Package ATU

```
package ATU
```

Classes

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

Package ATU

Class ATUEngine

java.lang.Object
    ATU.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 process follows the following priorities:
(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.

Author:

ZHANG Juntao

See Also:

`Person`, `ObservableList`

Constructor Summary

Constructors

Constructor	Description
`ATUEngine (javafx.collections.ObservableList<Person> ¦`	Construct ATUEngine object and pass the ObservableList it needs to manipulate.

Method Summary

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

Modifier and Type	Method	Description
`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.
`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 class Controller
extends Object
```

Main controller for JavaFX UI components

Author:

SHU Tian

Constructor Summary

Constructors

Constructor	Description
`Controller()`	

Method Summary

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

Modifier and Type	Method	Description
`void`	`initialize()`	Set initial states of UI components
`void`	`inputPressed(javafx.event.ActionEvent event)`	When "Load" button is pressed, initiate InputHandler to read file
`void`	`inquiryPressed(javafx.event.ActionEvent event)`	When "Inquiry" button is pressed, initiate InquiryHandler to handle query
`void`	`processPressed(javafx.event.ActionEvent event)`	When "Engine" button is pressed, initiate ATUEngine to process

Methods inherited from class java.lang.Object

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

Constructor Details

Controller

```
public Controller()
```

Method Details

initialize

```
public void initialize()
```

Set initial states of UI components

inputPressed

```
public void inputPressed(javafx.event.ActionEvent event)
```

When "Load" button is pressed, initiate InputHandler to read file

Parameters:

`event` - the ButtonPress event occurred

processPressed

```
public void processPressed(javafx.event.ActionEvent event)
```

When "Engine" button is pressed, initiate ATUEngine to process

Parameters:

`event` - the ButtonPress event occurred

inquiryPressed

```
public void inquiryPressed(javafx.event.ActionEvent event)
```

When "Inquiry" button is pressed, initiate InquiryHandler to handle query

Parameters:

`event` - the ButtonPress event occurred

Package ATU

Class GroupingInfo

java.lang.Object
    ATU.GroupingInfo

```
public class GroupingInfo
extends Object
```

GroupingInfo: stores the grouping information needed when a students inquires

Author:

Yang Yuang

Constructor Summary

Constructors

Constructor	Description
`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

Method Summary

All Methods | Instance Methods | Concrete Methods

Modifier and Type	Method	Description
`int`	`getIntegerK2Avg()`	helper function the get the average K2 energy in the team as an integer
`int`	`getIntegerTeamNo()`	helper function to access the team number in integer form
`String`	`getK1Avg()`	helper function the get the average K1 energy in the team
`String`	`getK2Avg()`	helper function the get the average K2 energy in the team
`String`	`getMyName()`	helper function to access the student's name
`String`	`getStudentID()`	helper function to access the student's ID
`String`	`getTeammate1()`	helper function to get the name of first team mate
`String`	`getTeammate2()`	helper function to get the name of second team

		mate
String	getTeammate3()	helper function to get the name of third team mate
String	getTeamNo()	helper function to access the team number
void	setK1Avg(String val)	helper function to set the average K1 energy
void	setK2Avg(String val)	helper function to set the average K2 energy
void	setMyName(String val)	helper function to set the student's name
void	setStudentid(String val)	helper function to set the student's ID
void	setTeammate1(String val)	helper function to set the 1st team mate's name
void	setTeammate2(String val)	helper function to set the second team mate's name
void	setTeammate3(String val)	helper function to set the third team mate's name
void	setTeamNo(String val)	helper function to set the team number

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 inquiry

`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 `teammate3` - the name of the student's first team mate (if exists)

`k1Avg` - the average K1 energy of the student's team

`k2Avg` - the average K2 energy of the student's team

Method Details

getStudentID

```
public String getStudentID()
```

helper function to access the student's ID

Returns:

string that indicates the student's ID

setStudentid

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

helper function to set the student's ID

Parameters:

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

getMyName

```
public String getMyName()
```

helper function to access the student's name

Returns:

string that indicates the student's name

setMyName

```
public void setMyName(String val)
```

helper function to set the student's name

Parameters:

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

getTeamNo

```
public String getTeamNo()
```

helper function to access the team number

Returns:

string that indicates the team number

getIntegerTeamNo

```
public  int  getIntegerTeamNo()
```

helper function to access the team number in integer form

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 to be

getTeammate2

```
public  String  getTeammate2()
```

helper function to get the name of second team mate

Returns:

string that indicate the second team mate's name

setTeammate2

```
public void setTeammate2(String val)
```

helper function to set the second team mate's name

Parameters:

`val` - a string that indicate the second team mate's name to be

getTeammate3

```
public String getTeammate3()
```

helper function to get the name of third team mate

Returns:

string that indicate the third team mate's name

setTeammate3

```
public void setTeammate3(String val)
```

helper function to set the third team mate's name

Parameters:

`val` - a string that indicate the third team mate's name to be

getK2Avg

```
public String getK2Avg()
```

helper function the get the average K2 energy in the team

Returns:

a string that indicates the average K2 energy in the team

getIntegerK2Avg

```
public int getIntegerK2Avg()
```

helper function the get the average K2 energy in the team as an integer

Returns:

an integer that indicates the average K2 energy in the team

setK2Avg

```
public void setK2Avg(String val)
```

helper function to set the average K2 energy

Parameters:

`val` - a string that indicates the average K2 energy

getK1Avg

```
public String getK1Avg()
```

helper function the get the average K1 energy in the team

Returns:

a string that indicates the average K1 energy in the team

setK1Avg

```
public void setK1Avg(String val)
```

helper function to set the average K1 energy

Parameters:

`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

Method Details

load_input

```
public boolean load_input(File file)
```

Read CSV file into person_data

Parameters:

`file` - a File object packing the CSV file to be read

Returns:

a boolean, if file is valid then True, otherwise False

validate_data

```
public boolean validate_data()
```

Validate data by checking type and range

Returns:

a boolean, if the data is valid then True, otherwise False

generate_statistics

```
public void generate_statistics()
```

Calculate statistics and store in stat_data

display_results

```
public void display_results(String path)
```

Display tables of student info and statistics

Parameters:

`path` - absolute path of the source CSV file

display_error

```
public void display_error(int type)
```

Prompt window showing error message

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

Constructor Summary

Constructors

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

Method Summary

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`

Constructor Details

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

Method Details

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

		value
String	getK3tick1()	Helper function to get student's K3 Tick1 value
String	getK3tick2()	Helper function to get student's K3 Tick2 value
String	getMypreference()	Helper function to get student's My Preference value
String	getStudentemail()	Helper function to get student's email
String	getStudentid()	Helper function to get student ID
String	getStudentname()	Helper function to get student name
void	setConcerns(String val)	Helper function to set student's new concerns
void	setGroupNumber(String val)	Helper function to set student's group number
void	setK1energy(String val)	Helper function to set new K1 Energy value
void	setK2energy(String val)	Helper function to set new K2 Energy value
void	setK3tick1(String val)	Helper function to set new K3 Tick1 value
void	setK3tick2(String val)	Helper function to set new K3 Tick2 value
void	setMypreference(String val)	Helper function to set new My Preference value
void	setStudentemail(String val)	Helper function to set new email
void	setStudentid(String val)	Helper function to set new student ID
void	setStudentname(String val)	Helper function to set new student name

Methods inherited from class java.lang.Object

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

Constructor Details

Person

```
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

Package ATU

Class Statistics

java.lang.Object
    ATU.Statistics

```
public class Statistics
extends Object
```

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

Author:

SHU Tian

Constructor Summary

Constructors

Constructor	Description
`Statistics(String fName, String lName)`	Construct a new Statistics object with given attribute values.

Method Summary

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

Modifier and Type	Method	Description
`String`	`getEntry()`	Helper function to get entry name
`String`	`getValue()`	Helper function to get entry value
`void`	`setEntry(String val)`	Helper function to set new entry name
`void`	`setValue(String val)`	Helper function to set new entry value

Methods inherited from class java.lang.Object

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

Constructor Details

Statistics

```
public Statistics(String fName,
                  String lName)
```

Construct a new Statistics object with given attribute values.

Parameters:

`fName` - the name of the entry

`lName` - the value of the entry

Method Details

getEntry

```
public String getEntry()
```

Helper function to get entry name

Returns:

a string indicating the entry name

setEntry

```
public void setEntry(String val)
```

Helper function to set new entry name

Parameters:

`val` - a string of the new entry name

getValue

```
public String getValue()
```

Helper function to get entry value

Returns:

a string indicating the entry value

setValue

```
public void setValue(String val)
```

Helper function to set new entry value

Parameters:

`val` - 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