SMBC

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Chapter 4

Class Documentation

4.1 Course Class Reference

A class to represent a University of Lethbridge course.

`#include <Course.h>`

Public Member Functions

- Course ()

  Constructor for the Course class.

- Course (const Course &cObj)

  Copy constructor for the Course class.

- Course * clone ()

  Clone function.

- const GLER getGler () const

  Accessor function for GLER category.

- const std::string getDepartment () const

  Accessor function for std::string department.

- int getNumber () const

  Accessor function for unsigned short number.

- const std::vector< Objective * > getPrerequisites () const

Accessor functino for vector of prerequisites.

- const std::string getTitle () const

  Accessor function for title.

- const std::string getDescription () const

  Accessor function for descriptino.

- bool hasTaken (std::vector< Course * > courseVector) const

  Checks if course is already in the vector.

- void read (std::istream &iStr) throw (InvalidFile)

  Initializes the course's members.

- void write (std::ostream &os) const

  Prints the course's members.

4.1.1 Member Function Documentation

4.1.1.1 Course * Course::clone ()

Returns:

A copy of this course.

References Course().

4.1.1.2 const std::string Course::getDepartment () const

Returns:

The course's department

Referenced by Course(), hasTaken(), and CourseTest::testCourseAccessors().

4.1.1.3 const std::string Course::getDescription () const

Returns:

The description of the course

Referenced by Course(), operator==(), and CourseTest::testCourseAccessors().

4.1.1.4 const GLER Course::getGler () const

Returns:

The course's GLER

Referenced by Course(), operator==(), and CourseTest::testCourseAccessors().

4.1.1.5 int Course::getNumber () const

Returns:

The course's number

Referenced by Course(), hasTaken(), operator==(), and CourseTest::testCourseAccessors().

4.1.1.6 const std::vector< Objective * > Course::getPrerequisites () const

Returns:

The vector of prerequisites

Referenced by Student::canTake(), Course(), and operator==().

4.1.1.7 const std::string Course::getTitle () const

Returns:

The title of the course

Referenced by Course(), operator==(), and CourseTest::testCourseAccessors().

4.1.1.8 bool Course::hasTaken (std::vector< Course * > *courseVector*) const

Returns:

true if the course is in the vector, false otherwise.

References getDepartment(), and getNumber().

4.1.1.9 void Course::read (std::istream & *iStr*) throw (InvalidFile)

Should be in the format:

[department] [number]

[title]

[description]

[GLER category]

P [tag of objective] [prerequisite1]

P [tag of objective] [prerequisite2]

...

Referenced by operator>>(), CourseTest::testCourseAccessors(), CourseTest::testCourseRead(), and CourseTest::testCourseWrite().

The documentation for this class was generated from the following files:

- Course.h
- Course.cc

4.2 CourseAlreadyExists Class Reference

Exception thrown when a duplicate course is being read into a CourseList.

`#include <Exceptions.h>`

Inherits std::runtime_error.

Public Member Functions

- CourseAlreadyExists (const std::string &arg)

4.2.1 Constructor & Destructor Documentation

4.2.1.1 CourseAlreadyExists::CourseAlreadyExists (const std::string & *arg*) [inline]

Constructor

Parameters:

arg the message to be displayed

The documentation for this class was generated from the following file:

- Exceptions.h

4.3 CourseList Class Reference

A master list of courses.

`#include <CourseList.h>`

Public Member Functions

- void destroy ()

  Destroys a CourseList when it is no longer needed.

- void read (std::istream &iStr) throw (CourseAlreadyExists, InvalidFile)

  Calls Course's read function for every Course in the file.

- void write (std::ostream &os) const

  Prints only the departments and numbers of the coursess.

- Course * find (const std::string &department, const int &number)

  Searches for a specified Course in the vector of Courses.

Static Public Member Functions

- static CourseList * getInstance ()

  Creates an instance if there isn't one or returns the only one.

4.3.1 Detailed Description

This class is a Singleton

4.3.2 Member Function Documentation

4.3.2.1 void CourseList::destroy ()

This function removes all the Courses contained in the CourseList when the application exits. It isn't even really necessary, because the only time that the CourseList should be deleted is when the program terminates, and even then, without this function the operating system would simply free the memory that was used by it anyway. So, *technically*, that is not a memory leak. I am not going to naively say that it is never a memory leak, because some OSes don't free the memory, so we'll include the destroy() function anyway. -CR

Go through the CourseList and delete all Course*

4.3.2.2 Course * CourseList::find (const std::string & *department*, const int & *number*)

Returns:

A pointer to a Course

4.3.2.3 void CourseList::read (std::istream & *iStr*) throw (CourseAlreadyExists, InvalidFile)

Should be in the format:

C

[Course1]

C

[Course2]

...

Referenced by operator>>().

The documentation for this class was generated from the following files:

- CourseList.h
- CourseList.cc

4.4 CourseListTest Class Reference

class to test functionality of the CourseList class

`#include <CourseListTest.h>`

Public Member Functions

- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up
- void **testRead** ()
- void **testFind** ()
- void **testSingleton** ()

4.4.1 Member Function Documentation

4.4.1.1 void CourseListTest::setUp ()

Create some variables to test with.

References CourseList::getInstance().

4.4.1.2 void CourseListTest::tearDown ()

Free space used by allocated variables.

The documentation for this class was generated from the following files:

- CourseListTest.h
- CourseListTest.cc

4.5 CourseNotFound Class Reference

Exception class to handle invalid course names.

`#include <Exceptions.h>`

Inherits std::runtime_error.

Public Member Functions

- CourseNotFound (const std::string &arg)

  Constructor.

4.5.1 Constructor & Destructor Documentation

4.5.1.1 CourseNotFound::CourseNotFound (const std::string & *arg*) [inline]

Parameters:

arg the message to be displayed

The documentation for this class was generated from the following file:

- Exceptions.h

4.6 CourseTest Class Reference

class to test functionality of the Course class

`#include <CourseTest.h>`

Public Member Functions

- void setUp ()

  override `setUp` to create variable

- void tearDown ()

  override `tearDown` to clean up

- void testCourseRead ()
- void testCourseWrite ()

  Test the Course::write function writes the correct data to the ostream.

- void testCourseAccessors ()

  Tests all the accessor functions in Course to ensure they return the correct information.

4.6.1 Member Function Documentation

4.6.1.1 void CourseTest::setUp ()

Create some variables to test with.

4.6.1.2 void CourseTest::tearDown ()

Free space used by allocated variables.

4.6.1.3 void CourseTest::testCourseRead ()

Test the Course::read function to ensure that the correct exceptions are thrown when an invalid course is read

Checking courses without prerequisites are read properly

Checking courses with prerequisites are read properly; destroyed in tearDown

Checks that invlid data cannot be read into a course

References Course::read().

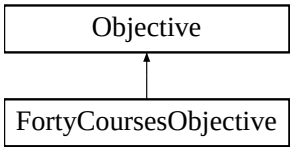
The documentation for this class was generated from the following files:

- CourseTest.h
- CourseTest.cc

4.7 FortyCoursesObjective Class Reference

An objective requiring 40 courses to be taken.

`#include <FortyCoursesObjective.h>`Inheritance diagram for FortyCoursesObjective::



Public Member Functions

- FortyCoursesObjective * clone () const

  Return a pointer to a cpy of this object.

- bool status (std::ostream &os, const std::vector< Course * > &coursesTaken) const

  Counts to see if there are at least 40 courses in coursesTaken.

- void read (std::istream &iStr)

  Initializes the objective's members.

- void write (std::ostream &os) const

  Writes the objective to the ostream.

4.7.1 Detailed Description

No more than 10 of which are 1000 level No more than 20 from one department A subclass of Objective

4.7.2 Member Function Documentation

4.7.2.1 FortyCoursesObjective * FortyCoursesObjective::clone () const [virtual]

Returns:

a pointer to a copy of the current Objective

Implements Objective.

4.7.2.2 void FortyCoursesObjective::read (std::istream & *iStr*) [inline, virtual]

Does nothing in this case

Implements Objective.

4.7.2.3 bool FortyCoursesObjective::status (std::ostream & *os*, const std::vector< Course * > & *coursesTaken*) const [virtual]

Not counting courses that exceed the 10 1000 level limit or the 20 per department limit

Implements Objective.

The documentation for this class was generated from the following files:

- FortyCoursesObjective.h
- FortyCoursesObjective.cc

4.8 FortyCoursesObjectiveTest Class Reference

class to test functionality of the FortyCoursesObjective class

`#include <FortyCoursesObjectiveTest.h>`

Public Member Functions

- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up

4.8.1 Member Function Documentation

4.8.1.1 void FortyCoursesObjectiveTest::setUp ()

Create some variables to test with.

4.8.1.2 void FortyCoursesObjectiveTest::tearDown ()

Free space used by allocated variables.

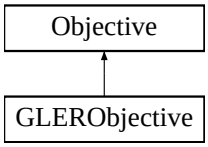
The documentation for this class was generated from the following files:

- FortyCoursesObjectiveTest.h
- FortyCoursesObjectiveTest.cc

4.9 GLERObjective Class Reference

An objective requiring 4 of a particular GLER category to be taken.

`#include <GLERObjective.h>`Inheritance diagram for GLERObjective::



Public Member Functions

- **GLERObjective** (GLER gler=SCIENCE)
- GLERObjective * clone () const

  Return a pointer to a cpy of this object.

- bool status (std::ostream &os, const std::vector< Course * > &coursesTaken) const

  Compares gler in coursesTaken to see if 4 match gler.

- void read (std::istream &iStr) throw (InvalidGLER)

  Initializes the objective's members.

- void write (std::ostream &os) const

  Writes the objective to the ostream.

4.9.1 Detailed Description

A subclass of Objective

4.9.2 Member Function Documentation

4.9.2.1 GLERObjective * GLERObjective::clone () const [virtual]

Returns:

a pointer to a copy of the current Objective

Implements Objective.

4.9.2.2 void GLERObjective::read (std::istream & *iStr*) throw (InvalidGLER) [virtual]

Should be in the format:

[glerType]

Implements Objective.

The documentation for this class was generated from the following files:

- GLERObjective.h
- GLERObjective.cc

4.10 GLERObjectiveTest Class Reference

class to test functionality of the GLERObjective class

`#include <GLERObjectiveTest.h>`

Public Member Functions

- void initCourseVectors ()
  Creates test courses to use.
- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up
- void testStatus ()
  Tests the status function for GLER.
- void testRead ()
  Tests read function.
- void testWrite ()
  Tests write function.

4.10.1 Member Function Documentation

4.10.1.1 void GLERObjectiveTest::setUp ()

Create some variables to test with.

References initCourseVectors().

4.10.1.2 void GLERObjectiveTest::tearDown ()

Free space used by allocated variables.

The documentation for this class was generated from the following files:

- GLERObjectiveTest.h
- GLERObjectiveTest.cc

4.11 GLERTest Class Reference

class to test functionality of the GLER class

`#include <GLERTest.h>`

Public Member Functions

- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up

4.11.1 Member Function Documentation

4.11.1.1 void GLERTest::setUp ()

Create some variables to test with.

4.11.1.2 void GLERTest::tearDown ()

Free space used by allocated variables.

The documentation for this class was generated from the following files:

- GLERTest.h
- GLERTest.cc

4.12 InvalidFile Class Reference

Exception class to handle invalid file names.

`#include <Exceptions.h>`

Inherits std::runtime_error.

Public Member Functions

- InvalidFile (const std::string &arg)

  Constructor.

4.12.1 Constructor & Destructor Documentation

4.12.1.1 InvalidFile::InvalidFile (const std::string & *arg*) `[inline]`

Parameters:

arg the message to be displayed

The documentation for this class was generated from the following file:

- Exceptions.h

4.13 InvalidGLER Class Reference

Exception thrown when an invalid GLER is encountered.

`#include <Exceptions.h>`

Inherits std::runtime_error.

Public Member Functions

- InvalidGLER (const std::string &arg)

4.13.1 Constructor & Destructor Documentation

4.13.1.1 InvalidGLER::InvalidGLER (const std::string & *arg*) `[inline]`

Constructor

Parameters:

arg the message to be displayed

The documentation for this class was generated from the following file:

- Exceptions.h

4.14 InvalidObjective Class Reference

Exception class to handle invalid Objectives.

`#include <Exceptions.h>`

Inherits std::runtime_error.

Public Member Functions

- InvalidObjective (const std::string &arg)

4.14.1 Constructor & Destructor Documentation

4.14.1.1 InvalidObjective::InvalidObjective (const std::string & *arg*) [inline]

Constructor

Parameters:

arg the message to be displayed

The documentation for this class was generated from the following file:

- Exceptions.h

4.15 InvalidPlan Class Reference

Exception thrown when an invalid Plan is created or encountered.

`#include <Exceptions.h>`

Inherits std::runtime_error.

Public Member Functions

- InvalidPlan (const std::string &arg)

4.15.1 Constructor & Destructor Documentation

4.15.1.1 InvalidPlan::InvalidPlan (const std::string & *arg*) `[inline]`

Constructor

Parameters:

arg the message to be displayed

The documentation for this class was generated from the following file:

- Exceptions.h

4.16 Major Class Reference

A class to represent a University of Lethbridge major.

`#include <Major.h>`

Public Member Functions

- void copy (const Major &orig)

  Make a copy of the data in the Major.

- **Major** (Major &m)
- void read (std::istream &iStr)

  Initializes the Major's members.

- void write (std::ostream &os) const

  Prints the Major's members.

- bool status (std::ostream &os, const std::vector< Course * > &coursesTaken) const

  Calls each Objective's status.

- const std::string & getTitle () const

  Get the title of the Major.

4.16.1 Member Function Documentation

4.16.1.1 void Major::copy (const Major & *orig*)

Parameters:

orig imports the Major to make a copy of

4.16.1.2 void Major::read (std::istream & *iStr*)

Should be in the format:

[title]

[objective1]

[objective2]

...

Referenced by operator>>().

The documentation for this class was generated from the following files:

- Major.h
- Major.cc

4.17 MajorAlreadyExists Class Reference

Exception thrown when a duplicate major is being read into a MajorList.

`#include <Exceptions.h>`

Inherits std::runtime_error.

Public Member Functions

- MajorAlreadyExists (const std::string &arg)

4.17.1 Constructor & Destructor Documentation

4.17.1.1 MajorAlreadyExists::MajorAlreadyExists (const std::string & *arg*) [inline]

Constructor

Parameters:

arg the message to be displayed

The documentation for this class was generated from the following file:

- Exceptions.h

4.18 MajorList Class Reference

A master list of majors.

`#include <MajorList.h>`

Public Member Functions

- void destroy ()
  Destroys the singleton MajorList in memory.
- void read (std::istream &iStr) throw (MajorAlreadyExists, InvalidFile)
  Calls Major's read function for every major in the file.
- void write (std::ostream &os) const
  Prints only the names of the majors.
- Major * find (const std::string &title)
  Returns a pointer to a specified Major in majors.

Static Public Member Functions

- static MajorList * getInstance ()
  Creates an instance if there isn't one or returns the only one.

4.18.1 Detailed Description

This class is a Singleton

4.18.2 Member Function Documentation

4.18.2.1 void MajorList::destroy ()

This function removes all the Majors contained in the MajorList when the application exits. It isn't even really necessary, because the only time that the MajorList should be deleted is when the program terminates, and even then, without this function the operating system would simply free the memory that was used by it anyway. So, *technically*, that is not a memory leak. I am not going to naively say that it is never a memory leak, because some OSes don't free the memory, so we'll include the destroy() function anyway. -CR

4.18.2.2 Major * MajorList::find (const std::string & *title*)

Finds the course in the major list matching title.

4.18.2.3 MajorList * MajorList::getInstance () [static]

Gets the instance of the Major List.

Returns:

a pointer to the Major List Singleton

4.18.2.4 void MajorList::read (std::istream & *iStr*) throw (MajorAlreadyExists, InvalidFile)

Reads the data into the Major List.

Should be in the format:

M

[major1]

M

[major2]

...

Each Major starts with the 'M' character, followed by the format used for the Major class.

Referenced by operator>>().

4.18.2.5 void MajorList::write (std::ostream & *os*) const

Writes the major list to the ostream.

Referenced by operator<<().

The documentation for this class was generated from the following files:

- MajorList.h
- MajorList.cc

4.19 MajorListTest Class Reference

class to test functionality of the MajorList class

`#include <MajorListTest.h>`

Public Member Functions

- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up

4.19.1 Member Function Documentation

4.19.1.1 void MajorListTest::setUp ()

Create some variables to test with.

4.19.1.2 void MajorListTest::tearDown ()

Free space used by allocated variables.

The documentation for this class was generated from the following files:

- MajorListTest.h
- MajorListTest.cc

4.20 MajorTest Class Reference

class to test functionality of the Major class

`#include <MajorTest.h>`

Public Member Functions

- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up

4.20.1 Member Function Documentation

4.20.1.1 void MajorTest::setUp ()

Create some variables to test with.

4.20.1.2 void MajorTest::tearDown ()

Free space used by allocated variables.

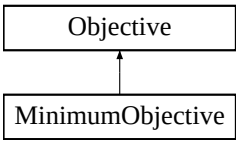
The documentation for this class was generated from the following files:

- MajorTest.h
- MajorTest.cc

4.21 MinimumObjective Class Reference

An Objective requiring a given number of courses at a particular level to be completed.

`#include <MinimumObjective.h>`Inheritance diagram for MinimumObjective::



Public Member Functions

- bool status (std::ostream &os, const std::vector< Course * > &coursesTaken) const

  Compares coursesTaken until n match the level of the objective.

- void read (std::istream &iStr)

  Initializes the objective's members.

- void write (std::ostream &os) const

  Writes the Objective to the ostream.

- MinimumObjective * clone () const

  Return a pointer to a copy of this object.

4.21.1 Detailed Description

This is a subclass of Objective

4.21.2 Member Function Documentation

4.21.2.1 MinimumObjective * MinimumObjective::clone () const [virtual]

Returns:

a pointer to a copy of the current Objective

Implements Objective.

4.21.2.2 void MinimumObjective::read (std::istream & *iStr*) [virtual]

Should be in the format:

[minCourses] [department] [level]

Implements Objective.

The documentation for this class was generated from the following files:

- MinimumObjective.h
- MinimumObjective.cc

4.22 MinimumObjectiveTest Class Reference

class to test functionality of the MinimumObjective class

`#include <MinimumObjectiveTest.h>`

Public Member Functions

- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up

4.22.1 Member Function Documentation

4.22.1.1 void MinimumObjectiveTest::setUp ()

Create some variables to test with.

4.22.1.2 void MinimumObjectiveTest::tearDown ()

Free space used by allocated variables.

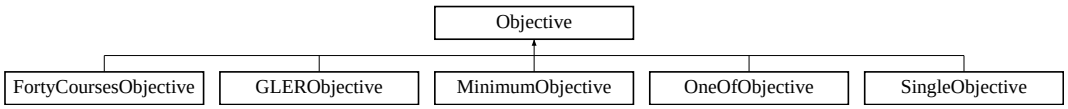
The documentation for this class was generated from the following files:

- MinimumObjectiveTest.h
- MinimumObjectiveTest.cc

4.23 Objective Class Reference

An abstract base class to define the requirements of a major and track their completion status.

`#include <Objective.h>`Inheritance diagram for Objective::



Public Member Functions

- virtual Objective * clone () const =0

  Return a pointer to a copy of this object.

- virtual bool status (std::ostream &os, const std::vector< Course * > &courseList) const =0

  Determines the objective's completion.

- virtual bool **isEqual** (Objective *o)
- virtual void read (std::istream &iStr)=0

  Initializes the objective's members.

- virtual void write (std::ostream &os) const =0

  Writes the objective to the ostream.

- virtual std::istream & operator>> (std::istream &is)

  Overloads the input stream operator for all Objectives.

- virtual std::ostream & operator<< (std::ostream &os) const

  Overloads the output stream operator for all Objectives.

4.23.1 Member Function Documentation

4.23.1.1 virtual Objective* Objective::clone () const [pure virtual]

Returns:

a pointer to a copy of the current Objective

Implemented in FortyCoursesObjective, GLERObjective, MinimumObjective, OneOfObjective, and SingleObjective.

4.23.1.2 virtual void Objective::read (std::istream & *iStr*) [pure virtual]

Should be in the format:

[type] [Objective]

where [type] is:

G for GLERObjective

M for MinimumObjective

O for OneOfObjective

S for SingleObjective

Implemented in FortyCoursesObjective, GLERObjective, MinimumObjective, OneOfObjective, and SingleObjective.

Referenced by operator>>().

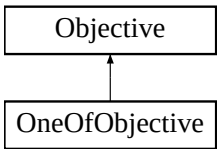
The documentation for this class was generated from the following file:

- Objective.h

4.24 OneOfObjective Class Reference

An objective requiring a single Course out of a list of Courses to be completed.

`#include <OneOfObjective.h>`Inheritance diagram for OneOfObjective::



Public Member Functions

- **OneOfObjective** (const OneOfObjective &oObj)
- OneOfObjective * clone () const

  Return of a copy of the Objective.

- bool status (std::ostream &os, const std::vector< Course * > &coursesTaken) const

  Compares coursesTaken to oneOf until one match is found.

- const bool isEqual (OneOfObjective *oObj) const

  equalilty test between two OneOfObjectives

- std::vector< std::string > getDeptVector () const

  Returns the vector of departments.

- std::vector< int > getNumberVector () const

  Returns the vector of course numbers.

- void read (std::istream &iStr)

  Initializes the objective's members.

- void write (std::ostream &os) const

  Writes the objective to the ostream.

4.24.1 Detailed Description

This is a subclass of Objective

4.24.2 Member Function Documentation

4.24.2.1 void OneOfObjective::read (std::istream & *iStr*) `[virtual]`

Should be in the format:

[dept1] [number1] [dept2] [number2] ...

Implements Objective.

The documentation for this class was generated from the following files:

- OneOfObjective.h
- OneOfObjective.cc

4.25 OneOfObjectiveTest Class Reference

class to test functionality of the OneOfObjective class

`#include <OneOfObjectiveTest.h>`

Public Member Functions

- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up

4.25.1 Member Function Documentation

4.25.1.1 void OneOfObjectiveTest::setUp ()

Create some variables to test with.

4.25.1.2 void OneOfObjectiveTest::tearDown ()

Free space used by allocated variables.

The documentation for this class was generated from the following files:

- OneOfObjectiveTest.h
- OneOfObjectiveTest.cc

4.26 Plan Class Reference

Builds a potential future plan for a Student.

`#include <Plan.h>`

Public Member Functions

- **Plan** (Student *s=NULL)
- Major * getMajor () const

  Returns a pointer to the plan's major.

- std::vector< Course * > getCourses () const

  Returns the vector of course pointers.

- void write (std::ostream &os) const throw (InvalidPlan)

  Prints the plan's members.

- void changeMajor (Major *newMajor)

  Changes the plan's major.

- void addCourse (Course *newCourse) throw (CourseAlreadyExists)

  Adds a pointer to a course in cl to coursesToTake.

- void removeCourse (const Course *oldCourse)

  Removes the pointer to c from coursesToTake.

- bool status (std::ostream &os) const throw (InvalidPlan)

  Calls major's status function with coursesToTake and coursesTaken.

- bool canTake (const Course *potentialCourse) const throw (InvalidPlan)

  Calls c's Objectives' statuses with coursesToTake and coursesTaken.

- void commitChanges () throw (InvalidPlan)

  Updates the student's coursesTaken with the plan's coursesToTake.

- std::vector< Course * > combineVectors () const throw (InvalidPlan)

  Combine the coursesTaken vector from student and coursesToTake.

4.26.1 Member Function Documentation

4.26.1.1 bool Plan::canTake (const Course * *potentialCourse*) const throw (InvalidPlan)

Uses student's major if one is not defined

4.26.1.2 bool Plan::status (std::ostream & *os*) const throw (InvalidPlan)

Uses student's major if one is not defined

The documentation for this class was generated from the following files:

- Plan.h
- Plan.cc

4.27 PlanTest Class Reference

class to test functionality of the Plan class

`#include <PlanTest.h>`

Public Member Functions

- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up
- void initCourseVectors ()
- void **testAddCourse** ()
- void **testCanTake** ()
- void **testChangeMajor** ()
- void **testCombineVectors** ()
- void **testCommitChanges** ()
- void **testGetCourses** ()
- void **testGetMajor** ()
- void **testRemoveCourse** ()
- void **testStatus** ()
- void **testWrite** ()

4.27.1 Member Function Documentation

4.27.1.1 void PlanTest::initCourseVectors ()

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

Referenced by setUp().

4.27.1.2 void PlanTest::setUp ()

Create some variables to test with.

References initCourseVectors().

4.27.1.3 void PlanTest::tearDown ()

Free space used by allocated variables.

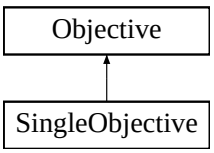
The documentation for this class was generated from the following files:

- PlanTest.h
- PlanTest.cc

4.28 SingleObjective Class Reference

An objective requiring one, specific course to be completed.

`#include <SingleObjective.h>`Inheritance diagram for SingleObjective::



Public Member Functions

- **SingleObjective** (const SingleObjective &sObj)
- SingleObjective * clone () const

  Return a copy of the Objective.

- bool status (std::ostream &os, const std::vector< Course * > &coursesTaken) const

  Searches for course in coursesTaken.

- const bool isEqual (SingleObjective *sObj) const

  equality test between two SingleObjectives

- std::string getDept () const

  Returns the department.

- int getNumber () const

  Returns the course number.

- void read (std::istream &iStr)

  Initializes the objective's members.

- void write (std::ostream &os) const

  Writes the objective to the ostream.

4.28.1 Detailed Description

A subclass of Objective

4.28.2 Member Function Documentation

4.28.2.1 void SingleObjective::read (std::istream & *iStr*) [virtual]

Should be in the format:

[department] [number]

Implements Objective.

The documentation for this class was generated from the following files:

- SingleObjective.h
- SingleObjective.cc

4.29 SingleObjectiveTest Class Reference

class to test functionality of the SingleObjective class

`#include <SingleObjectiveTest.h>`

Public Member Functions

- void setUp ()
  override `setUp` to create variable
- void tearDown ()
  override `tearDown` to clean up

4.29.1 Member Function Documentation

4.29.1.1 void SingleObjectiveTest::setUp ()

Create some variables to test with.

4.29.1.2 void SingleObjectiveTest::tearDown ()

Free space used by allocated variables.

The documentation for this class was generated from the following files:

- SingleObjectiveTest.h
- SingleObjectiveTest.cc

4.30 Student Class Reference

A class to represent a student's course status.

`#include <Student.h>`

Public Member Functions

- **Student** (Major *m=NULL)
- Major * getMajor () const

  Returns a pointer to the student's major.

- const std::vector< Course * > getCourses () const

  Returns the vector of course pointers.

- void write (std::ostream &os) const

  Prints the student's members.

- void changeMajor (Major *m)

  Changes the student's major.

- void addCourse (Course *c) throw (CourseAlreadyExists)

  Adds a pointer to a course in cl to coursesTaken.

- void removeCourse (const Course *c) throw (CourseNotFound)

  Removes the pointer to c from coursesToTake.

- bool status (std::ostream &os) const

  Calls major's status function with coursesTaken.

- bool canTake (const Course *c) const

  Call's c's Objectives' statuses with coursesTaken.

The documentation for this class was generated from the following files:

- Student.h
- Student.cc

4.31 StudentNotFound Class Reference

Exception class to handle invalid student names.

`#include <Exceptions.h>`

Inherits std::runtime_error.

Public Member Functions

- StudentNotFound (const std::string &arg)

  Constructor.

4.31.1 Constructor & Destructor Documentation

4.31.1.1 StudentNotFound::StudentNotFound (const std::string & *arg*) [inline]

Parameters:

arg the message to be displayed

The documentation for this class was generated from the following file:

- Exceptions.h

4.32 StudentTest Class Reference

class to test functionality of the Student class

`#include <StudentTest.h>`

Public Member Functions

- void setUp ()

  override `setUp` to create variable

- void tearDown ()

  override `tearDown` to clean up

- void initCourseVectors ()

  Adds some sample Course data to some vectors so that we can initialize a Student.

- void testAddCourse ()

  Tests that the Student::addCourse function throws the correct exceptions, if applicable.

- void testCanTake ()

  Tests that a Student either can or cannot take a given course.

- void testChangeMajor ()

  Tests that it is possible for a Student to change his or her major.

- void testGetCourses ()

  Tests that the Courses that the Student has taken correspond exactly to the Courses that were added.

- void testGetMajor ()

  Tests that the Student will return its correct Major.

- void testRemoveCourse ()

  Tests that a Course can be removed from the Student.

- void testStatus ()

  Tests that the status of the Student is correct after adding some Courses, or changing the Major, and so on.

- void testWrite ()

  Tests that the correct information is written to the output stream when Student::write is called.

4.32.1 Member Function Documentation

4.32.1.1 void StudentTest::setUp ()

Create some variables to test with.

References initCourseVectors().

4.32.1.2 void StudentTest::tearDown ()

Free space used by allocated variables.

The documentation for this class was generated from the following files:

- StudentTest.h
- StudentTest.cc

Chapter 5

File Documentation

5.1 Course.cc File Reference

A class to represent a University of Lethbridge course. `#include "Course.h"`

Functions

- std::istream & operator>> (std::istream &iStr, Course &c)

  Overload the extraction operator.

- std::ostream & operator<< (std::ostream &os, const Course &c)

  Overload the insertion operator.

- const bool operator== (const Course &firstCourse, const Course &secondCourse)

  Overload the equality test operator.

5.1.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.2 Course.h File Reference

A class to represent a University of Lethbridge course. `#include <cstdlib>`

```
#include <iostream>
#include <string>
#include <vector>
#include "Exceptions.h"
#include "Course.h"
#include "GLER.h"
#include "Objective.h"
#include "OneOfObjective.h"
#include "SingleObjective.h"
```

Classes

- class Course

  A class to represent a University of Lethbridge course.

Functions

- std::istream & operator>> (std::istream &iStr, Course &c)

  Overload the extraction operator.

- std::ostream & operator<< (std::ostream &os, const Course &c)

  Overload the insertion operator.

- const bool operator== (const Course &firstCourse, const Course &secondCourse)

  Overload the equality test operator.

5.2.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.3 CourseList.cc File Reference

A master list of courses. `#include "CourseList.h"`

Functions

- std::istream & operator>> (std::istream &iStr, CourseList &cl)
  Overload the extraction operator.
- std::ostream & operator<< (std::ostream &os, const CourseList &cl)
  Overload the insertion operator.

5.3.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.4 CourseList.h File Reference

A master list of courses. `#include <fstream>`

`#include <vector>`

`#include "Exceptions.h"`

`#include "Course.h"`

Classes

- class CourseList

  A master list of courses.

Functions

- std::istream & operator>> (std::istream &iStr, CourseList &cl)

  Overload the extraction operator.

- std::ostream & operator<< (std::ostream &os, const CourseList &cl)

  Overload the insertion operator.

5.4.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.5 CourseListTest.cc File Reference

Implementation of the unit tests for the CourseList class. `#include "CourseListTest.h"`

5.5.1 Detailed Description

Author:

Christopher Rabl

Date:

November 30, 2010

5.6 CourseListTest.h File Reference

Unit tests for the CourseList class. `#include <cppunit/TestFixture.h>`

`#include <cppunit/extensions/HelperMacros.h>`

`#include <fstream>`

`#include "Exceptions.h"`

`#include "CourseList.h"`

Classes

- class CourseListTest

  class to test functionality of the CourseList class

5.6.1 Detailed Description

Author:

Christopher Rabl 001051542

Date:

November 30, 2010

5.7 CourseTest.cc File Reference

Tests the member functions of Course to ensure proper functionality. `#include "CourseTest.h"`

5.7.1 Detailed Description

Author:

Christopher Rabl 001051542

Date:

November 22, 2010

5.8 CourseTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include <fstream>
#include <iostream>
#include <sstream>
#include "Exceptions.h"
#include "Course.h"
```

Classes

- class CourseTest

  class to test functionality of the Course class

5.8.1 Detailed Description

Author:

Christopher Rabl 001051542

Date:

November 30, 2010

5.9 Exceptions.h File Reference

Exception library for the application. `#include <stdexcept>`

`#include <string>`

Classes

- class InvalidFile

  Exception class to handle invalid file names.

- class StudentNotFound

  Exception class to handle invalid student names.

- class CourseNotFound

  Exception class to handle invalid course names.

- class InvalidObjective

  Exception class to handle invalid Objectives.

- class CourseAlreadyExists

  Exception thrown when a duplicate course is being read into a CourseList.

- class MajorAlreadyExists

  Exception thrown when a duplicate major is being read into a MajorList.

- class InvalidGLER

  Exception thrown when an invalid GLER is encountered.

- class InvalidPlan

  Exception thrown when an invalid Plan is created or encountered.

5.9.1 Detailed Description

Author:

Christopher Rabl 001051542, Steven Henke 001141476

Date:

November 9, 2010

5.10 FortyCoursesObjective.cc File Reference

The main objective for completing a generic major. `#include "FortyCoursesObjective.h"`

5.10.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.11 FortyCoursesObjective.h File Reference

The main objective for completing a generic major. `#include <iostream>`

```
#include <vector>
#include "Exceptions.h"
#include "Course.h"
#include "Objective.h"
```

Classes

- class FortyCoursesObjective

  An objective requiring 40 courses to be taken.

5.11.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.12 FortyCoursesObjectiveTest.cc File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "FortyCoursesObjective.h"
#include "FortyCoursesObjectiveTest.h"
```

5.12.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.13 FortyCoursesObjectiveTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "FortyCoursesObjective.h"
```

Classes

- class FortyCoursesObjectiveTest

  class to test functionality of the FortyCoursesObjective class

5.13.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.14 GLER.h File Reference

An enumerated data type, either SCIENCE, SOCIAL_SCIENCE, or FINE_ARTS_-HUMANITY. `#include "Exceptions.h"`

`#include <iostream>`

Enumerations

- enum GLER { **SCIENCE**, **SOCIAL_SCIENCE**, **FINE_ARTS_HUMANITY** }

  Defines the GLER categories; used in all Courses.

Functions

- std::istream & operator>> (std::istream &iStr, GLER &g) throw (InvalidGLER)

  Overload the extraction operator.

- std::ostream & operator<< (std::ostream &os, const GLER &g)

  Overload the insertion operator.

5.14.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.15 GLERObjective.cc File Reference

An objective requiring 4 of a particular GLER category to be taken. `#include "GLERObjective.h"`

5.15.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.16 GLERObjective.h File Reference

An objective requiring 4 of a particular GLER category to be taken. `#include <vector>`

```
#include "Exceptions.h"
#include "Course.h"
#include "GLER.h"
#include "Objective.h"
```

Classes

- class GLERObjective

  An objective requiring 4 of a particular GLER category to be taken.

5.16.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.17 GLERObjectiveTest.cc File Reference

```
#include "GLERObjectiveTest.h"
```

5.17.1 Detailed Description

Author:

Christopher Rabl 001051542

Date:

November 22, 2010

5.18 GLERObjectiveTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include <iostream>
#include <sstream>
#include <vector>
#include "Course.h"
#include "GLERObjective.h"
```

Classes

- class GLERObjectiveTest

  class to test functionality of the GLERObjective class

5.18.1 Detailed Description

Author:

Bradley Ellert 001133286 Christopher Rabl 001051542 Steven Henke 001141476

Date:

November 22, 2010

5.19 GLERTest.cc File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "GLER.h"
#include "GLERTest.h"
```

5.19.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.20 GLERTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "GLER.h"
```

Classes

- class GLERTest

  class to test functionality of the GLER class

5.20.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.21 Major.cc File Reference

A class to represent a University of Lethbridge major. `#include "Major.h"`

Functions

- std::istream & operator>> (std::istream &iStr, Major &m)
  Overload the extraction operator.
- std::ostream & operator<< (std::ostream &os, const Major &m)
  Overload the insertion operator.

5.21.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.22 Major.h File Reference

A class to represent a University of Lethbridge major. `#include <iostream>`

```
#include <string>
#include <vector>
#include "Exceptions.h"
#include "Objective.h"
#include "FortyCoursesObjective.h"
#include "GLERObjective.h"
#include "SingleObjective.h"
#include "MinimumObjective.h"
#include "OneOfObjective.h"
```

Classes

- class Major

  A class to represent a University of Lethbridge major.

Functions

- std::istream & operator>> (std::istream &iStr, Major &m)

  Overload the extraction operator.

- std::ostream & operator<< (std::ostream &os, const Major &m)

  Overload the insertion operator.

5.22.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.23 MajorList.cc File Reference

A master list of majors. `#include "MajorList.h"`

Functions

- std::istream & operator>> (std::istream &iStr, MajorList &ml)
  Overload of the >> operator for MajorList.
- std::ostream & operator<< (std::ostream &os, const MajorList &ml)
  Overload of the << operator for MajorList.

5.23.1 Detailed Description

Author:

Bradley Ellert 001133286 Christopher Rabl 001051542 Steven Henke 001141476

Date:

November 22, 2010

5.23.2 Function Documentation

5.23.2.1 std::ostream& operator<< (std::ostream & *os*, const MajorList & *ml*)

Overload the insertion operator.

References MajorList::write().

5.23.2.2 std::istream& operator>> (std::istream & *iStr*, MajorList & *ml*)

Overload the extraction operator.

References MajorList::read().

5.24 MajorList.h File Reference

A master list of majors. `#include <fstream>`

`#include <string>`

`#include <vector>`

`#include "Exceptions.h"`

`#include "Major.h"`

Classes

- class MajorList

  A master list of majors.

Functions

- std::istream & operator>> (std::istream &iStr, MajorList &ml)

  Overload the extraction operator.

- std::ostream & operator<< (std::ostream &os, const MajorList &ml)

  Overload the insertion operator.

5.24.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.25 MajorListTest.cc File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "MajorList.h"
#include "MajorListTest.h"
```

5.25.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.26 MajorListTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "MajorList.h"
```

Classes

- class MajorListTest

  class to test functionality of the MajorList class

5.26.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.27 MajorTest.cc File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "Major.h"
#include "MajorTest.h"
```

5.27.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.28 MajorTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "Major.h"
```

Classes

- class MajorTest

  class to test functionality of the Major class

5.28.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.29 MinimumObjective.cc File Reference

An Objective requiring a given number of courses at a particular level to be completed.
`#include "MinimumObjective.h"`

5.29.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.30 MinimumObjective.h File Reference

An Objective requiring a given number of courses at a particular level to be completed.

```
#include <iostream>
#include <string>
#include <vector>
#include "Exceptions.h"
#include "Course.h"
#include "Objective.h"
```

Classes

- class MinimumObjective

  An Objective requiring a given number of courses at a particular level to be completed.

5.30.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.31 MinimumObjectiveTest.cc File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "MinimumObjective.h"
#include "MinimumObjectiveTest.h"
```

5.31.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.32 MinimumObjectiveTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "MinimumObjective.h"
```

Classes

- class MinimumObjectiveTest

  class to test functionality of the MinimumObjective class

5.32.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.33 Objective.h File Reference

An abstract base class to define the requirements of a major and track their completion status. `#include <iostream>`

`#include <vector>`

Classes

- class Objective

  An abstract base class to define the requirements of a major and track their completion status.

5.33.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.34 OneOfObjective.cc File Reference

An objective requiring a single Course out of a list of Courses to be completed. `#include "OneOfObjective.h"`

5.34.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.35 OneOfObjective.h File Reference

An objective requiring a single Course out of a list of Courses to be completed.

```
#include <iostream>
#include <vector>
#include "Exceptions.h"
#include "Course.h"
#include "Objective.h"
```

Classes

- class OneOfObjective

  An objective requiring a single Course out of a list of Courses to be completed.

5.35.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.36 OneOfObjectiveTest.cc File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "OneOfObjective.h"
#include "OneOfObjectiveTest.h"
```

5.36.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.37 OneOfObjectiveTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "OneOfObjective.h"
```

Classes

- class OneOfObjectiveTest

  class to test functionality of the OneOfObjective class

5.37.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.38 Plan.cc File Reference

Builds a potential future plan for a Student. `#include "Plan.h"`

Functions

- std::ostream & operator<< (std::ostream &os, const Plan &p)

  Overload the insertion operator.

5.38.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.39 Plan.h File Reference

Builds a potential future plan for a Student. `#include <iostream>`

```
#include <sstream>
#include <vector>
#include "Exceptions.h"
#include "Course.h"
#include "Major.h"
#include "Student.h"
```

Classes

- class Plan

  Builds a potential future plan for a Student.

Functions

- std::ostream & operator<< (std::ostream &os, const Plan &p)

  Overload the insertion operator.

5.39.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.40 PlanTest.cc File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "PlanTest.h"
```

5.40.1 Detailed Description

5.41 PlanTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "Plan.h"
```

Classes

- class PlanTest

  class to test functionality of the Plan class

5.41.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.42 SingleObjective.cc File Reference

An objective requiring one, specific course to be completed. `#include "SingleObjective.h"`

5.42.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.43 SingleObjective.h File Reference

An objective requiring one, specific course to be completed. `#include <iostream>`

```
#include <vector>
#include "Exceptions.h"
#include "Course.h"
#include "Objective.h"
```

Classes

- class SingleObjective

  An objective requiring one, specific course to be completed.

5.43.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.44 SingleObjectiveTest.cc File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "SingleObjective.h"
#include "SingleObjectiveTest.h"
```

5.44.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.45 SingleObjectiveTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "SingleObjective.h"
```

Classes

- class SingleObjectiveTest

  class to test functionality of the SingleObjective class

5.45.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.46 Student.cc File Reference

A class to represent a student's course status. `#include "Student.h"`

Functions

- std::ostream & operator<< (std::ostream &os, const Student &s)

  Overload the insertion operator.

5.46.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.47 Student.h File Reference

A class to represent a student's course status. `#include <iostream>`

`#include <sstream>`

`#include <vector>`

`#include "Exceptions.h"`

`#include "Course.h"`

`#include "Major.h"`

Classes

- class Student

  A class to represent a student's course status.

Functions

- std::ostream & operator<< (std::ostream &os, const Student &s)

  Overload the insertion operator.

5.47.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 6, 2010

5.48 StudentTest.cc File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include "Student.h"
#include "StudentTest.h"
```

5.48.1 Detailed Description

Author:

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Date:

November 22, 2010

5.49 StudentTest.h File Reference

```
#include <cppunit/TestFixture.h>
#include <cppunit/extensions/HelperMacros.h>
#include <iostream>
#include <sstream>
#include <vector>
#include "Student.h"
```

Classes

- class StudentTest

  class to test functionality of the Student class

5.49.1 Detailed Description

Author:

Bradley Ellert 001133286

Date:

November 22, 2010

5.50 tester.cc File Reference

```
#include <cppunit/TextTestRunner.h>
#include "CourseTest.h"
#include "CourseListTest.h"
#include "FortyCoursesObjectiveTest.h"
#include "GLERTest.h"
#include "GLERObjectiveTest.h"
#include "MajorTest.h"
#include "MajorListTest.h"
#include "MinimumObjectiveTest.h"
#include "OneOfObjectiveTest.h"
#include "PlanTest.h"
#include "SingleObjectiveTest.h"
#include "StudentTest.h"
```

Functions

- int main ()

  The simple main function to run the test suites.

5.50.1 Detailed Description

Main program to run test suites

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