

Lab 2 - Student Portfolio Application

50 Points Possible

3/9/2024

Attempt 1



In Progress

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Unlimited Attempts Allowed

2/7/2024

▼ Details

Create an object-oriented programming (OOP) program that the student portfolio program. The Student Portfolio is a collection of student work that provides an overview of the student's learning process, like achievements, projects, courses, assignments, grades, etc.

In this lab exercise, you will learn to organize, store, and perform operations on data. Operations performed on a data structure include accessing or updating stored data, searching for specific data, inserting new data, and removing data. A data structure is a way of organizing, storing, and performing operations on data. Operations performed on a data structure include accessing or updating stored data, searching for specific data, inserting new data, and removing data.

Lab 2 Requirements:

Write a data structures portfolio application to manage the transfer courses.

1) Implement a class `Course` that contains the following fields and all the common overloading operators:

- ***Department*** - contains the department (ex. CS)
- ***Course*** - contain the course number (ex. 101)
- ***Title*** - contains the course description
- ***Description*** - contains multiple lines of description. The ending backslash "\" is a special character that indicates the continuation of the next line.
- ***Prerequisite*** - contains string value like ENGL 151B
- ***Units*** - contains integer value in units

2) Given this data file, [cs transfer courses.dat](https://ohlone.instructure.com/courses/29469/files/5189817?wrap=1)

<https://ohlone.instructure.com/courses/29469/files/5189817?wrap=1>)_ ↓

https://ohlone.instructure.com/courses/29469/files/5189817/download?download_frd=1) - the application reads and populates the list of data structures in the above step.

Example of a `Course` that contains the following:

CS 101**Introduction to Computers and Information Technology**

This course is a general introduction to the area of computers and information technology, and is designed for all students. This survey course examines a broad overview of topics including software, hardware, the networking of computer systems, information technology, and survey of programming languages. Students explore the implications of this technology with regard to today's information society.

ENGL 151B

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3) Implement the class template class ArrayList that holds the collection of data**Example:**

```
template <typename T>
class ArrayList
```

4) Implement a derived class ComputerScienceTransferCourses : public UnorderedArrayList contains the list of courses**Example:**

```
template <typename T>
class ComputerScienceTransferCourses : public UnorderedArrayList<Course>
```

5) Implement a member method ComputerScienceTransferCourses::sort by <any fieldname> using quickSort**Example:**

```
template <typename T>
class ComputerScienceTransferCourses : public ArrayList<Course> {
...
public:
    void sort();          // implement quickSort
    int search(Course& c) // implement binary search
...
private:
...
};
```

6) Implement a member method ComputerScienceTransferCourses::search using binary search**Example:**

```

template <typename T>
class ComputerScienceTransferCourses : public ArrayList<Course> {
...
public:
    int search(Course& c) // implement binary search
...
};

```

7) Implement a new class **StudentFortfolio**: public Menu like your class **UserMenu** from Lab 1

Example:

```

class StudentFortfolio : public Menu {
...

// TODO - you decide what variables and methods to add

private:
    ComputerScienceTransferCourses* pTransferCourses; // Use pointer for this lab assignment
...

};

```

8) Implement the Computer Science Transfer Courses menu, like:

***** **Computer Science Transfer Courses** *****

- 1) List of courses - prompt user for sort preference, default sorting by ascending order, and option to sort by descending order (see above 5))
- 2) View the course details - binary search and view the course details
- 3) Add a new course - see above 2) for the data format
- 4) Edit course - binary search and edit course
- 5) Remove course - binary search and remove course
- x) Exit - save data to file cs_transfer_course.dat

9) Implement these methods selection//////////;

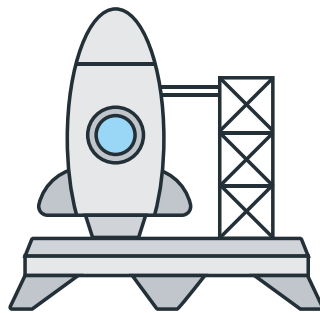
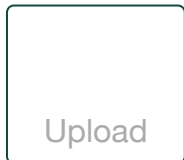
```

class StudentFortfolio : public Menu {
...

void showList(... /* parameter */); // prompt user for sort preference, default sorting by
ascending
// order, and option to sort by descending order (see above 5)
void viewCourse(...); // biew the course details - binary search and view the course details
void addCourse(...); // Add a new course - see above 2) for the data format
void editCourse(...); // Edit course - binary search and edit course
void removeCourse(...); // Remove course - binary search and delete course

```

```
void quit(); // Exit - save data to file cs_transfer_course.dat
```

10) Use <iomanip> to format the output for cout and follow the C++ Programming guidelines**Submission: lab2-<your name>.zip and the screenshots of the output.****Importantly:** Your lab assignment is to be done individually. You may discuss the concepts with other students in class. You may not copy someone else's work.**Choose a submission type**

Choose a file to upload

or

 Webcam Photo Canvas Files

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