Example1: Admission

The purpose of this project is to read the name, GPA, and GMAT of students from the interface and decide if the MSMIS student status is admitted or not. The classes are created for the purpose of re-usability.

This application needs to create a class called Student. This class has four class level variables: gpa, gmat, fName, lName, and admitted. Create all needed getter and setter methods for gpa, gmat, fName, lName and also for admitted. This class has methods to check GPA (0-4) and also the GMAT scores (0-800) to see that they are valid, it also has a method called checkQualification returns true if gpa is greater than or equals to 3.0, and gmat is greater than or equals to 550. The Boolean value returned by this method is stored in the variable admitted.

In addition, this application needs to create a class called MyApp. This class has the main method. You create an instance of Student in the main method and have the appropriate method calls in the main method to set the data in the object and also check if the candidate can be admitted. Depending upon the value returned by the get method of admitted, the main method pops out the appropriate message, i.e. if the candidate is admitted to the program or now.

1. MyApp Class

```java
import javax.swing.*;

public class MyApp {
    public static void main(String[] args) {

        String fn, ln;
        double gm, gp=0.0;

        Student App = new Student();

        fn = JOptionPane.showInputDialog("Enter First Name: ");
        App.setFName(fn);

        ln = JOptionPane.showInputDialog("Enter Last Name: ");
```
App.setLName(ln);

gp = Double.parseDouble(JOptionPane.showInputDialog("Enter GPA:"));
App.setGPA(gp);

gm = Double.parseDouble(JOptionPane.showInputDialog("Enter GMAT:"));
App.setGMAT(gm);
App.setAdmitted(gp, gm);

if (App.getAdmitted())
    JOptionPane.showMessageDialog(null, "Congratulation! " + App.getFName() + " " + App.getLName() + "\nYou got admitted.", "Admission Result", JOptionPane.INFORMATION_MESSAGE);
else
    JOptionPane.showMessageDialog(null, "Sorry! " + App.getFName() + " " + App.getLName() + "\nYou are not admitted.", "Admission Result", JOptionPane.INFORMATION_MESSAGE);
System.exit(0);
}

2. Student Class

import javax.swing.*;
public class Student {

    private double gpa;
    private double gmat;
    protected String fName;
    protected String lName;
    protected boolean admitted;

    public Student() //Default constructor
    {
        setFName("");
        setLName("");
        admitted = false;
    }

    public Student(String fn, String ln)
    {
        setFName(fn);
        setLName(ln);
        admitted = false;
    }

    public void setFName(String fn)//Setter for the first name
{  fName = fn;
}

public void setLName(String ln)//Setter for the first name
{  lName = ln;
}

public String getFName()//getter for the first name
{  return fName;
}

public String getLName()//getter for the first name
{  return lName;
}

public void setGPA(double gp)
{  checkGPA(gp);
    gpa = gp;
}

public void setGMAT(double gm)
{  checkGMAT(gm);
    gmat = gm;
}

public double getGPA()
{  return gpa;
}

public double getGMAT()
{  return gmat;
}

public boolean checkGPA(double gp)
{  if (gp < 0.0 || gp > 4.0)
{  
    JOptionPane.showMessageDialog(null," GPA is out of range. Please, check your data!" ,"Error", JOptionPane.ERROR_MESSAGE);
    return false;
  }
  else return true;
}
public boolean checkGMAT(double gm)
{
    if (gm < 0.0 || gm > 800.0)
    {
        JOptionPane.showMessageDialog(null, "Your GMAT is out of range. Please, enter again!", "Error", JOptionPane.ERROR_MESSAGE);
        return false;
    }
    else return true;
}

public void setAdmitted(double gpa, double gmat)
{
    admitted = checkQualification(gpa, gmat);
}

public boolean getAdmitted()
{
    return admitted;
}

public boolean checkQualification(double gpa, double gmat)
{
    if (gpa == 0.0 || gmat == 0.0)
        return false;
    if (gpa >= 3.0 && gmat >= 550)
        return true;
    else
        return false;
}
Example 2: Admission 2

Refer to previous example, this project needs to create another class called MISStudent. The purpose of this project is to read the name, GPA, and GMAT of students from the interface and decide if the MSMIS student status is admitted or not. The classes are created for the purpose of re-usability.

First, the application needs to create an abstract class called Student. This class has variables `fName` and `lName` for first name and last name of the student and a variable `admitted` which is boolean. The get and set methods of `fName` and `lName` are not abstract.

Second, create a class called MSMISStudent. This class has two class level variables: `gpa` `gmat` and inherits the other variables like `fName`, `lName`, and `admitted` from Student. Create all needed getter and setter methods for `gpa` `gmat` and also for `admitted`. This class has methods to check GPA (0-4) and also the GMAT scores (0-800) to see that they are valid, it also has a method called `checkQualification` returns true if `gpa` is greater than or equals to 3.0, and `gmat` is greater than or equals to 550. The Boolean value returned by this method is stored in the variable `admitted`.

Third, create a class called MyApp (your last four digit student ID). This class has the main method. You create an instance of MSMISStudent in the main method and have the appropriate method calls in the main method to set the data in the object and also check if the candidate can be admitted. Depending upon the value returned by the get method of admitted, the main method pops out the appropriate message, i.e. if the candidate is admitted to the program or now.

1. MyApp Class

```java
import javax.swing.*;

public class MyApp {
    public static void main(String[] args) {
        String fn, ln;
        double gm, gp=0.0;
        MISStudent App = new MISStudent();
        fn = JOptionPane.showInputDialog("Enter First Name:");
        App.setFName(fn);
```
In = JOptionPane.showInputDialog("Enter Last Name:");
App.setLName(ln);

do
{
    gp = Double.parseDouble(JOptionPane.showInputDialog("Enter GPA:"));
}while(!App.checkGPA(gp));

App.setGPA(gp);

do{
    gm = Double.parseDouble(JOptionPane.showInputDialog("Enter GMAT:"));
}while(!App.checkGMAT(gm));
App.setGMAT(gm);
App.setAdmitted(gp, gm);

if (App.getAdmitted())
    JOptionPane.showMessageDialog(null, "Congratulation! " + App.getFName()
        + " " + App.getLName() + ".\nYou got admitted.", "Admission Result",
    JOptionPane.INFORMATION_MESSAGE);
else
    JOptionPane.showMessageDialog(null, "Sorry! " + App.getFName() + " "
        + App.getLName() + ".\nYou are not admitted.", "Admission Result",
    JOptionPane.INFORMATION_MESSAGE);

System.exit(0);
}

2. Student Class

public abstract class Student {

    protected String fName;
    protected String lName;

    public Student() //Default constructor
    {
        setFName("");
        setLName("");
    }

    public void setFName(String f)//Setter for the first name
    {
        fName = f;
    }

    public void setLName(String l)//Setter for the first name
    {
        lName = l;
    }
3. **MISStudent Class**

```java
import javax.swing.*;

public class MISStudent extends Student{

    private double gpa;
    private double gmat;
    private boolean admitted;

    public MISStudent() //default constructor
    {
        super();
    }

    public void setGPA(double p)
    {
        checkGPA(p);
        gpa = p;
    }

    public void setGMAT(double m)
    {
        checkGMAT(m);
        gmat = m;
    }

    public double getGPA()
    {
        return gpa;
    }

    public double getGMAT()
    {
        return gmat;
    }
}
```
public boolean checkGPA(double sp)
{
    if (sp < 0.0 || sp > 4.0)
    {
        JOptionPane.showMessageDialog(null, "GPA is out of range. Please, check your data!","Error", JOptionPane.ERROR_MESSAGE);
        return false;
    }
    else return true;
}

public boolean checkGMAT(double sm)
{
    if (sm < 0.0 || sm > 800.0)
    {
        JOptionPane.showMessageDialog(null, "Your GMAT is out of range. Please, enter again!", "Error", JOptionPane.ERROR_MESSAGE);
        return false;
    }
    else return true;
}

public void setAdmitted(double p, double m)
{
    admitted = checkQualification(p, m);
}

public boolean getAdmitted()
{
    return admitted;
}

public boolean checkQualification(double sgpa, double sgmat)
{
    if (sgpa == 0.0 || sgmat == 0.0)
        return false;
    if (sgpa >= 3.0 && sgmat >= 550)
        return true;
    else
        return false;
}