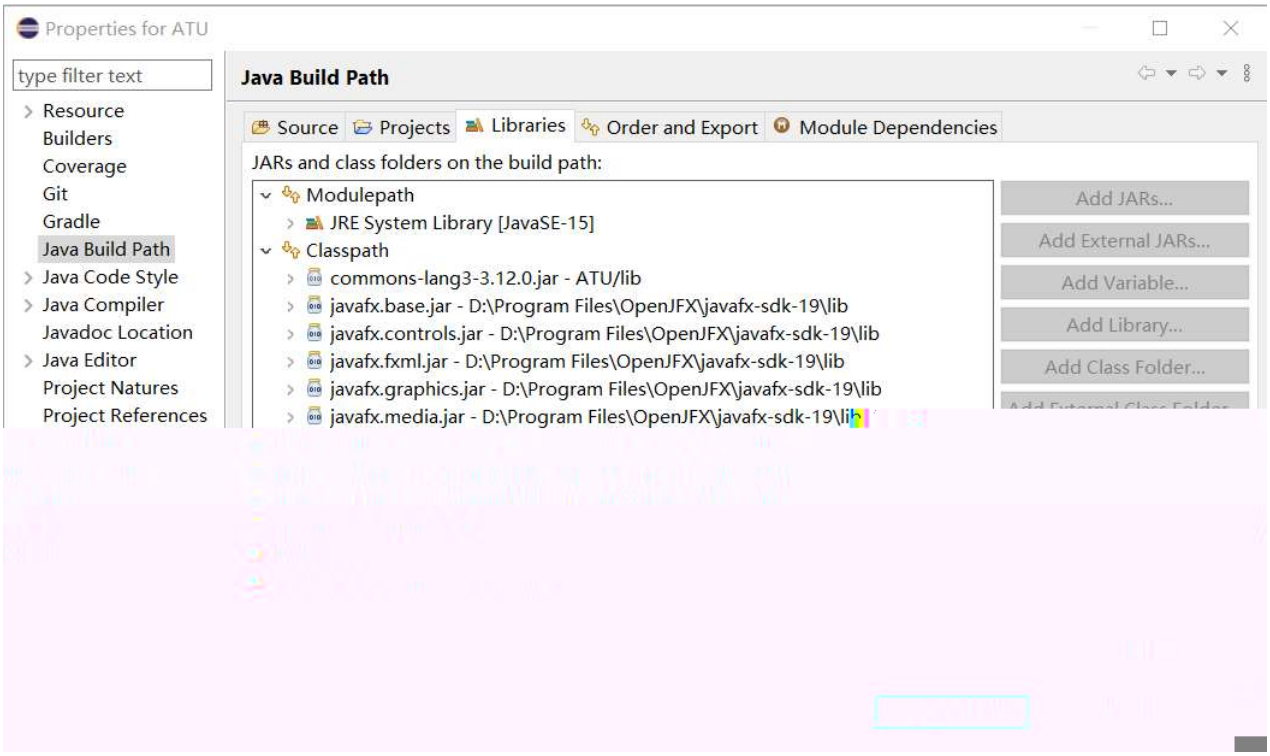
- In `Libraries`, click `Classpath`, then select `Add External JARs...`.



- Browse the location of JavaFX on the computer and select all the JARs under `lib` folder, then click "OK".



- After adding all the required JARs, the build path should be the same as below (10 JARs added in total).



Comp 3111 Project Report

Group 30

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PART 1: Documentation – Project Management

1.1. Team Meeting Minutes

1.1.1. Meeting Minute #1

Minutes of the 1st Project Scrum Meeting
Auto Teaming Up

Date: November 5, 2022
Time: 7:00 P.M.
Place: Library LG1 LC02
Attending: SHU Tian, ZHANG Juntao, YANG Yuang
Recorder: SHU Tian

(1) Report on progress during the past week

Name	Tasks worked on in the past week	Total hours
SHU Tian	Studied the skeleton code provided and implemented a basic UI. Implemented InputHandler for the INPUT part.	9
ZHANG Juntao	Studied the requirements of ATU Engine and come up with a sketch of the algorithm to be implemented.	2
YANG Yuang	Looked into JavaFX Table View and interactive components.	2

(2) Discussion of impediments and resolution

- SHU introduced the overall structure of the UI and controller.
- SHU demonstrated the problem related to dataset parsing, which was resolved using the CSV reader from OpenCSV API.

(3) Goals for the coming week

Name	Tasks to be worked on in the coming week
SHU Tian	Implement unit tests for InputHandler.
ZHANG Juntao	Come up with a sketch implementation of the ATU Engine.
YANG Yuang	Work on the Table View UI for outputting teaming up report.

(4) Meeting adjournment and next meeting

The meeting was adjourned at 8:00 P.M. The next meeting will be held on November 12 at 6:00 P.M. via ZOOM.

1.1.2. Meeting Minute #2

Minutes of the 2nd Project Scrum Meeting
Auto Teaming Up

Date: November 12, 2022
Time: 6:00 P.M.
Place: Online via ZOOM
Attending: SHU Tian, ZHANG Juntao, YANG Yuang
Recorder: SHU Tian

(1) Report on progress during the past week

Name	Tasks worked on in the past week	Total hours
SHU Tian	Implemented unit test for InputHandler, Person, and Statistics classes. Fixed minor issues related to UI design.	4
ZHANG Juntao	Completed Naïve implementation of ATU Engine and its unit tests. Implemented notification window.	6
YANG Yuang	Worked on part of the Inquiry service and Report window.	6

(2) Discussion of impediments and resolution

- SHU demonstrated the difficulties related to JUnit tests on JavaFX components. Most issues are resolved using JFXPanel and Threads.
- Some conflicts occurred on local git branches as the three of us made changes simultaneously. The conflicts are manually resolved and the complete version of the code is updated on GitHub.

(3) Goals for the coming week

Name	Tasks to be worked on in the coming week
SHU Tian	Refactor code and generate official documentation with Javadoc.
ZHANG Juntao	Update the implementation of ATU Engine to the enhanced version that meets the requirement of the honor track.
YANG Yuang	Keep working on Inquiry and Report tasks and implement unit tests.

(4) Meeting adjournment and next meeting

The meeting was adjourned at 7:00 P.M. The next meeting will be hold on November 19 at 7:00 P.M. at Hall VII L6 Common Room

1.1.3. Meeting Minute #3

Minutes of the 3rd Project Scrum Meeting
Auto Teaming Up

Date: November 19, 2022
Time: 7:00 P.M.
Place: Hall VII L6 Common Room
Attending: SHU Tian, ZHANG Juntao, YANG Yuang
Recorder: SHU Tian

(1) Report on progress during the past week

Name	Tasks worked on in the past week	Total hours
SHU Tian	Added “Team” column in the input table. Rewrote comments into the form of Javadoc and generate official documentation for classes related to Input tasks.	3
ZHANG Juntao	Implemented the enhanced version of ATU Engine and corresponding unit tests.	8
YANG Yuang	Complete the Inquiry and Report functions for Output tasks and their unit tests.	8

(2) Discussion of impediments and resolution

- Encountered merge conflict on GitHub due to mistakes during pulling. Manually resolved the conflict during the meeting.
- YANG and ZHANG had some problems related to the requirement and grading of the project, which was then resolved by posting those problems on the Telegram group.
- Discussed the remaining paperwork do be done.

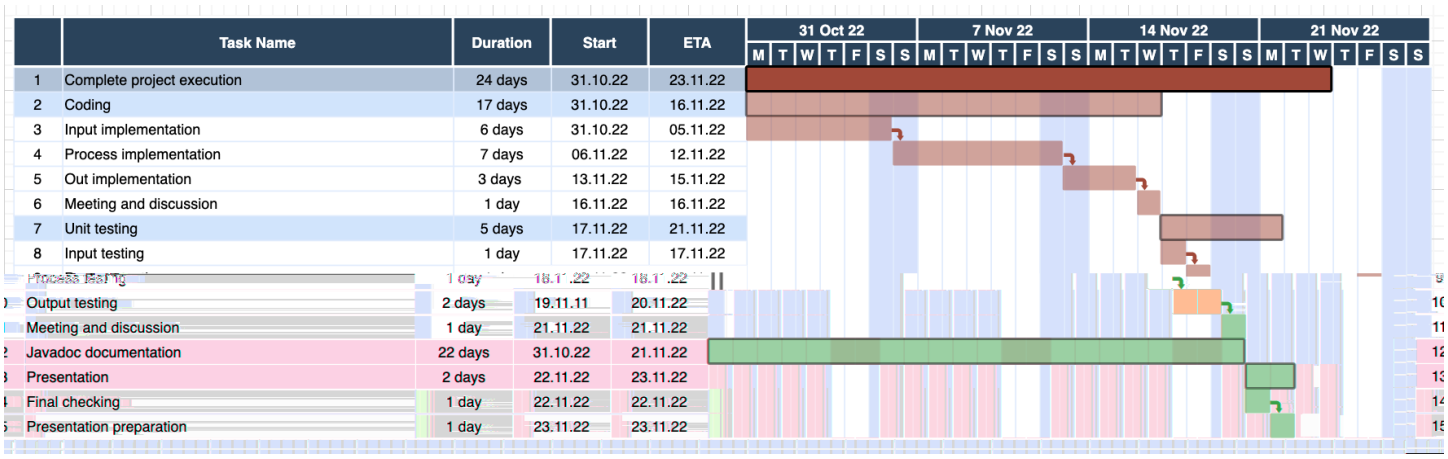
(3) Goals for the coming week

Name	Tasks to be worked on in the coming week
SHU Tian	Final check of UI and documentation.
ZHANG Juntao	Generate official documentation for ATU Engine.
YANG Yuang	Double check all files to be uploaded for Activity 2.

(4) Meeting adjournment and next meeting

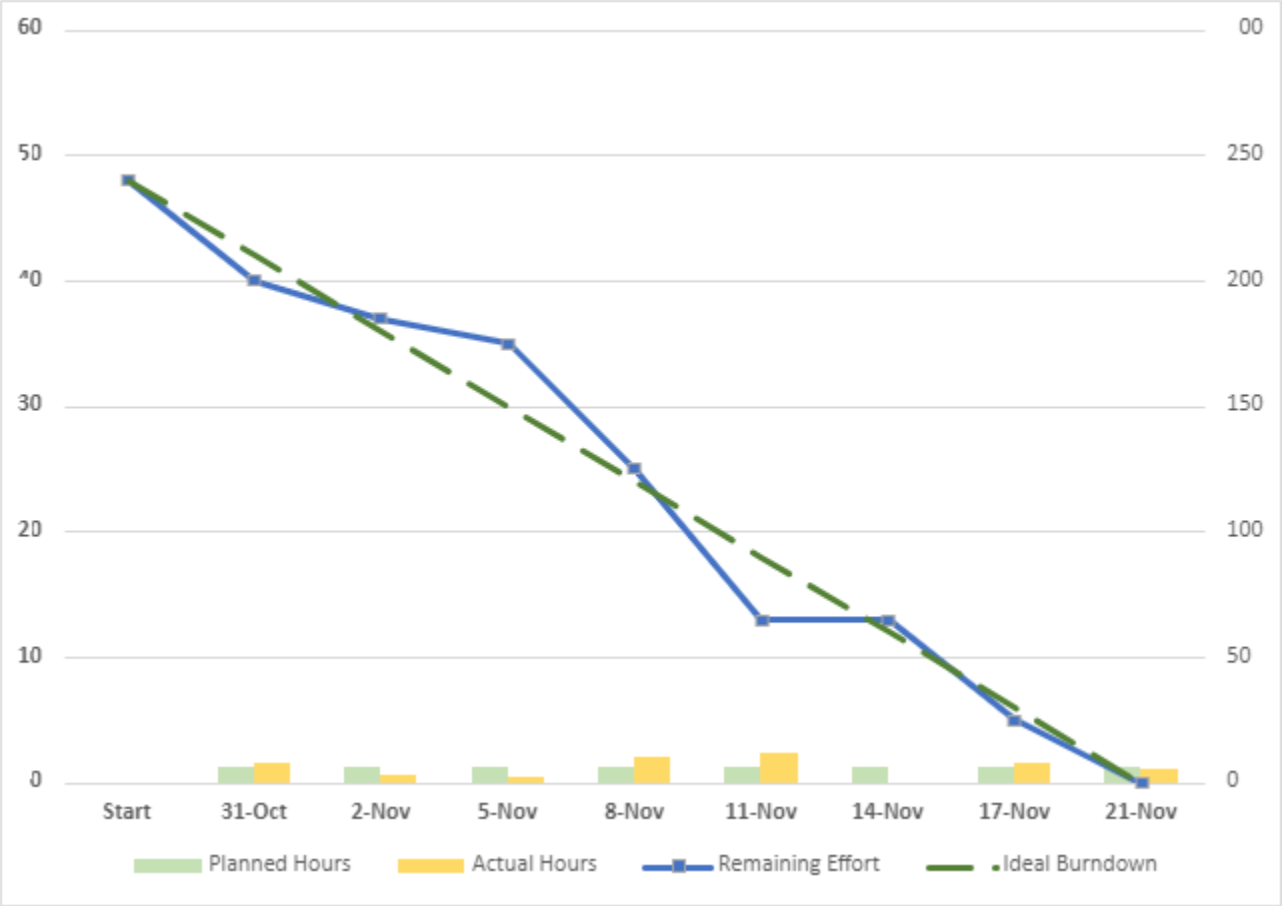
The meeting was adjourned at 8:30 P.M. No more meetings will be held as the only thing left is to check the documentation and manually double-check functional requirements.

1.2. Gantt Chart



	Task Name	Duration	Start	ETA
1	Complete project execution	24 days	31.10.22	23.11.22
2	Coding	17 days	31.10.22	16.11.22
3	Input implementation	6 days	31.10.22	05.11.22
4	Process implementation	7 days	06.11.22	12.11.22
5	Out implementation	3 days	13.11.22	15.11.22
6	Meeting and discussion	1 day	16.11.22	16.11.22
7	Unit testing	5 days	17.11.22	21.11.22
8	Input testing	1 day	17.11.22	17.11.22
	Process testing	1 day	18.11.22	18.11.22
	Output testing	2 days	19.11.11	20.11.22
	Meeting and discussion	1 day	21.11.22	21.11.22
	Javadoc documentation	22 days	31.10.22	21.11.22
	Presentation	2 days	22.11.22	23.11.22
	Final checking	1 day	22.11.22	22.11.22
	Presentation preparation	1 day	23.11.22	23.11.22

1.3. Burndown Chart



1.4. Representative Git commit log on GitHub

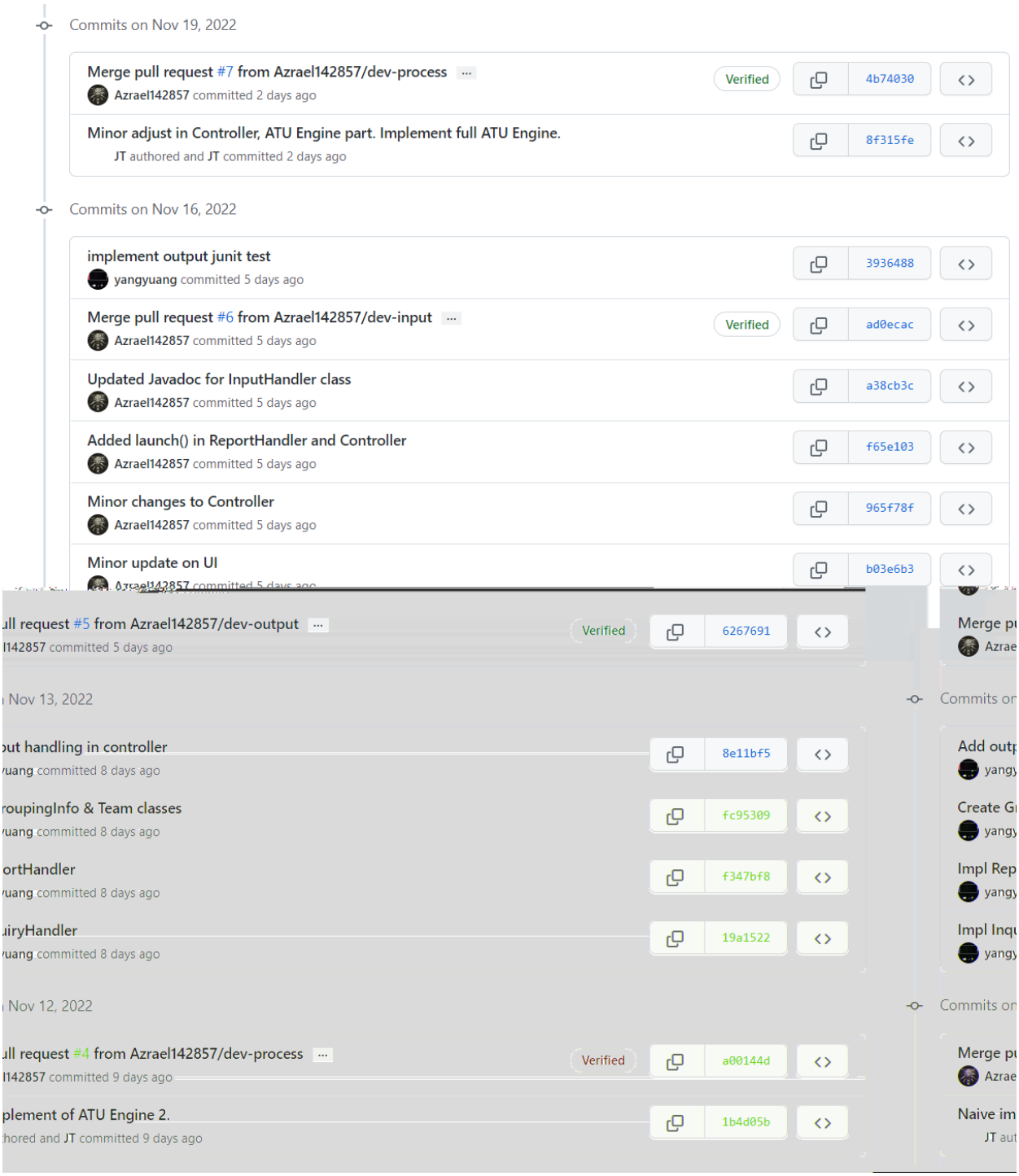
master

Commits on Nov 21, 2022

Upload Javadoc PDF and Screenshots Azrael142857 committed 6 minutes ago		f7d7d70
Merge pull request #14 from Azrael142857/dev-input ... Azrael142857 committed 39 minutes ago	Verified	89e14de
Generated Javadoc Documentations Azrael142857 committed 41 minutes ago		1c3ab04
public methods JT authored and JT committed 1 hour ago		03548c1
Merge branch 'master' of https://github.com/Azrael142857/COMP-3111-Pr... ... JT authored and JT committed 1 hour ago		15eade4
JAVADOC JT authored and JT committed 1 hour ago		229bea9
Merge pull request #13 from Azrael142857/dev-input ... Azrael142857 committed 1 hour ago	Verified	49671c7
Fixed compilation error in InquiryHandlerTest Azrael142857 committed 1 hour ago		eb76f6b
Merge pull request #12 from Azrael142857/dev-process ... Azrael142857 committed 2 hours ago	Verified	7113b39
Merge branch 'master' into dev-process Azrael142857 committed 2 hours ago	Verified	8ec1a84
JavaDoc and minor changes on ATUEngine Constructor's parameter list. JT authored and JT committed 3 hours ago		7b78141

Commits on Nov 20, 2022

Merge pull request #11 from Azrael142857/dev-output ... yangyuangUST committed yesterday	Verified	bf54279
fix bugs in javadoc yangyuang committed yesterday		b51caee
Merge branch 'master' into dev-output yangyuangUST committed yesterday	Verified	dba7c68
added java doc comments yangyuang committed yesterday		344d92f
Merge pull request #9 from Azrael142857/dev-process ... JordanZh committed yesterday	Verified	13caddb
Delete the Naive algorithm ATUEngine::team_up() JT authored and JT committed yesterday		9792151
Merge pull request #8 from Azrael142857/dev-input ... Azrael142857 committed yesterday	Verified	5757008
Added Test Cases for InputHandler, InquirtyHandler, and ReportHandler Azrael142857 committed yesterday		55b98a4
Added Javadoc for Controller, InputHandler, Person, Statistics, etc. Azrael142857 committed yesterday		376df08

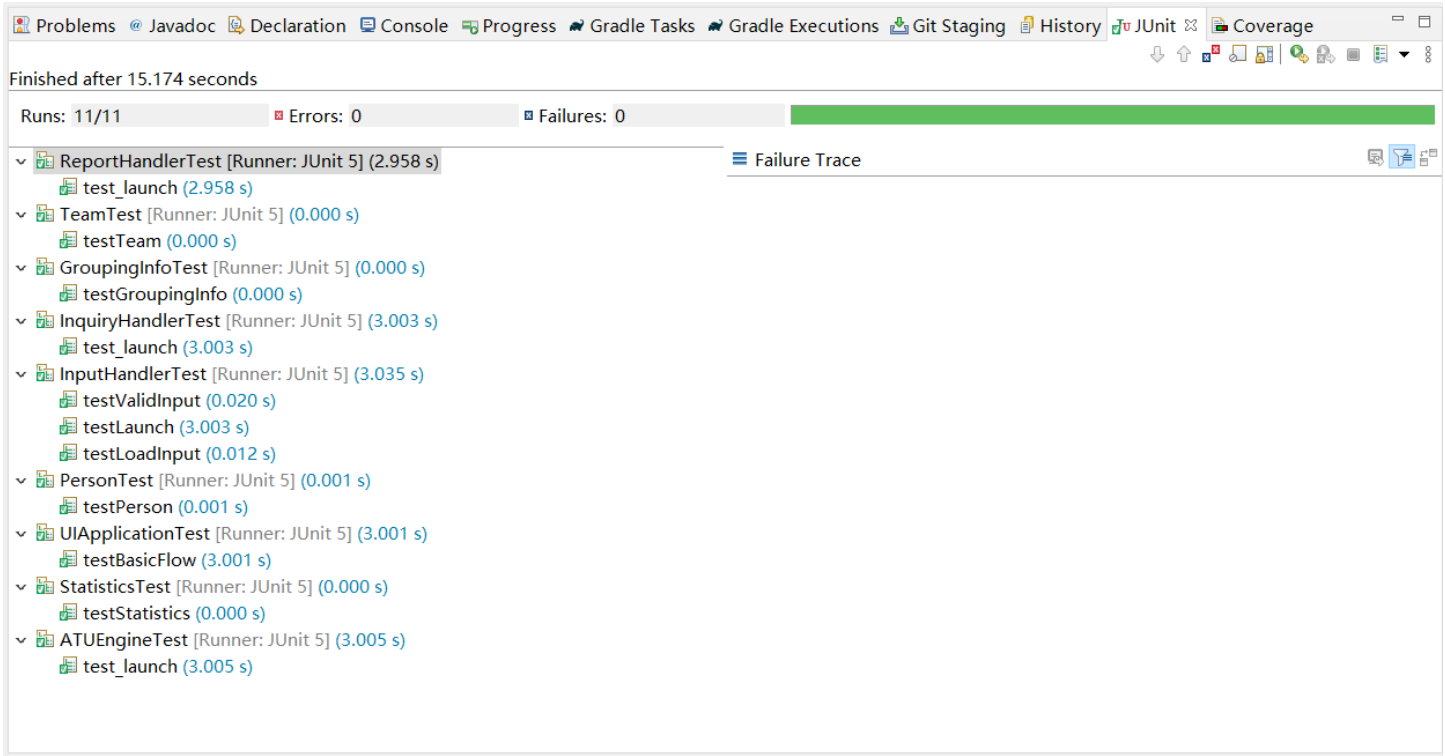

Commits on Nov 19, 2022
Merge pull request #7 from Azrael142857/dev-process
Azrael142857 committed 2 days ago
Verified
4b74030
Minor adjust in Controller, ATU Engine part. Implement full ATU Engine.
JT authored and JT committed 2 days ago
8f315fe
Commits on Nov 16, 2022
implement output junit test
yangyuang committed 5 days ago
3936488
Merge pull request #6 from Azrael142857/dev-input
Azrael142857 committed 5 days ago
Verified
ad0ecac
Updated Javadoc for InputHandler class
Azrael142857 committed 5 days ago
a38cb3c
Added launch() in ReportHandler and Controller
Azrael142857 committed 5 days ago
f65e103
Minor changes to Controller
Azrael142857 committed 5 days ago
965f78f
Minor update on UI
b03e6b3
Verified
6267691
Nov 13, 2022
8e11bf5
8 days ago
fc95309
8 days ago
f347bf8
8 days ago
19a1522
8 days ago
Nov 12, 2022
Verified
a00144d
9 days ago
1b4d05b
9 days ago

13 Pull requests merged by **3** people

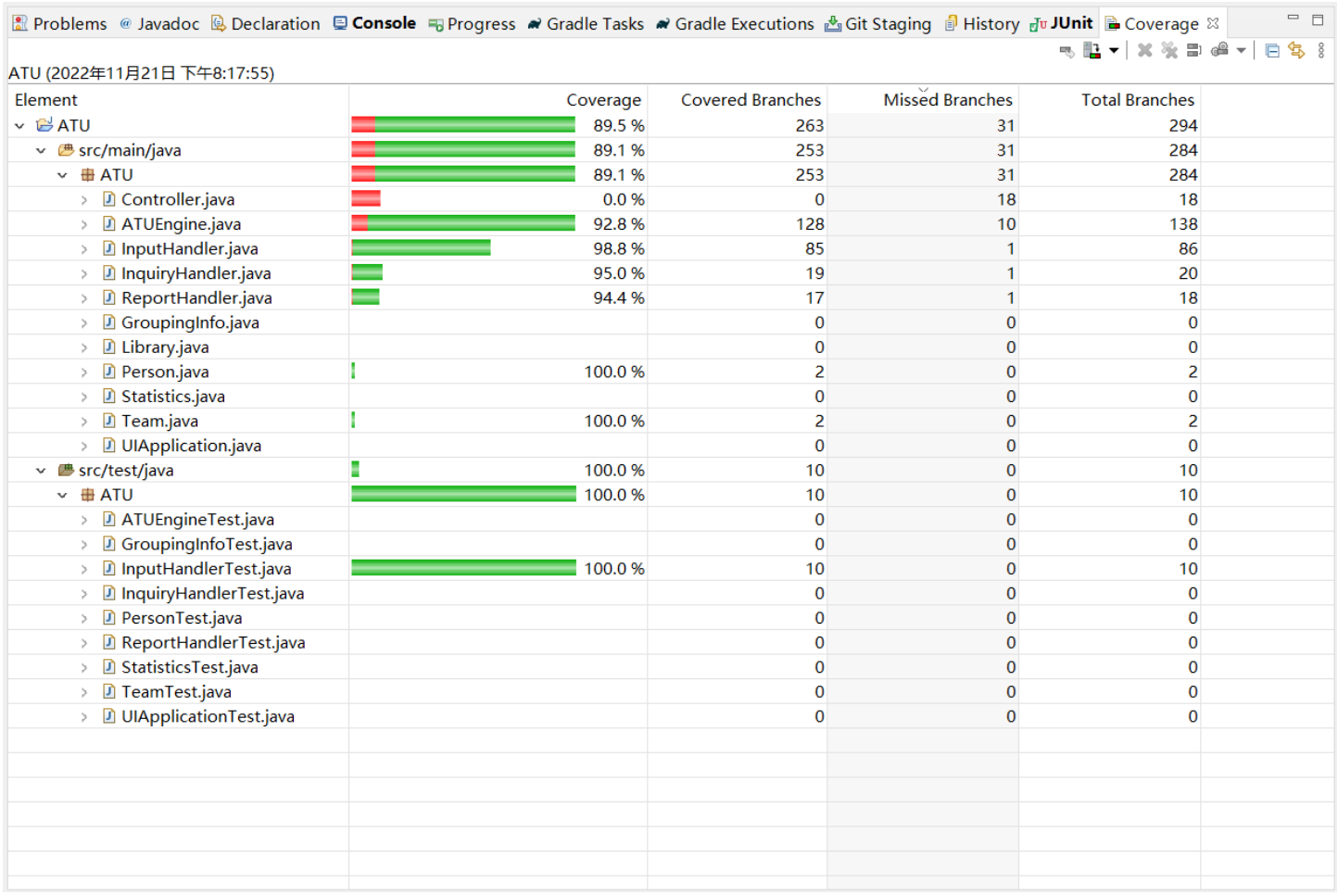
- **Generated Javadoc Documentations**
  #14 merged 1 hour ago
- **Fixed compilation error in InquiryHandlerTest**
  #13 merged 2 hours ago
- **JavaDoc and minor changes on ATUEngine Constructor's parameter list.**
  #12 merged 2 hours ago
- **Dev output**
  #11 merged yesterday
- **Delete the Naive algorithm ATUEngine::team_up()**
  #9 merged yesterday
- **Completed Javadoc for INPUT, updated unit test cases**
  #8 merged yesterday
- **Dev process**
  #7 merged 2 days ago
- **Modified UI, Fixed Minor Bugs, and Created Javadoc for InputHandler**
  #6 merged 5 days ago
- **Dev output**
  #5 merged 5 days ago
- **Naive implement of ATU Engine 2.**
  #4 merged 9 days ago
- **Implemented Unit Tests for InputHandler [Major Update for INPUT]**
  #3 merged 16 days ago
- **Set up UI, Implement Input-Handler to Load & Process CSV Data [Major Update for INPUT]**
  #2 merged 19 days ago
- **Pushed "StuPi.csv" for team sharing**
  #1 merged 22 days ago

PART 2: Documentation – Implementation and Testing

2.1. Report on the unit testing for the implemented tasks (100% pass)



2.2. Report on the coverage test (>65% branch coverage)



Problems Javadoc Declaration Console Progress Gradle Tasks Gradle Executions Git Staging History JUnit Coverage

ATU (2022年11月21日 下午8:17:55)

Element	Coverage	Covered Branches	Missed Branches	Total Branches
ATU	89.5 %	263	31	294
src/main/java	89.1 %	253	31	284
ATU	89.1 %	253	31	284
Controller.java	0.0 %	0	18	18
ATUEngine.java	92.8 %	128	10	138
InputHandler.java	98.8 %	85	1	86
InquiryHandler.java	95.0 %	19	1	20
ReportHandler.java	94.4 %	17	1	18
GroupingInfo.java		0	0	0
Library.java		0	0	0
Person.java	100.0 %	2	0	2
Statistics.java		0	0	0
Team.java	100.0 %	2	0	2
UIApplication.java		0	0	0
src/test/java	100.0 %	10	0	10
ATU	100.0 %	10	0	10
ATUEngineTest.java		0	0	0
GroupingInfoTest.java		0	0	0
InputHandlerTest.java	100.0 %	10	0	10
InquiryHandlerTest.java		0	0	0
PersonTest.java		0	0	0
ReportHandlerTest.java		0	0	0
StatisticsTest.java		0	0	0
TeamTest.java		0	0	0
UIApplicationTest.java		0	0	0

2.3. Documentation on the implemented tasks using JavaDoc

For better typesetting, as the JavaDoc documentation is quite long, this section is postponed to the end of this document.

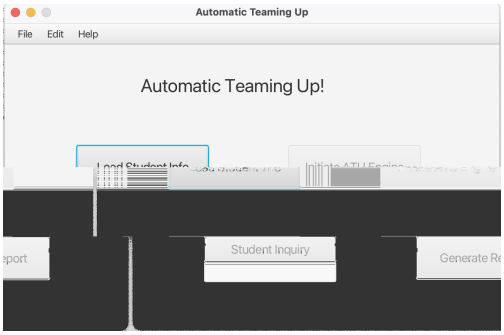
Please refer to “Part 4: Javadoc Documentation” starting from page 22 of the document.

PART 3: Program Execution and Screenshots

3.1. Screenshots of INPUT

Input:

Click on “Load Student Info” button and load the dataset StuPI.CSV



Output:

1) Person table displaying all students’ information

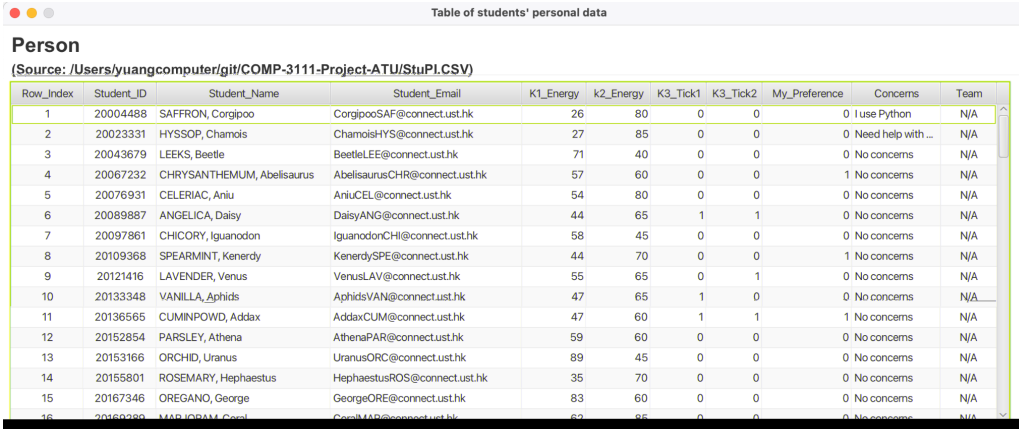


Table of students' personal data

Person

(Source: /Users/yuangcomputer/git/COMP-3111-Project-ATU/StuPI.CSV)

Row_Index	Student_ID	Student_Name	Student_Email	K1_Energy	k2_Energy	K3_Tick1	K3_Tick2	My_Preference	Concerns	Team
1	20004488	SAFFRON, Corgipoo	CorgipooSAF@connect.ust.hk	26	80	0	0	0	I use Python	N/A
2	20023331	HYSSOP, Chamois	ChamoisHYS@connect.ust.hk	27	85	0	0	0	Need help with ...	N/A
3	20043679	LEEKS, Beetle	BeetleLEE@connect.ust.hk	71	40	0	0	0	No concerns	N/A
4	20067232	CHRYSANTHEMUM, Abelisaurus	AbelisaurusCHR@connect.ust.hk	57	60	0	0	1	No concerns	N/A
5	20076931	CELERIAC, Aniu	AniuCEL@connect.ust.hk	54	80	0	0	0	No concerns	N/A
6	20089887	ANGELICA, Daisy	DaisyANG@connect.ust.hk	44	65	1	1	0	No concerns	N/A
7	20097861	CHICORY, Iguanodon	IguanodonCHI@connect.ust.hk	58	45	0	0	0	No concerns	N/A
8	20109368	SPEARMINT, Kenerdy	KenerdySPE@connect.ust.hk	44	70	0	0	1	No concerns	N/A
9	20121416	LAVENDER, Venus	VenusLAV@connect.ust.hk	55	65	0	1	0	No concerns	N/A
10	20133348	VANILLA, Aphids	AphidsVAN@connect.ust.hk	47	65	1	0	0	No concerns	N/A
11	20136565	CUMINPOWD, Addax	AddaxCUM@connect.ust.hk	47	60	1	1	1	No concerns	N/A
12	20152854	PARSLEY, Athena	AthenaPAR@connect.ust.hk	59	60	0	0	0	No concerns	N/A
13	20153166	ORCHID, Uranus	UranusORC@connect.ust.hk	89	45	0	0	0	No concerns	N/A
14	20155801	ROSEMARY, Hephaestus	HephaestusROS@connect.ust.hk	35	70	0	0	0	No concerns	N/A
15	20167346	OREGANO, George	GeorgeORE@connect.ust.hk	83	60	0	0	0	No concerns	N/A

2) Statistics table displaying statistical values

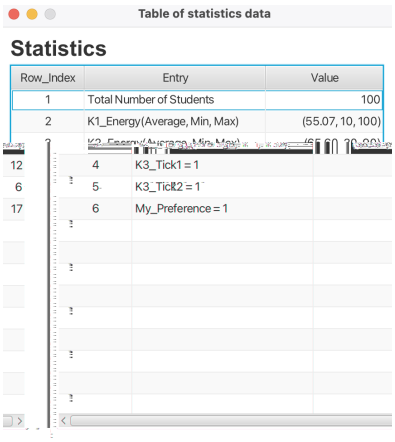


Table of statistics data

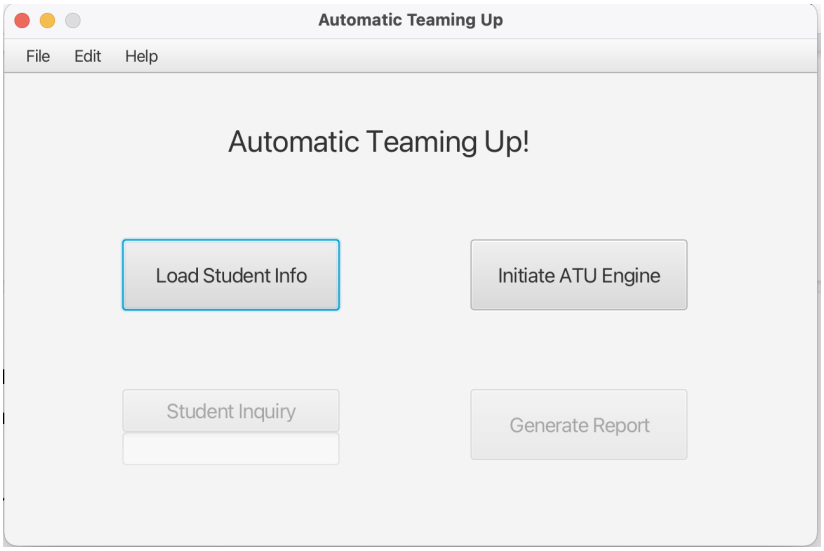
Statistics

Row_Index	Entry	Value
1	Total Number of Students	100
2	K1_Energy(Average, Min, Max)	(55.07, 10, 100)
4	K3_Tick1 = 1	
5	K3_Tick2 = 1	
6	My_Preference = 1	

3.2. Screenshots of PROCESS

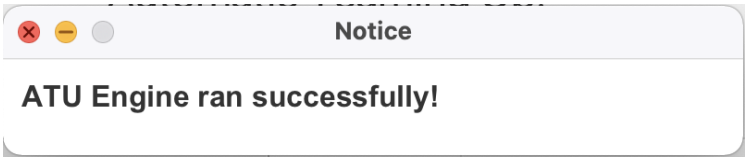
Input:

click on “Initiate ATU Engine” button after loading dataset



Output:

prompt message indicating the engine finishes processing



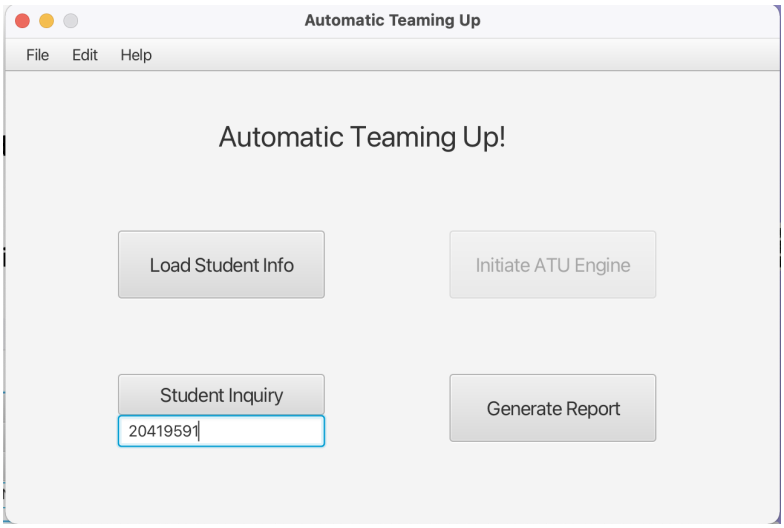
3.3. Screenshots of OUTPUT

3.3.1. Student Inquiry Service

3.3.1.1 Inquiry via student ID

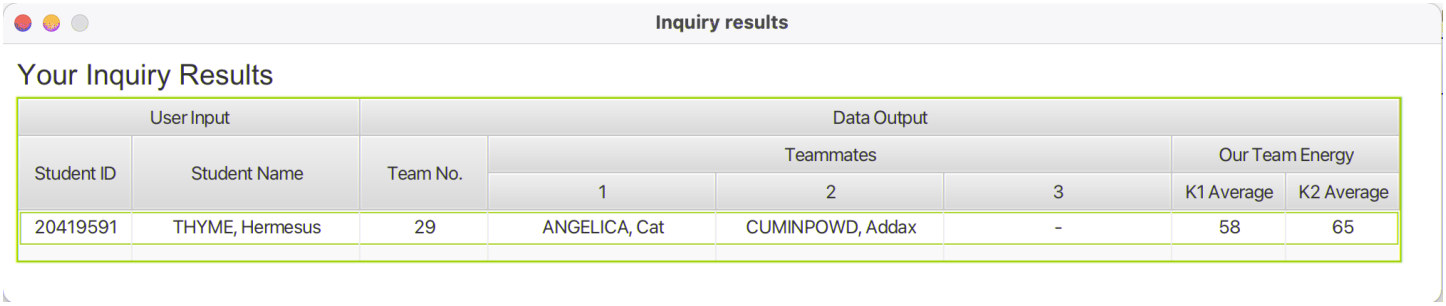
Input:

Input “20419591” in the text box and click on “Student Inquiry” button



Output:

table displaying teaming up information of the student

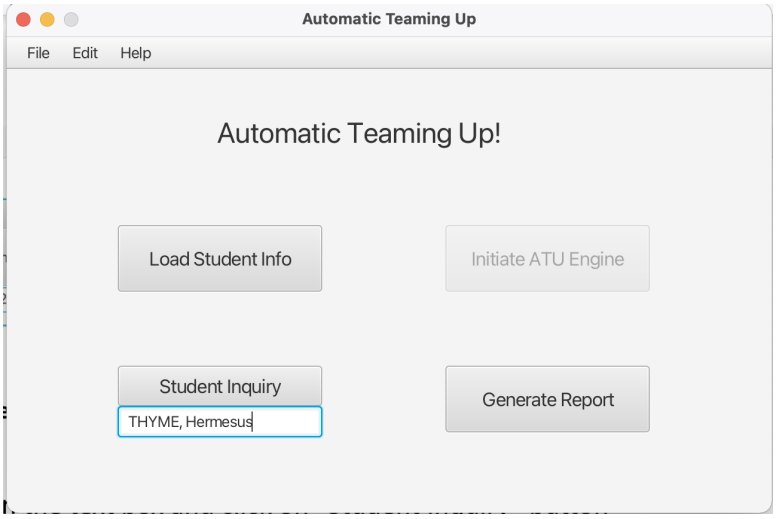


User Input		Data Output					
Student ID	Student Name	Team No.	Teammates			Our Team Energy	
			1	2	3	K1 Average	K2 Average
20419591	THYME, Hermesus	29	ANGELICA, Cat	CUMINPOWD, Addax	-	58	65

3.3.1.2 Inquiry via student name

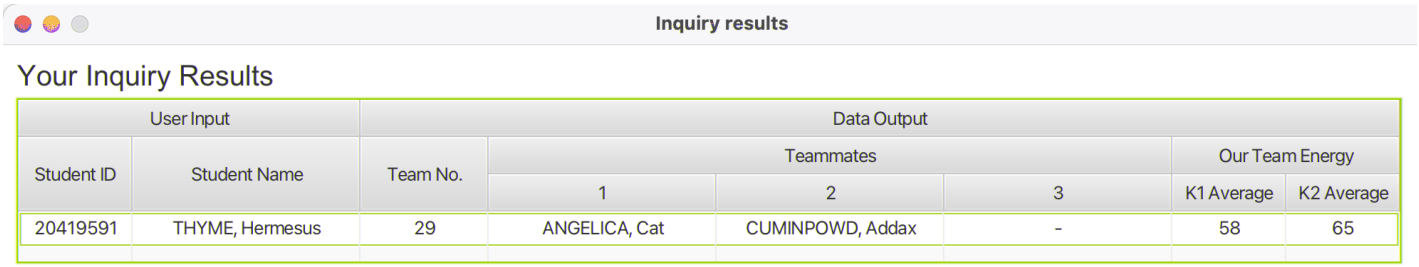
Input:

Input “THYME, Hermesus” in the text box and click on “Student Inquiry” button



Output:

table displaying teaming up information of the student

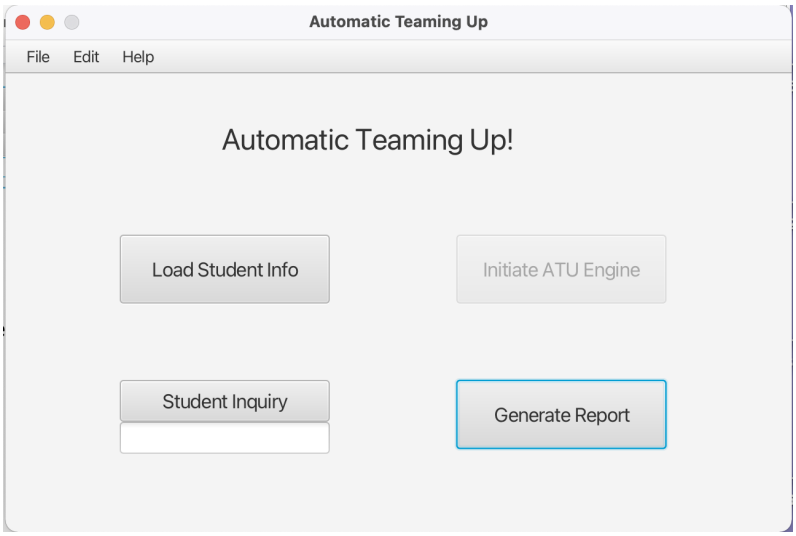


User Input		Data Output					
Student ID	Student Name	Team No.	Teammates			Our Team Energy	
			1	2	3	K1 Average	K2 Average
20419591	THYME, Hermesus	29	ANGELICA, Cat	CUMINPOWD, Addax	-	58	65

3.3.2. Report

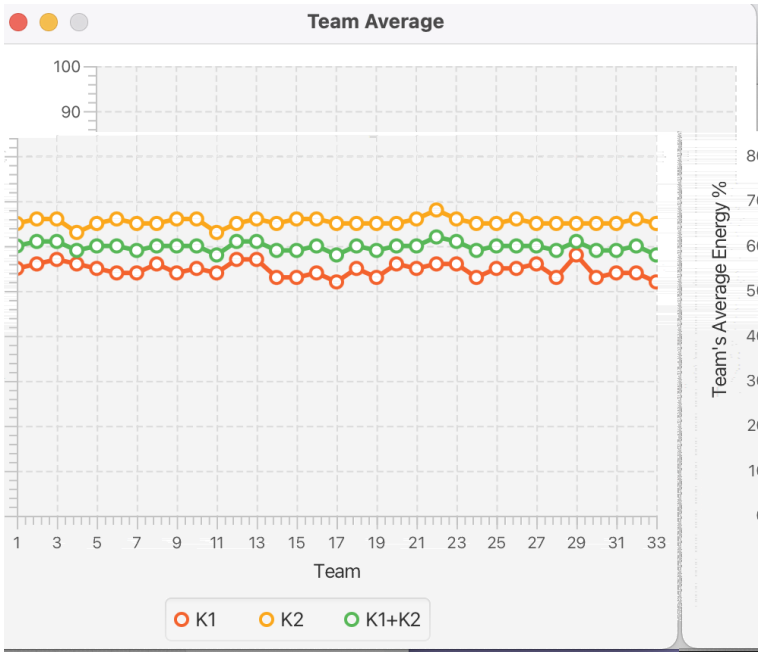
Input:

click on “Generate Report” button after running ATU engine



Output:

chart displaying the average energy values for all teams

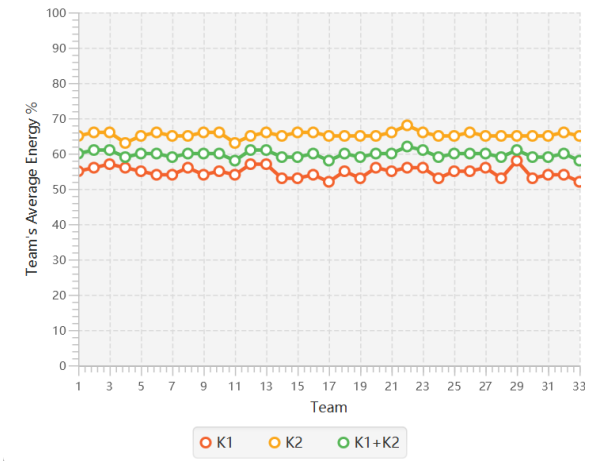


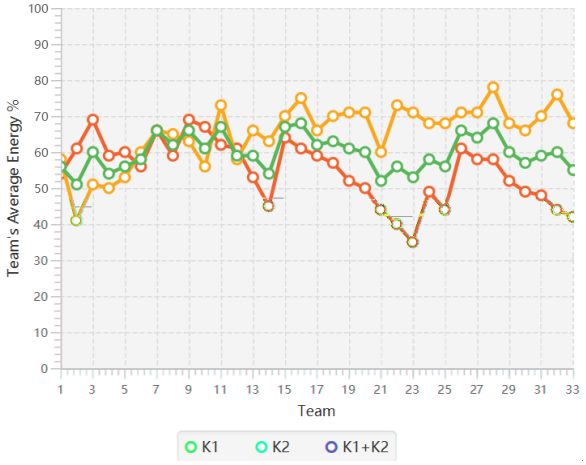
3.4. Presentation of Commendable Features

- Feature 1: Clustering & Greedy assign.
- Feature 2: Pairwise adjustments to lower down average K1 and K2 variance between each team.
- Feature 3: Pairwise adjustments to evenly distribute “K3_tick” within a specific change in variance.
- Feature 4: Pairwise adjustments to evenly distribure “my_preference”within a specific change in variance.

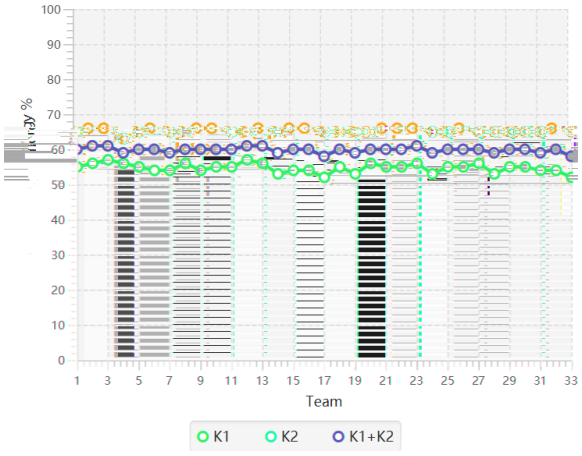
- Absence Comparasion

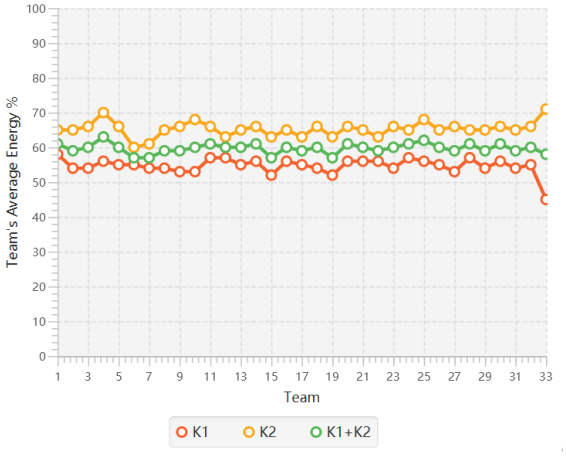
A) Feature 1,2,3,4 / Naive sort



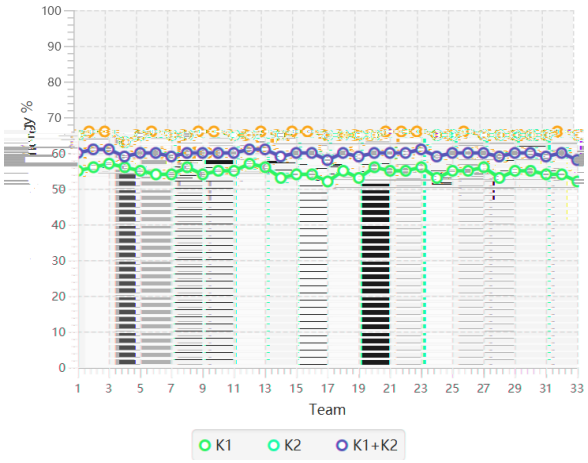


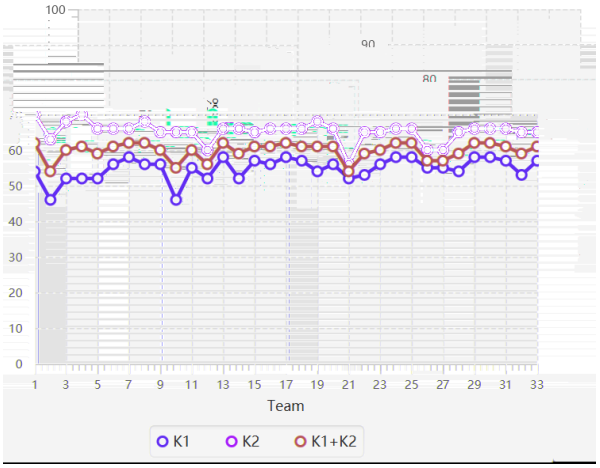
B) With/Without Feature 1





C) With/Without Feature 2





D) With/Without Feature 3

Row_Index	Student_ID	Student_Name	Student_Email	K1_Energy	k2_Energy	K3_Tick1	K3_Tick2	My_Preference	Concerns	Team
86	20665944	PATTIPAN, Macaronie	MacaroniePAT@connect.ust.hk	53	50	1	0	0	No concerns	29
87	20419591	THYME, Hermesus	HermesusTHY@connect.ust.hk	67	85	0	0	0	No concerns	29
88	20136565	CUMINPOWD, Addax	AddaxCUM@connect.ust.hk	47	60	1	1	1	No concerns	29
89	20283263	ANGELICA, Cat	CatANG@connect.ust.hk	60	50	0	0	0	No concerns	30
90	20879263	JASMINE, Emily	EmilyJAS@connect.ust.hk	45	60	0	0	0	No concerns	30
91	20468854	LEEKS, Akita	AkitaLEE@connect.ust.hk	61	85	0	0	0	No concerns	30

86	20283263	ANGELICA, Cat	CatANG@connect.ust.hk	60	50	0	0	0	No concerns	29
87	20419591	THYME, Hermesus	HermesusTHY@connect.ust.hk	67	85	0	0	0	No concerns	29
88	20136565	CUMINPOWD, Addax	AddaxCUM@connect.ust.hk	47	60	1	1	1	No concerns	29
89	20665944	PATTIPAN, Macaronie	MacaroniePAT@connect.ust.hk	53	50	1	0	0	No concerns	30
90	20879263	JASMINE, Emily	EmilyJAS@connect.ust.hk	45	60	0	0	0	No concerns	30
91	20468854	LEEKS, Akita	AkitaLEE@connect.ust.hk	61	85	0	0	0	No concerns	30

E) With/Without Feature 4

Row_Index	Student_ID	Student_Name	Student_Email	K1_Energy	k2_Energy	K3_Tick1	K3_Tick2	My_Preference	Concerns	Team
38	20912449	HOREBOUND, Philis	PhilisHOR@connect.ust.hk	75	70	0	0	1	No concerns	13
39	20319288	CILANTRO, Ares	AresCIL@connect.ust.hk	61	75	0	0	0	No concerns	13
40	20972736	PERUVIAN, Florestina	FlorestinaPER@connect.ust.hk	33	55	0	1	1	No concerns	13
41	20563934	ALLSPICE, Beta	BetaALL@connect.ust.hk	18	80	0	0	0	No concerns	14
42	20987847	JICAMA, Rinchenia	RincheniaJIC@connect.ust.hk	85	70	0	0	0	No concerns	14
43	20097861	CHICORY, Iguanodon	IguanodonCHI@connect.ust.hk	58	45	0	0	0	No concerns	14
44	20558464	BAYLEAF, Civet	CivetBAY@connect.ust.hk	25	75	0	0	0	No concerns	15
45	20399150	POPPY, Malasaura	MalasauraPOP@connect.ust.hk	61	55	0	0	0	No concerns	15
46	20746350	SUNFLOWER, Giganotosaurus	GiganotosaurusSUN@connect.ust.hk	77	70	0	0	0	No concerns	15

38	20746350	SUNFLOWER, Giganotosaurus	GiganotosaurusSUN@connect.ust.hk	77	70	0	0	0	No concerns	13
39	20319288	CILANTRO, Ares	AresCIL@connect.ust.hk	61	75	0	0	0	No concerns	13
40	20972736	PERUVIAN, Florestina	FlorestinaPER@connect.ust.hk	33	55	0	1	1	No concerns	13
41	20563934	ALLSPICE, Beta	BetaALL@connect.ust.hk	18	80	0	0	0	No concerns	14
42	20987847	JICAMA, Rinchenia	RincheniaJIC@connect.ust.hk	85	70	0	0	0	No concerns	14
43	20097861	CHICORY, Iguanodon	IguanodonCHI@connect.ust.hk	58	45	0	0	0	No concerns	14
44	20558464	BAYLEAF, Civet	CivetBAY@connect.ust.hk	25	75	0	0	0	No concerns	15
45	20399150	POPPY, Malasaura	MalasauraPOP@connect.ust.hk	61	55	0	0	0	No concerns	15
46	20912449	HOREBOUND, Philis	PhilisHOR@connect.ust.hk	75	70	0	0	1	No concerns	15

PART 4: JavaDoc Documentation

package ATU

	This class contains methods for manipulating an Person type ObservableList.
	Main controller for JavaFX UI components
	GroupingInfo: stores the grouping information needed when a students inquires
	InputHandler: load input and generate statistics.
	The InquiryHandler class handles inquiries from students, and it takes studentID or student name as a key, and outputs his/her grouping information
	Main class initiate the whole program.
	Person: store a single student's private info.
	The ReportHandle class handles the call to produce a report
	Statistics: store a single statistics' entry and value.
	Team: store a team's info.
	UI container to create and set the scene for main UI

Package

Class ATUEngine

```
public class ATUEngine
extends Object
```

This class contains methods for manipulating an Person type ObservableList. This class teams up the Person type objects in ObservableList by setting the groupNumber attribute through Person::setGroupNumber method.

The team up pro 1 aw st s m Uw s amr m M

		Person::k2energy among groups should be close to the possible minimum value. (3) The distribution of "1" in Person::k3tick1 and Person::k3tick2 should be even. (4) The distribution of "1" in Person::myPefernce should be even. This method gives a final grouping result.
void	autoTeamUp()	The caller function of a sequence of functions to manipulate ATUEgine::person_data.
void	clusterRest(HashMap<String, Integer> studentid_to_Cluster)	Clustering the remaining Points to the 2nd and 3rd cluster, so that the 3rd Cluster has low intra-cluster L2 distances (i.e., the 3rd cluster have Points close to the mean).
void	display(int type, String message)	Prompt window showing error, warning, or notice message.
void	greedyAssign(ArrayList<ATU.ATUEngine.Point> groupList, int cluster, ATU.ATUEngine.Point original_mean, ATU.ATUEngine.Point target_mean, HashMap<String, Integer> studentid_to_Cluster)	Greedily assign Person in designated Cluster to each groups so that the resulted sum of K1, K2 energy is close to target_mean. Group further from original_mean will be assigned first.
boolean	launch()	The interface for starting the Automatic Teaming Up process.
boolean	tryAndSwap(Person p1, Person p2, float loss_tolerance, ArrayList<ATU.ATUEngine.Point> groupList)	Swap 2 person from their groups if after swapping, the change of the sum of K1, K2 variance is under the specific loss_tolerance.

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Details

ATUEngine

public ATUEngine(javafx.collections.ObservableList<Person> person_data)

Construct ATUEngine object and pass the ObservableList it needs to manipulate.

Parameters:

`person_data` - an Person type ObservableList that needs to be manipulate.

Method Details

launch

```
public  boolean  launch()
```

The interface for starting the Automatic Teaming Up process. Person objects in the ObservableList will be manipulated upon calling this method.

Returns:

True if the manipulation is successful, else false.

display

```
public  void  display(int  type,
                      String  message)
```

Prompt window showing error, warning, or notice message.

Parameters:

`type` - Message type. 0 for Error, 1 for Warning, 2 for notice

`message` - A string that describes the message to be shown in the prompt window.

clusterRest

```
public  void  clusterRest(HashMap<String, Integer>  studentid_to_Cluster)
```

Clustering the remaining Points to the 2nd and 3rd cluster, so that the 3rd Cluster has low intra-cluster L2 distances (i.e., the 3rd cluster have Points close to the mean).
Centroid Clustering is applied to the remaining Points.

Parameters:

`studentid_to_Cluster` - A hashMap maps student_id to the Cluster he/she belongs to.

greedyAssign

```
public  void  greedyAssign(ArrayList<ATU.ATUEngine.Point>  groupList,
                           int  cluster,
                           ATU.ATUEngine.Point  original_mean,
                           ATU.ATUEngine.Point  target_mean,
                           HashMap<String, Integer>  studentid_to_Cluster)
```

Greedily assign Person in designated Cluster to each groups so that the resulted sum of K1, K2 energy is close to target_mean.
Group further from original_mean will be assigned first.

Parameters:

`groupList` - Array of Points indicate the Group's (K1, K2) position,

`cluster` - Cluster number of the designated Cluster.

`original_mean` - Average (K1, K2) point of Groups before the assignment of Person.

`target_mean` - Average (K1, K2) point of Groups after the assignment of Person.

`studentid_to_Cluster` - A hashMap maps student_id to the Cluster he/she belongs to.

autoTeamUp

```
public  void  autoTeamUp()
```

The caller function of a sequence of functions to manipulate ATUEgine::person_data. After this, all Person in ATUEngine::person_data should be assigned to a group.
This method gives a preliminary grouping result.

tryAndSwap

```
public  boolean  tryAndSwap(Person  p1,
                            Person  p2,
                            float  loss_tolerance,
                            ArrayList<ATU.ATUEngine.Point>  groupList)
```

Swap 2 person from their groups if after swapping, the change of the sum of K1, K2 variance is under the specific loss_tolerance.

Parameters:

`p1` - Person 1.

`p2` - Person 2.

`loss_tolerance` - The specific tolerance.

`groupList` - Array of points indicating current groups's (K1, K2).

Returns:

True if swap is performed, else false.

adjust

```
public  void  adjust()
```

Adjust the team assignment so that:
When (1) Each team has at least one member with Person::k1energy greater or equals to the average K1_energy over the entire ObservableList.
(2) The sum of variance of average Person::k1energy and Person::k2energy among groups should be close to the possible minimum value.

(3) The distribution of "1" in Person::k3tick1 and Person::k3tick2 should be even.
(4) The distribution of "1" in Person::myPefernce should be even.
This method gives a final grouping result.

Package ATU

Class Controller

java.lang.Object
ATU.Controller

public Controller
extends Object

Author:

Constructor Summary

Constructors

Constructor	Description
Controller()	

Method Summary

All Methods	Instance Methods	Concrete Methods

Modifier	Method	Description
void	initialize()	
void	inputPressed(javafx.event.Acti	
void	inquiryPressed(javafx.event.Acti	
void	processPressed(javafx.event.Acti	

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Controller Details

Controller

SXEOLFÔ&RQWUROOHU

0HWKRG 'HWDLOV

LQLWLDOL]H

SXEOLFÔYRLGÔLQLWLDOL]H

6HW LQLWLDO VWDWHV RI 8, FRPSRQHQWV

LQSXW3UHVVHG

SXEOLFÔYRLGÔLQSXW3UHVVHG MDYDI[HYHQW $FWLRQ(YHQWÔHYHQ

:KHQ /RDG EXWWRQ LV SUHVVHG LQLWLDWH ,QSXW+DQGOHU WR U

3DUDPHWHUV

HYHQW WKH %XWWRQ3UHVV HYHQW RFFXUUHG

SURFHVV3UHVVHG

SXEOLFÔYRLGÔSURFHVV3UHVVHG MDYDI[HYHQW $FWLRQ(YHQWÔHY

:KHQ (QJLQH EXWWRQ LV SUHVVHG LQLWLDWH $78(QJLQH WR SUR

3DUDPHWHUV

HYHQW WKH %XWWRQ3UHVV HYHQW RFFXUUHG

LQTXLU\3UHVVHG

SXEOLFÔYRLGÔLQTXLU\3UHVVHG MDYDI[HYHQW $FWLRQ(YHQWÔHYH

:KHQ ,QTXLU\ EXWWRQ LV SUHVVHG LQLWLDWH ,QTXLU\+DQGOHU

3DUDPHWHUV

HYHQW WKH %XWWRQ3UHVV HYHQW RFFXUUHG

&ODVV *URXSLQJ,QIR

MDYD ODQJ 2EMHFW
$78 *URXSLQJ,QIR

SXEOLF ILQDO FODVV *URXSLQJ,QIR
H[WHQGV 2EMHFW

*URXSLQJ,QIR VWRUHV WKH JURXSLQJ LQIRUPDWLRQ QHHGHG ZKHQ D

$XWKRU
<DQJ <XDQJ

&RQVWUXFWRU 6XPPDU\

&RQVWUXFWRUV

&RQVWUXFWRU	'HVFULSWLRQ
*URXSLQJ,QIR6WULQJ6WULQJ6WULQJ6WULQJ	&RQVWUXFWV WKH FRQVWUXFWRU IRU *UR
6WULQJ6WULQJ6WULQJ6WULQJ	
ÔWHDPPDWHÔ6WULQJ6WULQJ6WULQJ6WULQJ $YJ6WUI	
ÔN $YJ	

0HWKRG 6XPPDU\

$OO 0HWKRGV ,QVWDQFH 0HWKRGV &RQFUHWH 0HWKRGV

0RGLILHU D 0HWKRG	'HVFULSWLRQ
LQW JHW,QWHJHU. $YJ	KHOSHU IXQFWLRQ WKH JHW WKH DY LQ WKH WHDP DV DQ LQWHJHU
LQW JHW,QWHJHU7HDP	KHOSHU IXQFWLRQ WR DFFHVV WKH LQWHJHU IRUP
6WULQJ JHW. $YJ	KHOSHU IXQFWLRQ WKH JHW WKH DY LQ WKH WHDP
6WULQJ JHW. $YJ	KHOSHU IXQFWLRQ WKH JHW WKH DY LQ WKH WHDP
6WULQJ JHW0\1DPH	KHOSHU IXQFWLRQ WR DFFHVV WKH
6WULQJ JHW6WXGHQW,'	KHOSHU IXQFWLRQ WR DFFHVV WKH
6WULQJ JHW7HDPPDWH	KHOSHU IXQFWLRQ WR JHW WKH QDF PDWH
6WULQJ JHW7HDPPDWH	KHOSHU IXQFWLRQ WR JHW WKH QDF

		ma
String	getTeammate3()	helper function to get the mate
String	getTeamNo()	helper function to access t
void	setK1Avg(String val)	helper function to set the
void	setK2Avg(String val)	helper function to set the
void	setMyName(String val)	helper function to set the
void	setStudentId(String val)	helper function to set the
void	setTeamName(String val)	helper function to set the
void	setTeammate2(String val)	helper function to set the name
void	setTeammate3(String val)	helper function to set the name
void	setTeamNo(String val)	helper function to set the

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Details

GroupingInfo

```
public GroupingInfo(String student_id,
                    String my_name,
                    String team_no,
                    String teammate1,
                    String teammate2,
                    String teammate3,
                    String k1Avg,
                    String k2Avg)
```

the constructor for Grouping Info

Parameters:

student_id - the student ID of the student making the in

my_name - the name of the student making the inquiry

team_no - the team number of the student's team

teammate1 - the name of the student's first team mate

teammate2 - the name of the student's second team mate

teamma-tet3he name of the student's first team mate (i

k1Av-g the average K1 energy of the student's team

k2Av-g the average K2 energy of the student's team

Method Details

JHW6WXGHQW,'

publ Sc Yfi ngetStudentID()

helper function to access the student's ID

5HWXUQV

string that indicates the student's ID

VHW6WXGHQWLG

publicУvoidУseSttSrfUngvaldid(

helper function to set the student's ID

3DUDPHWHUV

val- a string to set the student's ID to be

JHW0\1DPH

publ Sc Yfi ngetMyName()

helper function to access the student's name

5HWXUQV

string that indicates the student's name

VHW0\1DPH

publicУvoidУSe tMyvNaalme(

helper function to set the student's name

3DUDPHWHUV

val- a string to set the student's name to be

JHW7HDP1R

publ Sc Yfi ngetTeamNo()

helper function to access the team number

Returns
string that indicates the team number

getTeamNo

public int getIntegerTeamNo()

helper function to access the team number in integer

Returns
integer that indicates the team number

setTeamNo

public void setTeamNo(String val)

helper function to set the team number

Parameters
val- string that indicates the team number

getTeammate1

public String getTeammate1()

helper function to get the name of first team mate

Returns
string that indicate the first team mate's name

setTeammate1

public void setTeammate1(String val)

helper function to set the 1st team mate's name

Parameters
val- a string that indicate the first team mate's name

getTeammate2

public String getTeammate2()

helper function to get the name of second team mate

Returns

string that indicate the second team mate's name

VHW7HDPPDWH

public void setTeammate2(String val)

helper function to set the second team mate's name

3DUDPHWHUV

val- a string that indicate the second team mate's n

JHW7HDPPDWH

public String getTeammate3()

helper function to get the name of third team mate

5HWXUQV

string that indicate the third team mate's name

VHW7HDPPDWH

public void setTeammate3(String val)

helper function to set the third team mate's name

3DUDPHWHUV

val- a string that indicate the third team mate's na

JHW. $YJ

public String getK2Avg()

helper function the get the average K2 energy in th

5HWXUQV

a string that indicates the average K2 energy in th

JHW,QWHJHU. $YJ

public int getIntegerK2Avg()

helper function the get the average K2 energy in th

5HWXUQV

an integer that indicates the average K2 energy in

VHW.$YJ

public void setK2Avg(String val)

helper function to set the average K2 energy

3DUDPHWHUV

val- a string that indicates the average K2 energy

JHW.$YJ

public String getK1Avg()

helper function the get the average K1 energy in th

5HWXUQV

a string that indicates the average K1 energy in th

VHW.$YJ

public void setK1Avg(String val)

helper function to set the average K1 energy

3DUDPHWHUV

val- a string that indicates the average K1 energy

Package ATU

Class InputHandler

java.lang.Object
    ATU.InputHandler

```
public class InputHandler
extends Object
```

InputHandler: load input and generate statistics.

Author:

SHU Tian

Nested Class Summary

Nested Classes

Modifier and Type	Class	Description
class	InputHandler.RowIndexCellFactory<S, T>	Helper class for creating row index.

Method Summary

All Methods | **Instance Methods** | **Concrete Methods**

Modifier and Type	Method	Description
void	display_error(int type)	Prompt window showing error message
void	display_results(String path)	Display tables of student info and statistics
void	generate_statistics()	Calculate statistics and store in stat_data
javafx.collections.Observab	getPersondata()	Helper function to return students' info
javafx.collections.Observab	getStatdata()	Helper function to return students' statistics
boolean	launch(File file)	Read CSV and generate statistics
boolean	load_input(File file)	Read CSV file into person_data
boolean	validate_data()	Validate data by checking type and range

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Parameters:

`type` - type of the error

launch

`public boolean launch(File file)`

Read CSV and generate statistics

Parameters:

`file` - if not null, then open corresponding file; otherwise, prompt file dialog.

Returns:

a boolean, if file/info is invalid, then False; otherwise, True

getPersondata

`public javafx.collections.ObservableList<Person> getPersondata()`

Helper function to return students' info

Returns:

a ObservableList, person_data

getStatdata

`public javafx.collections.ObservableList<Statistics> getStatdata()`

Helper function to return students' statistics

Returns:

a ObservableList, stat_data

Package ATU

Class InquiryHandler

java.lang.Object
    ATU.InquiryHandler

```
public class InquiryHandler
extends Object
```

The InquiryHandler class handles inquiries from students, and it takes studentID or student name as a key, and outputs his/her grouping information

Since:

2022-11-20

Version:

1.0

Author:

Yang Yuang

Constructors

Constructor	Description
`InquiryHandler (javafx.collections.ObservableList<Person> person, String key)`	This is the constructor for InquiryHandler

All Methods | Instance Methods | Concrete Methods

Modifier and Type	Method	Description
void	`display(String message)`	Prompt window showing error message
void	`display_results()`	Display the grouping results for the inquiry
void	`find_person()`	This method is used to find the single person entry with the key provided, inside the all the student data
void	`find_team_info()`	find all the team information to be included in data output
boolean	`launch()`	Start the Inquiry

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

InquiryHandler

```
public InquiryHandler(javafx.collections.ObservableList<Person> person_data,
                      String key)
```

This is the constructor for InquiryHandler

Parameters:

`person_data` - This is the list of all student data

`key` - This is the key for the inquiry, it can either be a name or student ID

find_person

```
public void find_person()
```

This method is used to find the single person entry with the key provided, inside the all the student data

find_team_info

```
public void find_team_info()
```

find all the team information to be included in data output

launch

```
public boolean launch()
```

Start the Inquiry

Returns:

a boolean, if can find the person and its team info, return true. Otherwise return false.

display

```
public void display(String message)
```

Prompt window showing error message

Parameters:

`message` - the message to be shown on the error window

display_results

```
public  void  display_results()
```

Display the grouping results for the inquiry

Package ATU

Class Library

java.lang.Object
    ATU.Library

```
public class Library
extends Object
```

Main class initiate the whole program.

Constructor Summary

Constructors

Constructor	Description
Library()	

Method Summary

All Methods | **Static Methods** | **Concrete Methods**

Modifier and Type	Method	Description
static void	main(String[] args)	Initiate UIApplication and start the program

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Details

Library

```
public Library()
```

Method Details

main

```
public static void main(String[] args)
```

Initiate UIApplication and start the program

Parameters:

`args` - arguments passed by compiler

Package ATU

Class Person

java.lang.Object
    ATU.Person

```
public class Person
extends Object
```

Person: store a single student's private info. All properties are stored with SimpleStringProperty. Helper functions (set/get) expect String parameter/return-value.

Author:

SHU Tian

Constructor Summary

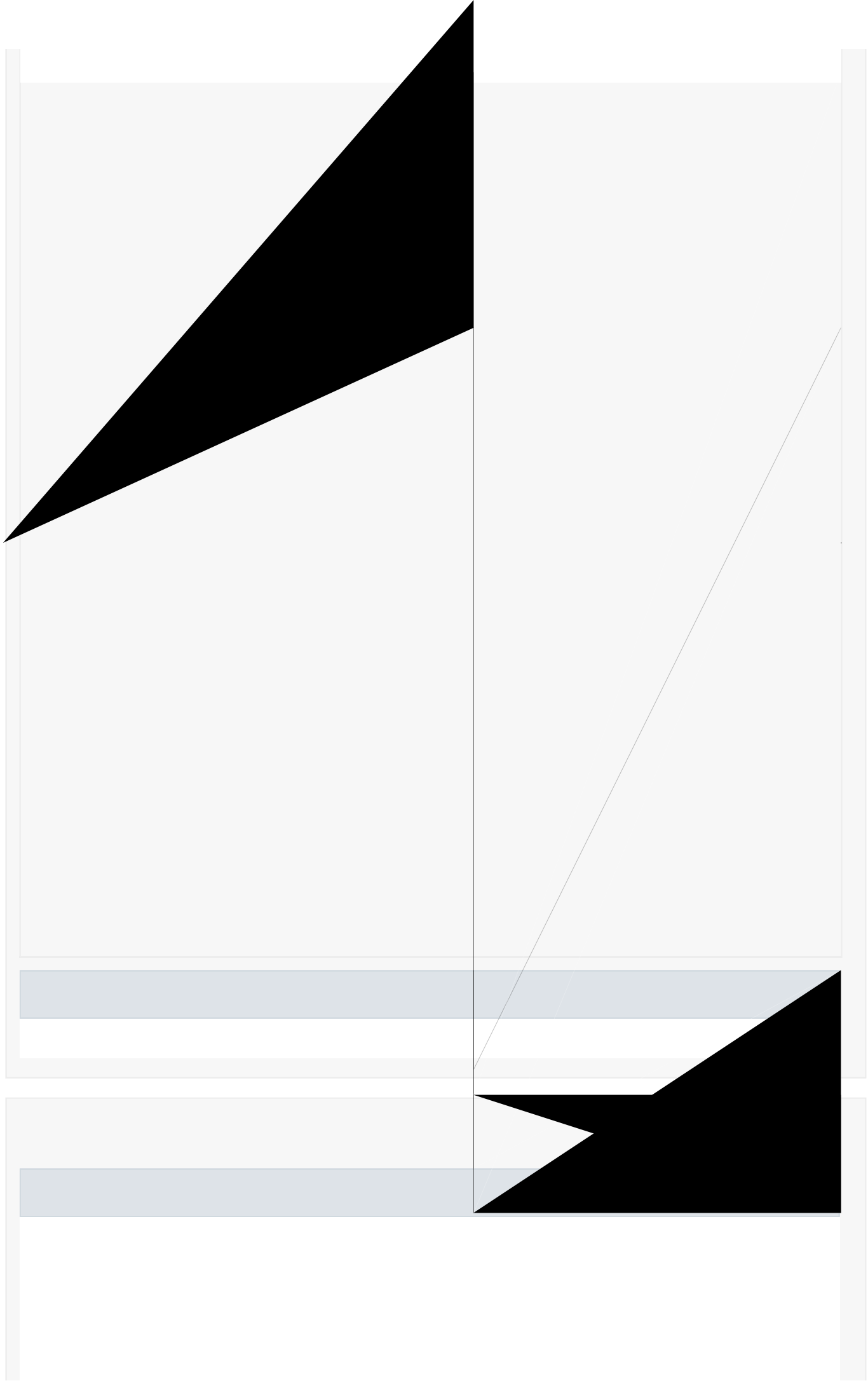
Constructors

Constructor	Description
Person(String student_id, String student_name, String student_email, String k1_energy, String k2_energy, String k3_tick1, String k3_tick2, String my_preference, String concerns)	Construct a new Person object with given attribute values.

Method Summary

All Methods | **Instance Methods** | **Concrete Methods**

Modifier and Type	Method	Description
String	getConcerns()	Helper function to get student's concerns
String	getGroupNumber()	Helper function to get student's group number
int	getIntegerGroupNumber()	Helper function to get student's group number by integer
int	getIntegerK1energy()	Helper function to get student's K1 Energy value by integer
int	getIntegerK2energy()	Helper function to get student's K2 Energy value by integer
String	getK1energy()	Helper function to get student's K1 Energy value
String	getK2energy()	Helper function to get student's K2 Energy



```
public Person(String student_id,
              String student_name,
              String student_email,
              String k1_energy,
              String k2_energy,
              String k3_tick1,
              String k3_tick2,
              String my_preference,
              String concerns)
```

Construct a new Person object with given attribute values.

Parameters:

`student_id` - the student's ID number

`student_name` - the student's name

`student_email` - the student's email

`k1_energy` - the student's K1 Energy value

`k2_energy` - the student's K2 Energy value

`k3_tick1` - 0/1 value, whether "Is Creative" is selected

`k3_tick2` - 0/1 value, whether "Willing more workloads" is selected

`my_preference` - 0/1 value, whether "Wanna be project leader" is selected

`concerns` - any student's comment

Method Details

getStudentid

```
public String getStudentid()
```

Helper function to get student ID

Returns:

a string indicating student ID

setStudentid

```
public void setStudentid(String val)
```

Helper function to set new student ID

Parameters:

`val` - a string of the new student ID

getStudentname

`public String getStudentname()`

Helper function to get student name

Returns:

a string indicating student name

setStudentname

`public void setStudentname(String val)`

Helper function to set new student name

Parameters:

`val` - a string of the new student name

getStudentemail

`public String getStudentemail()`

Helper function to get student's email

Returns:

a string indicating student's email

setStudentemail

`public void setStudentemail(String val)`

Helper function to set new email

Parameters:

`val` - a string of the new email

getK1energy

`public String getK1energy()`

Helper function to get student's K1 Energy value

Returns:

a string indicating student's K1 Energy value

getIntegerK1energy

`public int getIntegerK1energy()`

Helper function to get student's K1 Energy value by integer

Returns:

an integer indicating student's K1 Energy value

setK1energy

`public void setK1energy(String val)`

Helper function to set new K1 Energy value

Parameters:

`val` - a string of the new K1 Energy value

getK2energy

`public String getK2energy()`

Helper function to get student's K2 Energy value

Returns:

a string indicating student's K2 Energy value

getIntegerK2energy

`public int getIntegerK2energy()`

Helper function to get student's K2 Energy value by integer

Returns:

an integer indicating student's K2 Energy value

setK2energy

`public void setK2energy(String val)`

Helper function to set new K2 Energy value

Parameters:

`val` - a string of the new K2 Energy value

getK3tick1

`public String getK3tick1()`

Helper function to get student's K3 Tick1 value

Returns:

a string indicating student's K3 Tick1 value

setK3tick1

`public void setK3tick1(String val)`

Helper function to set new K3 Tick1 value

Parameters:

`val` - a string of the new K3 Tick1 value

getK3tick2

`public String getK3tick2()`

Helper function to get student's K3 Tick2 value

Returns:

a string indicating student's K3 Tick2 value

setK3tick2

`public void setK3tick2(String val)`

Helper function to set new K3 Tick2 value

Parameters:

`val` - a string of the new K3 Tick2 value

getMypreference

`public String getMypreference()`

Helper function to get student's My Preference value

Returns:

a string indicating student's My Preference value

setMypreference

`public void setMypreference(String val)`

Helper function to set new My Preference value

Parameters:

`val` - a string of the new My Preference value

getConcerns

`public String getConcerns()`

Helper function to get student's concerns

Returns:

a string indicating student's concerns

setConcerns

`public void setConcerns(String val)`

Helper function to set student's new concerns

Parameters:

`val` - a string of the student's new concerns

getGroupNumber

`public String getGroupNumber()`

Helper function to get student's group number

Returns:

a string indicating student's group number. If no group is assigned yet, return "N/A".

getIntegerGroupNumber

`public int getIntegerGroupNumber()`

Helper function to get student's group number by integer

Returns:

an integer indicating student's group number If no group is assigned yet, return -1.

setGroupNumber

`public void setGroupNumber(String val)`

Helper function to set student's group number

Parameters:

`val` - a string of the student's group number

Package ATU

Class ReportHandler

java.lang.Object
    ATU.ReportHandler

```
public class ReportHandler
extends Object
```

The ReportHandle class handles the call to produce a report

Since:

2022-11-20

Version:

1.0

Author:

Yang Yuang

Constructor Summary

Constructors

Constructor	Description
`ReportHandler (javafx.collections.ObservableList<Person> person_data)`	Constructor, get person data list

Method Summary

All Methods | **Instance Methods** | **Concrete Methods**

Modifier and Type	Method	Description
void	`CalculateTeamsInfo()`	construct all the teams and their information
void	`DisplayReport()`	generate and display report on each team's average energy
void	`hideReport()`	Helper function to hide report stage
boolean	`launch()`	launch the report handler

Methods inherited from class java.lang.Object

`equals`, `getClass`, `hashCode`, `notify`, `notifyAll`, `toString`, `wait`, `wait`, `wait`

Constructor Details

ReportHandler

```
public ReportHandler(javafx.collections.ObservableList<Person> person_data)
```

Constructor, get person data list

Parameters:

`person_data` - the list of all student data

Method Details

CalculateTeamsInfo

```
public void CalculateTeamsInfo()
```

construct all the teams and their information

DisplayReport

```
public void DisplayReport()
```

generate and display report on each team's average energy

hideReport

```
public void hideReport()
```

Helper function to hide report stage

launch

```
public boolean launch()
```

launch the report handler

Returns:

a boolean, always true when the run is successful

bd b ATU

D b T b d

java.lang.Object
ATU.Statistics

((Statistics
(

Statistics: store a single statistics' entry and value. Entry and value are stored with SimpleStringProperty. Helper functions (set/get) expect String parameter/return-value.

[redacted]

SHU Tian

Constructor Summary

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D d	E d
Statistics String (String	Construct a new Statistics object with given attribute values.

Method Summary

[redacted] | b d | D d

b	[redacted]	E d
String	getEntry	Helper function to get entry name
String	getValue	Helper function to get entry value
	setEntry String	Helper function to set new entry name
	setValue String	Helper function to set new entry value

[redacted] [redacted] d b b b b Pc d

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Constructor Details

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Construct a new Statistics object with given attribute values.

b b

- the name of the entry

- the value of the entry

Method Details

Helper function to get entry name

S

a string indicating the entry name

Helper function to set new entry name

b b

- a string of the new entry name

b

Helper function to get entry value

S

a string indicating the entry value

b

Helper function to set new entry value

b b

- a string of the new entry value

Package ATU

Class Team

java.lang.Object
    ATU.Team

```
public class Team
extends Object
```

Team: store a team's info.

Author:

Yang Yuang

Constructor Summary

Constructors

Constructor	Description
`Team(int group_number)`	Construct a new Team object with given group number.

Method Summary

All Methods | **Instance Methods** | **Concrete Methods**

Modifier and Type	Method	Description
void	`calculateTeamInfo()`	helper function to calculate final group information
int	`getEnergyAvg()`	Helper function to access average K1 and K2 energy
int	`getGroupNumber()`	Helper function to access group number
int	`getk1Avg()`	Helper function to access average K1 energy
int	`getk2Avg()`	Helper function to access average K2 energy
int	`getNumMembers()`	Helper function to access the number of members within the group
void	`setk1Avg(int val)`	Helper function to modify average K1 energy
void	`setk2Avg(int val)`	Helper function to modify average K2 energy
void	`setNumMembers(int val)`	Helper function to modify the number of members within a group

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Details

Team

public Team(int group_number)

Construct a new Team object with given group number.

Parameters:

group_number - the index number of the group

Method Details

calculateTeamInfo

public void calculateTeamInfo()

helper function to calculate final group information

getGroupNumber

public int getGroupNumber()

Helper function to access group number

Returns:

an integer indicating group number

getEnergyAvg

public int getEnergyAvg()

Helper function to access average K1 and K2 energy

Returns:

an integer indicating the the average value of energy of the team

getk1Avg

public int getk1Avg()

Helper function to access average K1 energy

Returns:

an integer indicating average K1 energy

setk1Avg

`public void setk1Avg(int val)`

Helper function to modify average K1 energy

Parameters:

`val` - the value to set k1Avg to be

getk2Avg

`public int getk2Avg()`

Helper function to access average K2 energy

Returns:

an integer indicating average K2 energy

setk2Avg

`public void setk2Avg(int val)`

Helper function to modify average K2 energy

Parameters:

`val` - the value to set k2Avg to be

getNumMembers

`public int getNumMembers()`

Helper function to access the number of members within the group

Returns:

an integer indicating number of members within the group

setNumMembers

`public void setNumMembers(int val)`

Helper function to modify the number of members within a group

Parameters:

`val` - the value to set the number of members to be

Package ATU

Class UIApplication

java.lang.Object
    javafx.application.Application
        ATU.UIApplication

```
public class UIApplication
extends javafx.application.Application
```

UI container to create and set the scene for main UI

Author:

SHU Tian

Nested Class Summary

Nested classes/interfaces inherited from class javafx.application.Application

`javafx.application.Application.Parameters`

Field Summary

Fields inherited from class javafx.application.Application

`STYLESHEET_CASPIAN, STYLESHEET_MODENA`

Constructor Summary

Constructors

Constructor	Description
`UIApplication()`	

Method Summary

All Methods | **Static Methods** | **Instance Methods** | **Concrete Methods**

Modifier and Type	Method	Description
`static void`	`run(String[] arg)`	Launch the main stage and run UI components
`void`	`start(javafx.stage.Stage stage)`	Override start method in JavaFX

Application to create scene on main stage

Methods inherited from class javafx.application.Application

getHostServices, getParameters, getUserAgentStylesheet, init, launch, launch, notifyPreloader, setUserAgentStylesheet, stop

Methods inherited from class java.lang.Object

equals, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Details

UIApplication

public UIApplication()

Method Details

start

public void start(javafx.stage.Stage stage)
throws Exception

Override start method in JavaFX Application to create scene on main stage

Specified by:

start in class javafx.application.Application

Throws:

Exception

run

public static void run(String[] arg)

Launch the main stage and run UI components

Parameters:

arg - arguments passed by compiler