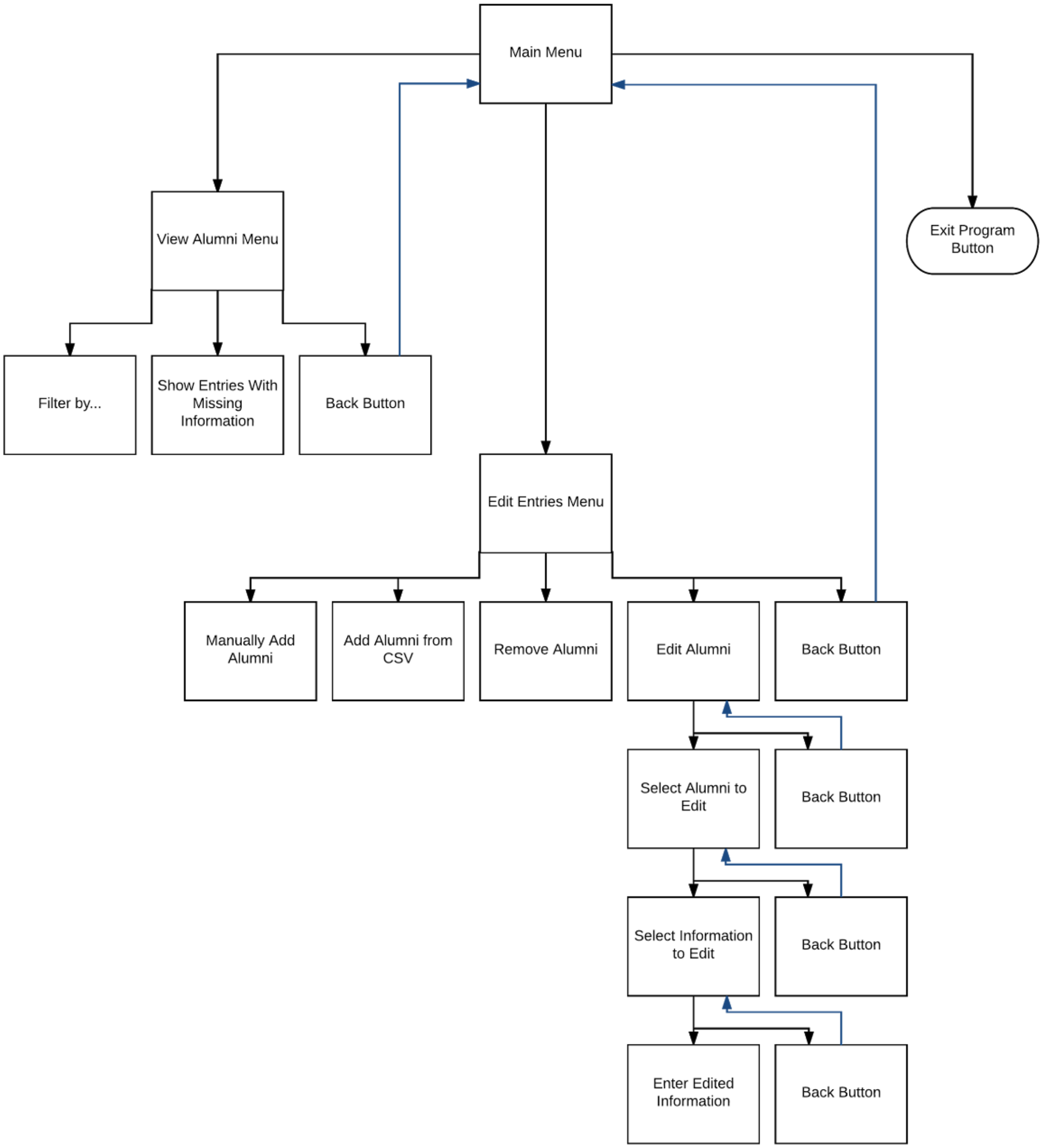
Criterion B: Design

Test Plan

Action to be Tested	Testing Method
Connection to database	Ensure that on startup of application, a connection is established to the database and that it is stable and does not falter during use of the application. Various calls to the database will be made from inside the application to insure that there are no errors with connection.
Editing Database	Ensure that the application can edit entries by attempting to edit each column of the database
Adding to Database	Add various information into the database, including entries that are missing information and ensure the database can correctly enter in null data for missing entries.
Filtering Database	Testing various cases of selecting certain values from the database depending on user input and ensuring that the output is correct
GUI	Traverse the entirety of the application's GUI and ensure that there are no errors in displaying information and that buttons serve the correct function.

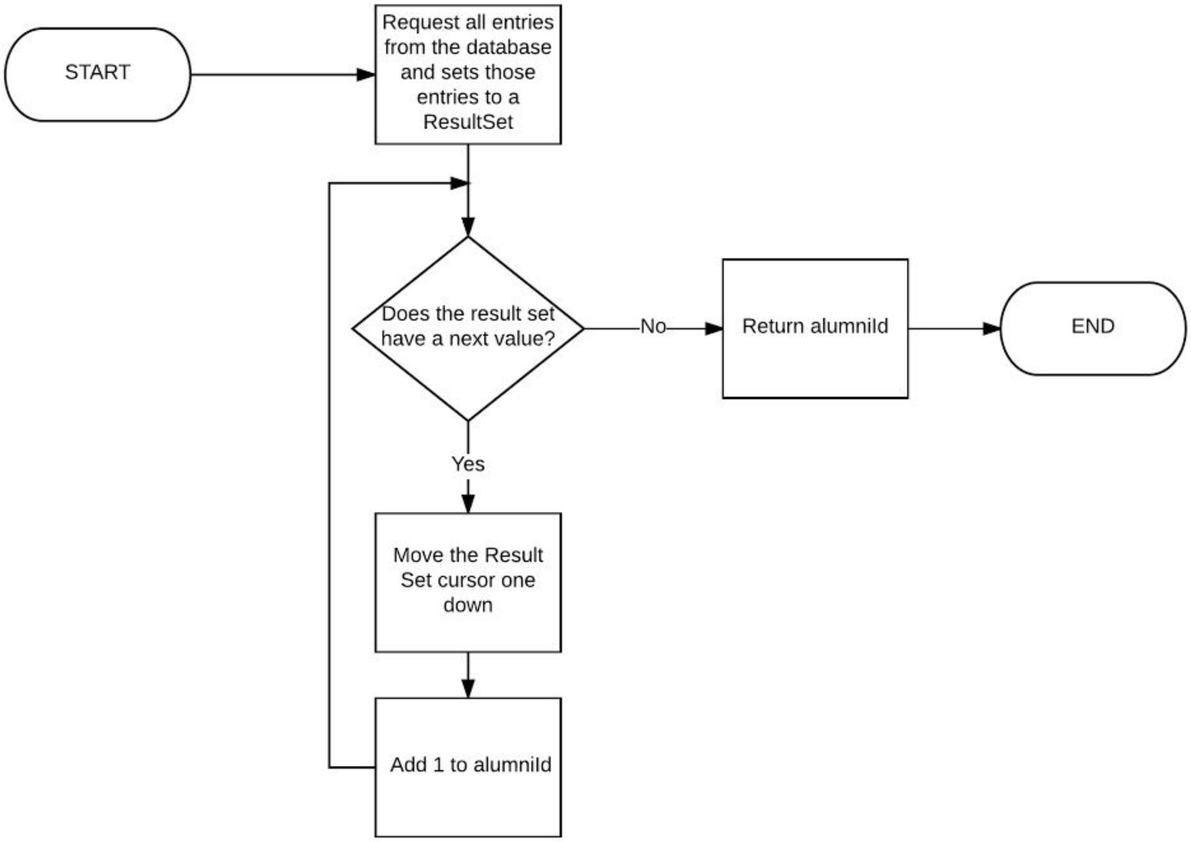
Design Overview:

- **Graphical User Interface Visualization**

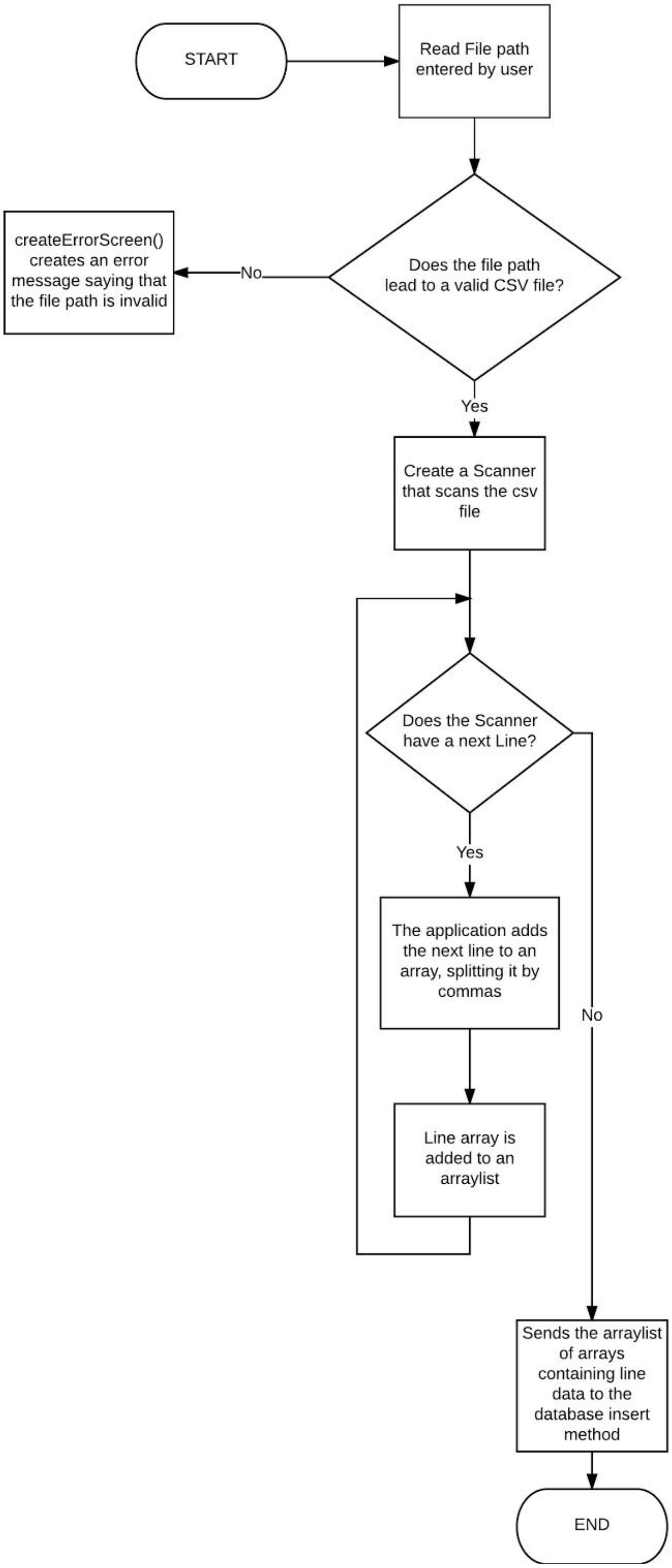


- **Algorithms**

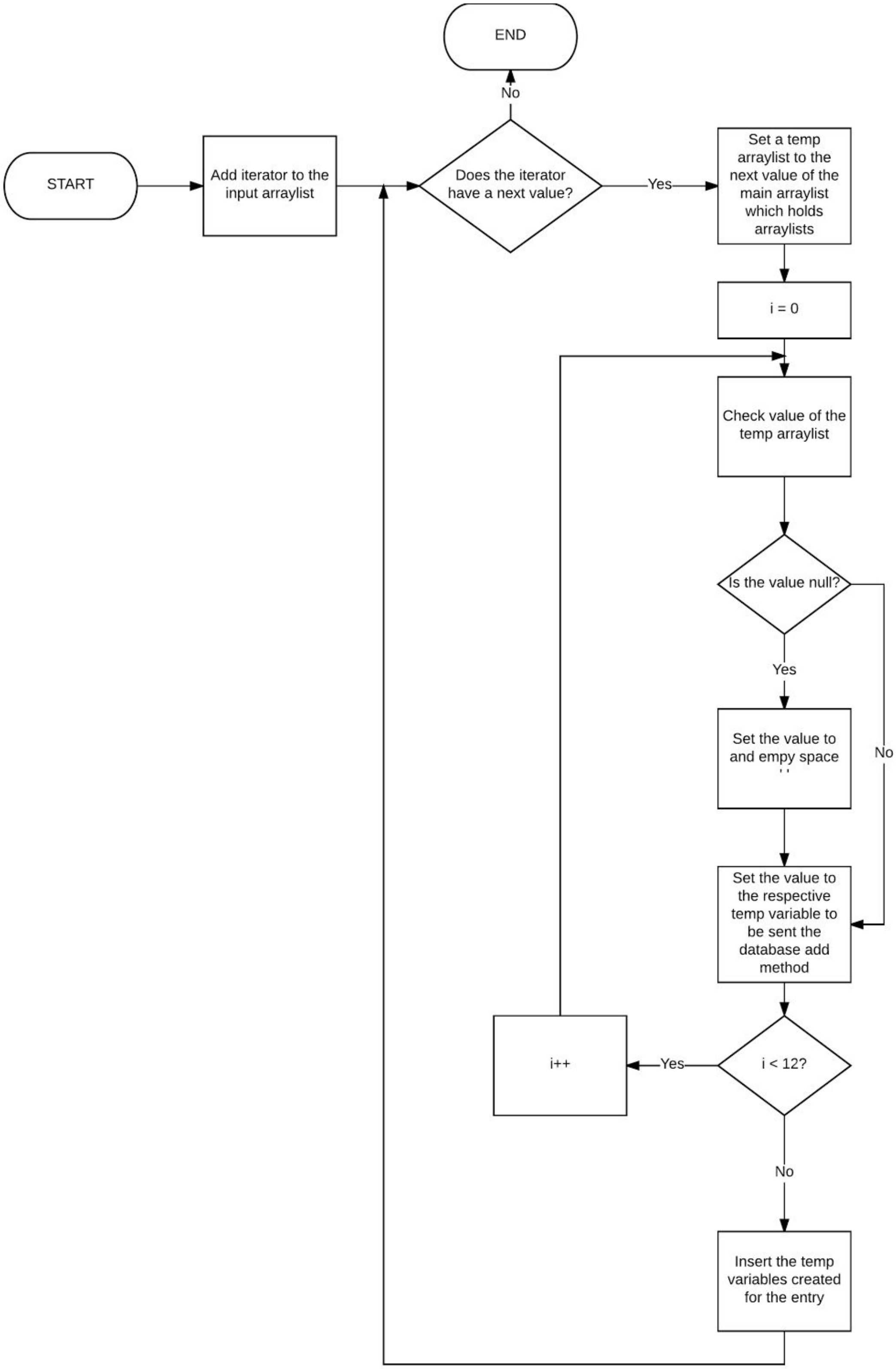
Method: getId() , Class: DbCalc


START
Request all entries from the database and sets those entries to a ResultSet
Does the result set have a next value?
No
Return alumniId
END
Yes
Move the Result Set cursor one down
Add 1 to alumniId

Method: addCSV() , Class: CsvMenu


START
Read File path entered by user
Does the file path lead to a valid CSV file?
No
createErrorScreen() creates an error message saying that the file path is invalid
Yes
Create a Scanner that scans the csv file
Does the Scanner have a next Line?
Yes
The application adds the next line to an array, splitting it by commas
Line array is added to an arraylist
No
Sends the arraylist of arrays containing line data to the database insert method
END

Method: csvInsert(ArrayList input) , Class: DbMethods


END
No
START
Add iterator to the input arraylist
Does the iterator have a next value?
Yes
Set a temp arraylist to the next value of the main arraylist which holds arraylists
i = 0
Check value of the temp arraylist
Is the value null?
Yes
No
Set the value to and empy space ' '
Set the value to the respective temp variable to be sent the database add method
i++
Yes
i < 12?
No
Insert the temp variables created for the entry

- **Database Table Design**

Alumni Table

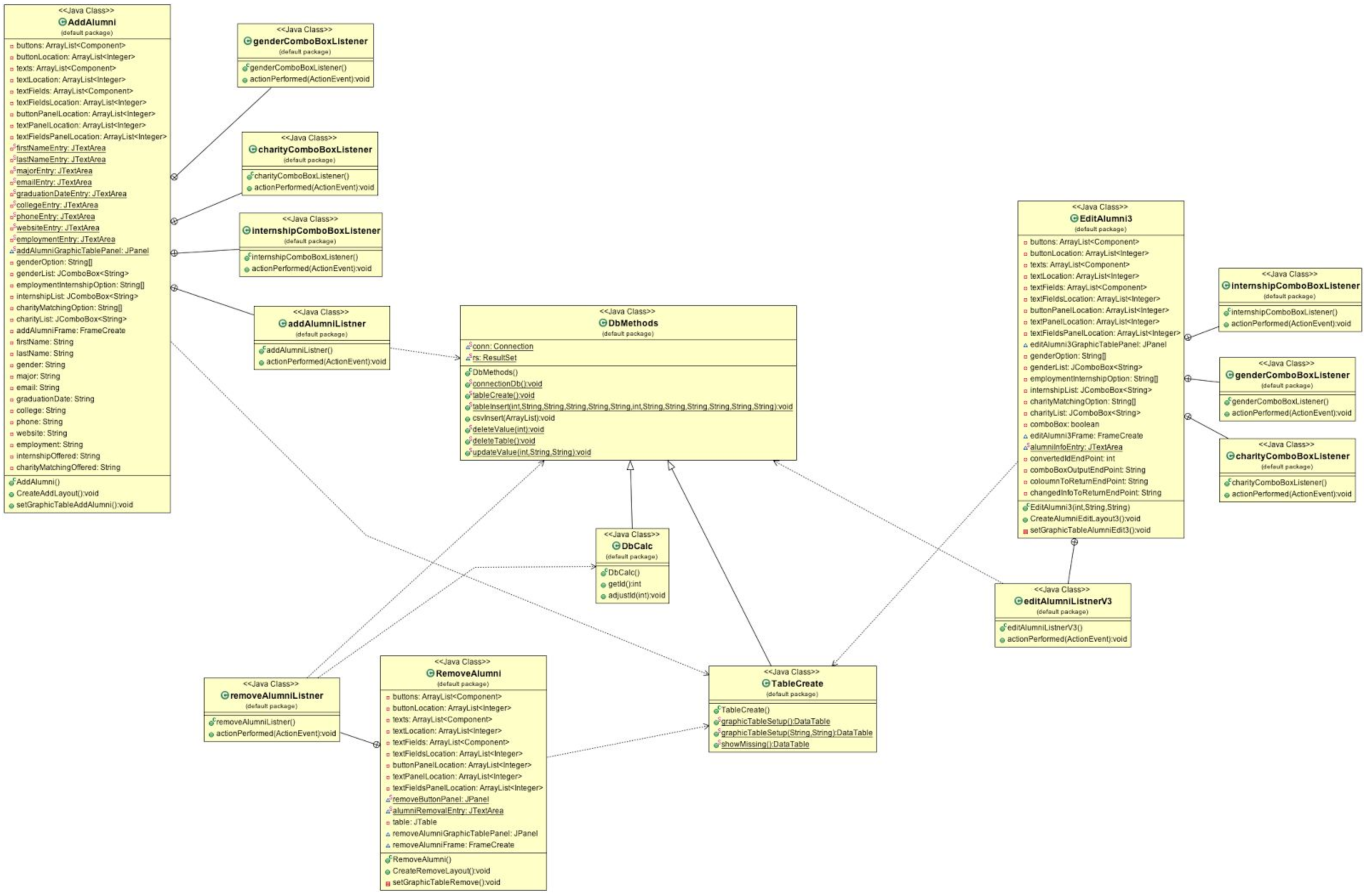
Database Field Name	**Field Type**	**Use**
alumni_id	int	Gives an identifier to the entry. The application uses this identifier for deletion and editing purposes, and automatically assigns an alumni_id value to new entries
FirstName	String	Holds the alumni's first name
LastName	String	Holds the alumni's last name
Gender	String	Holds the alumni's gender
Major	String	Holds the alumni's major
Email	String	Holds the alumni's email
GraduationDate	int	Holds the alumni's graduation date
College	String	Holds the alumni's college
PhoneNumber	String	Holds the alumni's phone number
Website	String	Holds the alumni's website
Employer	String	Holds the alumni's employer
InternshipOffered	String	Holds whether or not the alumni's employer offers internships
CharityMatching	String	Holds whether or not the alumni's employer offers charity matching.

- **Database Query Methods**

Method	**SQL Query**	**Explanation**
connectionDb()	-	Connects to the database using the username and password to the database
tableCreate()	"CREATE TABLE alumni" + "(alumni_id int, FirstName varchar(50), LastName varchar(50), Gender varchar(50), Major varchar(50), Email varchar(80), GraduationDate int, College varchar(50), PhoneNumber varchar(12), Website varchar(50), Employer varchar(50), InternshipOffered varchar(5), CharityMatching varchar(5))"	Creates a table with the columns needed for each Alumni.
tableInsert(int alumniID, String firstName, String secondName, String gender, String major, String email, int graduationDate, String alumniCollege, String phoneNumber, String website, String employmentFirm, String employmentInternship, String charityMatching)	INSERT INTO alumni " + "VALUES('" + alumniID + "','"+ firstName + "','"+ secondName + "','" + gender + "','" + major + "','" + email + "','" + graduationDate + "','" + alumniCollege + "','" + phoneNumber + "','" + website + "','" + employmentFirm + "','" + employmentInternship + "','" + charityMatching+ "')"	Inserts the values in its parameters into the database
deleteValue(int userValue)	"DELETE FROM alumni WHERE alumni_id=" + userValue +";"	Deletes the entry where the alumni_id equals the value entered into the parameter

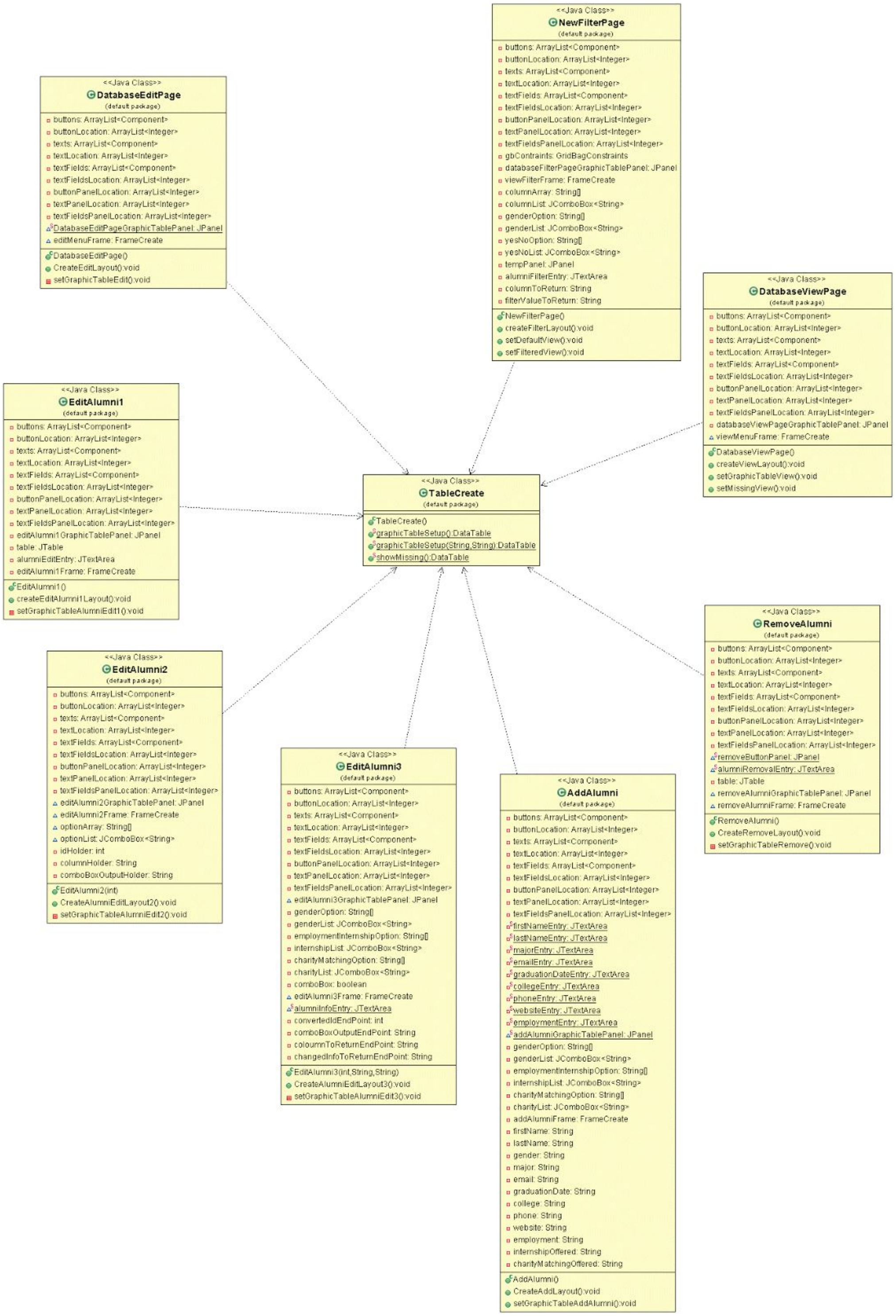
updateValue(int userSelectValue, String entryDetermination, String entryValue)	"UPDATE alumni SET " + entryDetermination + "='"+ entryValue + "' WHERE alumni_id=" + userSelectValue +";"	Updates the input field (entryDetermination) for the entry which has the inputted alumni_id (userSelectValue) to the input value (entryValue).

- **UML**
  - **Database Relationships**

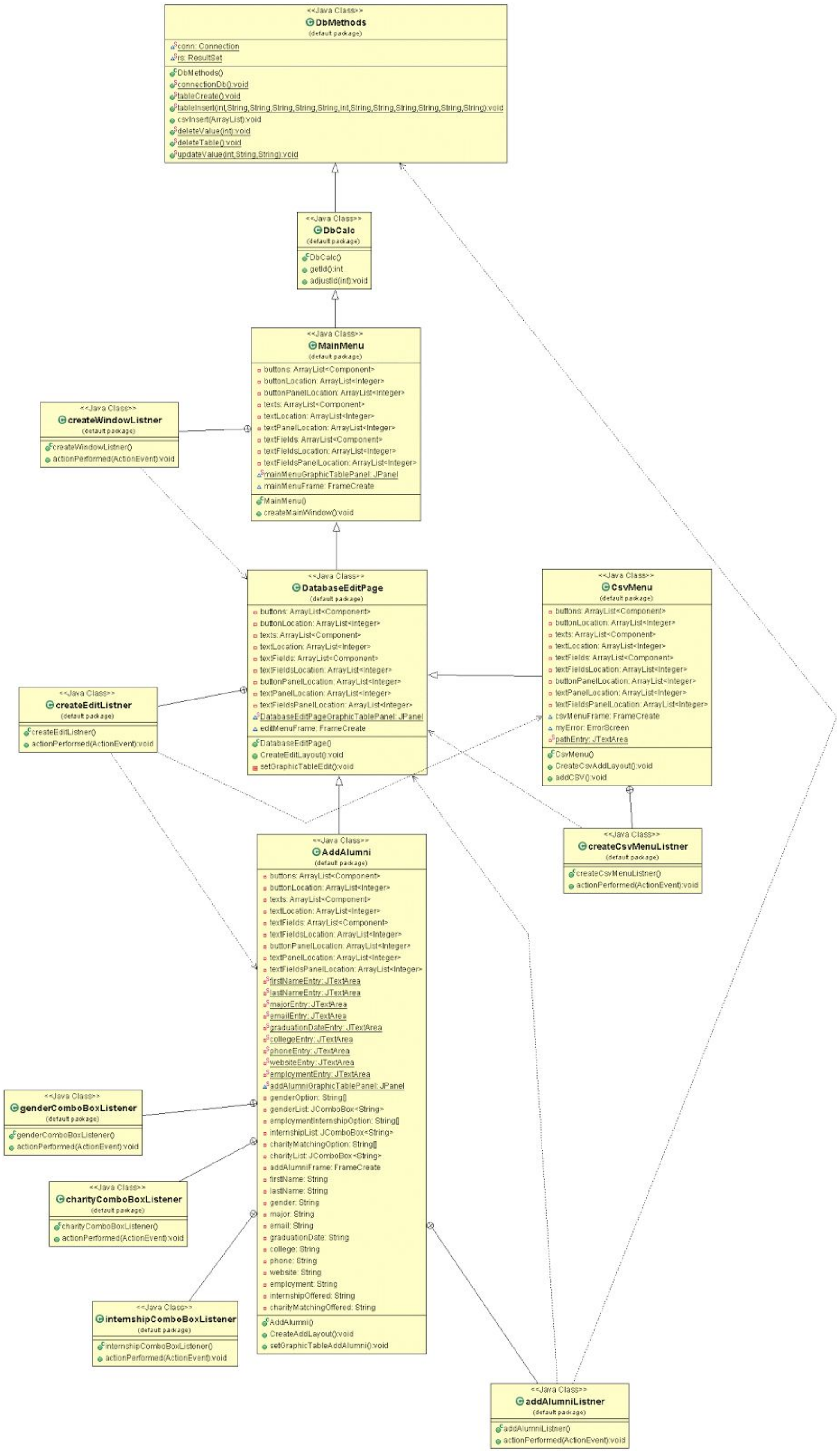


<<Java Class>>
AddAlumni
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
firstNameEntry: JTextArea
lastNameEntry: JTextArea
majorEntry: JTextArea
emailEntry: JTextArea
graduationDateEntry: JTextArea
collegeEntry: JTextArea
phoneEntry: JTextArea
websiteEntry: JTextArea
employmentEntry: JTextArea
addAlumniGraphicTablePanel: JPanel
genderOption: String[]
genderList: JComboBox<String>
employmentInternshipOption: String[]
internshipList: JComboBox<String>
charityMatchingOption: String[]
charityList: JComboBox<String>
addAlumniFrame: FrameCreate
firstName: String
lastName: String
gender: String
major: String
email: String
graduationDate: String
college: String
phone: String
website: String
employment: String
internshipOffered: String
charityMatchingOffered: String
AddAlumni()
CreateAddLayout():void
setGraphicTableAddAlumni():void
<<Java Class>>
genderComboBoxListener
(default package)
genderComboBoxListener()
actionPerformed(ActionEvent):void
<<Java Class>>
charityComboBoxListener
(default package)
charityComboBoxListener()
actionPerformed(ActionEvent):void
<<Java Class>>
internshipComboBoxListener
(default package)
internshipComboBoxListener()
actionPerformed(ActionEvent):void
<<Java Class>>
addAlumniListner
(default package)
addAlumniListner()
actionPerformed(ActionEvent):void
<<Java Class>>
DbMethods
(default package)
conn: Connection
rs: ResultSet
DbMethods()
connectionDb():void
tableCreate():void
tableInsert(int,String,String,String,String,String,int,String,String,String,String,String,String):void
csvInsert(ArrayList):void
deleteValue(int):void
deleteTable():void
updateValue(int,String,String):void
<<Java Class>>
EditAlumni3
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
editAlumni3GraphicTablePanel: JPanel
genderOption: String[]
genderList: JComboBox<String>
employmentInternshipOption: String[]
internshipList: JComboBox<String>
charityMatchingOption: String[]
charityList: JComboBox<String>
comboBox: boolean
editAlumni3Frame: FrameCreate
alumniInfoEntry: JTextArea
convertedIdEndPoint: int
comboBoxOutputEndPoint: String
coloumnToReturnEndPoint: String
changedInfoToReturnEndPoint: String
EditAlumni3(int,String,String)
CreateAlumniEditLayout3():void
setGraphicTableAlumniEdit3():void
<<Java Class>>
internshipComboBoxListener
(default package)
internshipComboBoxListener()
actionPerformed(ActionEvent):void
<<Java Class>>
genderComboBoxListener
(default package)
genderComboBoxListener()
actionPerformed(ActionEvent):void
<<Java Class>>
charityComboBoxListener
(default package)
charityComboBoxListener()
actionPerformed(ActionEvent):void
<<Java Class>>
DbCalc
(default package)
DbCalc()
getId():int
adjustId(int):void
<<Java Class>>
editAlumniListnerV3
(default package)
editAlumniListnerV3()
actionPerformed(ActionEvent):void
<<Java Class>>
removeAlumniListner
(default package)
removeAlumniListner()
actionPerformed(ActionEvent):void
<<Java Class>>
RemoveAlumni
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
removeButtonPanel: JPanel
alumniRemovalEntry: JTextArea
table: JTable
removeAlumniGraphicTablePanel: JPanel
removeAlumniFrame: FrameCreate
RemoveAlumni()
CreateRemoveLayout():void
setGraphicTableRemove():void
<<Java Class>>
TableCreate
(default package)
TableCreate()
graphicTableSetup():DataTable
graphicTableSetup(String,String):DataTable
showMissing():DataTable

- **Table Creation Relationships**


<<Java Class>>
NewFilterPage
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
gbContraints: GridBagConstraints
databaseFilterPageGraphicTablePanel: JPanel
viewFilterFrame: FrameCreate
columnArray: String[]
columnList: JComboBox<String>
genderOption: String[]
genderList: JComboBox<String>
yesNoOption: String[]
yesNoList: JComboBox<String>
tempPanel: JPanel
alumniFilterEntry: JTextArea
columnToReturn: String
filterValueToReturn: String
NewFilterPage()
createFilterLayout():void
setDefaultView():void
setFilteredView():void
<<Java Class>>
DatabaseEditPage
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
DatabaseEditPageGraphicTablePanel: JPanel
editMenuFrame: FrameCreate
DatabaseEditPage()
CreateEditLayout():void
setGraphicTableEdit():void
<<Java Class>>
DatabaseViewPage
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
databaseViewPageGraphicTablePanel: JPanel
viewMenuFrame: FrameCreate
DatabaseViewPage()
createViewLayout():void
setGraphicTableView():void
setMissingView():void
<<Java Class>>
EditAlumni1
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
editAlumni1GraphicTablePanel: JPanel
table: JTable
alumniEditEntry: JTextArea
editAlumni1Frame: FrameCreate
EditAlumni1()
createEditAlumni1Layout():void
setGraphicTableAlumniEdit1():void
<<Java Class>>
TableCreate
(default package)
TableCreate()
graphicTableSetup():DataTable
graphicTableSetup(String,String):DataTable
showMissing():DataTable
<<Java Class>>
RemoveAlumni
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
removeButtonPanel: JPanel
alumniRemovalEntry: JTextArea
table: JTable
removeAlumniGraphicTablePanel: JPanel
removeAlumniFrame: FrameCreate
RemoveAlumni()
CreateRemoveLayout():void
setGraphicTableRemove():void
<<Java Class>>
EditAlumni2
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
editAlumni2GraphicTablePanel: JPanel
editAlumni2Frame: FrameCreate
optionArray: String[]
optionList: JComboBox<String>
idHolder: int
columnHolder: String
comboBoxOutputHolder: String
EditAlumni2(int)
CreateAlumniEditLayout2():void
setGraphicTableAlumniEdit2():void
<<Java Class>>
EditAlumni3
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
editAlumni3GraphicTablePanel: JPanel
genderOption: String[]
genderList: JComboBox<String>
employmentInternshipOption: String[]
internshipList: JComboBox<String>
charityMatchingOption: String[]
charityList: JComboBox<String>
comboBox: boolean
editAlumni3Frame: FrameCreate
alumniInfoEntry: JTextArea
convertedIdEndPoint: int
comboBoxOutputEndPoint: String
coloumnToReturnEndPoint: String
changedInfoToReturnEndPoint: String
EditAlumni3(int,String,String)
CreateAlumniEditLayout3():void
setGraphicTableAlumniEdit3():void
<<Java Class>>
AddAlumni
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
firstNameEntry: JTextArea
lastNameEntry: JTextArea
majorEntry: JTextArea
emailEntry: JTextArea
graduationDateEntry: JTextArea
collegeEntry: JTextArea
phoneEntry: JTextArea
websiteEntry: JTextArea
employmentEntry: JTextArea
addAlumniGraphicTablePanel: JPanel
genderOption: String[]
genderList: JComboBox<String>
employmentInternshipOption: String[]
internshipList: JComboBox<String>
charityMatchingOption: String[]
charityList: JComboBox<String>
addAlumniFrame: FrameCreate
firstName: String
lastName: String
gender: String
major: String
email: String
graduationDate: String
college: String
phone: String
website: String
employment: String
internshipOffered: String
charityMatchingOffered: String
AddAlumni()
CreateAddLayout():void
setGraphicTableAddAlumni():void

- **Code structure example**


<<Java Class>>
DbMethods
(default package)
conn: Connection
rs: ResultSet
DbMethods()
connectionDb():void
tableCreate():void
tableInsert(int,String,String,String,String,String,int,String,String,String,String,String,String):void
csvInsert(ArrayList):void
deleteValue(int):void
deleteTable():void
updateValue(int,String,String):void
<<Java Class>>
DbCalc
(default package)
DbCalc()
getId():int
adjustId(int):void
<<Java Class>>
MainMenu
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
mainMenuGraphicTablePanel: JPanel
mainMenuFrame: FrameCreate
MainMenu()
createMainWindow():void
<<Java Class>>
createWindowListner
(default package)
createWindowListner()
actionPerformed(ActionEvent):void
<<Java Class>>
DatabaseEditPage
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
DatabaseEditPageGraphicTablePanel: JPanel
editMenuFrame: FrameCreate
DatabaseEditPage()
CreateEditLayout():void
setGraphicTableEdit():void
<<Java Class>>
CsvMenu
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
csvMenuFrame: FrameCreate
myError: ErrorScreen
pathEntry: JTextArea
CsvMenu()
CreateCsvAddLayout():void
addCSV():void
<<Java Class>>
createEditListner
(default package)
createEditListner()
actionPerformed(ActionEvent):void
<<Java Class>>
createCsvMenuListner
(default package)
createCsvMenuListner()
actionPerformed(ActionEvent):void
<<Java Class>>
AddAlumni
(default package)
buttons: ArrayList<Component>
buttonLocation: ArrayList<Integer>
texts: ArrayList<Component>
textLocation: ArrayList<Integer>
textFields: ArrayList<Component>
textFieldsLocation: ArrayList<Integer>
buttonPanelLocation: ArrayList<Integer>
textPanelLocation: ArrayList<Integer>
textFieldsPanelLocation: ArrayList<Integer>
firstNameEntry: JTextArea
lastNameEntry: JTextArea
majorEntry: JTextArea
emailEntry: JTextArea
graduationDateEntry: JTextArea
collegeEntry: JTextArea
phoneEntry: JTextArea
websiteEntry: JTextArea
employmentEntry: JTextArea
addAlumniGraphicTablePanel: JPanel
genderOption: String[]
genderList: JComboBox<String>
employmentInternshipOption: String[]
internshipList: JComboBox<String>
charityMatchingOption: String[]
charityList: JComboBox<String>
addAlumniFrame: FrameCreate
firstName: String
lastName: String
gender: String
major: String
email: String
graduationDate: String
college: String
phone: String
website: String
employment: String
internshipOffered: String
charityMatchingOffered: String
AddAlumni()
CreateAddLayout():void
setGraphicTableAddAlumni():void
<<Java Class>>
genderComboBoxListener
(default package)
genderComboBoxListener()
actionPerformed(ActionEvent):void
<<Java Class>>
charityComboBoxListener
(default package)
charityComboBoxListener()
actionPerformed(ActionEvent):void
<<Java Class>>
internshipComboBoxListener
(default package)
internshipComboBoxListener()
actionPerformed(ActionEvent):void
<<Java Class>>
addAlumniListner
(default package)
addAlumniListner()
actionPerformed(ActionEvent):void