

Lab4A-DonorBank

[New Attempt](#)

Due Wednesday by 9:56am **Points** 10 **Submitting** a file upload **File Types** zip
Available Oct 13 at 8:35am - Oct 14 at 9:55am 1 day

This lab has been designed to help you learn concepts of inheritance, abstract class, interface, static, final, and polymorphism.

Problem statement: There is a Donor Bank seeking donations in cash or kind from CMU students registered in a certain course. The students come up with a donation policy as listed below:

- Section A students decide to donate 1% of each student's income
- Section B lets each student decide to donate **randomly** anywhere between \$1 to \$1,000 (inclusive).
- Section C decides to donate \$10 per student and service-time **randomly** anywhere between 1 to 100 hours (inclusive) per student.

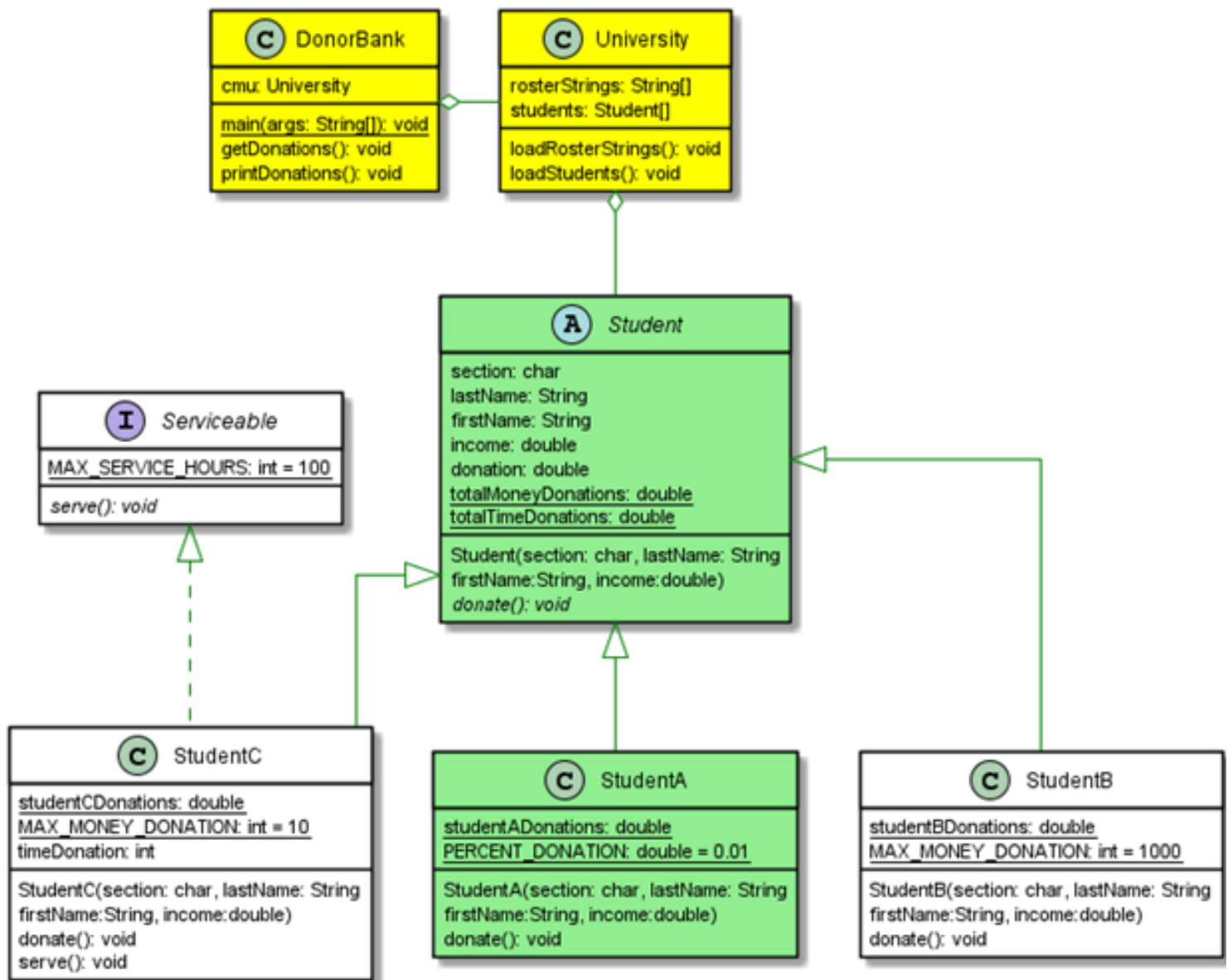
You are given Roster.csv as shown in Figure 1. It has 4 columns : Section, Last name, First name, Income. You need to print total donations as shown in Figure 2.

<p>A,Aithal,Mukunda,232433 A,Baishya,Kristi,257231 A,Bao,Yufan,319217 A,Chandra,Diya,321593 A,Chang,Andrey,269064 ...</p> <p>Fig. 1: Roster.csv</p> <p>The student income generated using a random function. No hard feelings!</p>	<p>Section A money donations: \$ 114,182.99 Section B money donations: \$ 17,696.00 Section C money donations: \$ 290.00 ----- Total money donations: \$ 132,168.99 ----- Section C time donations: 1,591 hours</p> <p>Fig. 2: Output</p> <p>Note: Section B's money and C's time donations are random and hence will vary</p>
--	--

Design constraint:

1. Use of Collection classes, such as Lists or Maps is not allowed in this lab.
2. Each class must be created in its own .java file

Solution Design:



Legend:

- Yellow: partially coded
- Green: Fully coded
- White: To be coded

Fig. 3: Class diagram

Please refer to the code-comments in files provided. Some additional guidelines given below:

- Serviceable interface
 - SectionC implements this interface. In its serve() method, SectionC sets timeDonation to a random integer between 1 and MAX_SERVICE_HOURS (inclusive) and accordingly updates totalTimeDonations
- DonorBank
 - getDonations(): this method must invoke the donate() and serve() methods on students[] array objects

polymorphically

- You must use the constants (e.g. MAX_SERVICE_HOURS and MAX_MONEY_DONATIONS) instead of their literal values in your code.

Instructions:

1. Download the following files:

- [DonorBank.java](https://canvas.cmu.edu/courses/25253/files/6728590/download?download_frd=1) ↓ (https://canvas.cmu.edu/courses/25253/files/6728590/download?download_frd=1)
- [University.java](https://canvas.cmu.edu/courses/25253/files/6728585/download?download_frd=1) ↓ (https://canvas.cmu.edu/courses/25253/files/6728585/download?download_frd=1)
- [Student.java](https://canvas.cmu.edu/courses/25253/files/6728619/download?download_frd=1) ↓ (https://canvas.cmu.edu/courses/25253/files/6728619/download?download_frd=1)
- [StudentA.java](https://canvas.cmu.edu/courses/25253/files/6728584/download?download_frd=1) ↓ (https://canvas.cmu.edu/courses/25253/files/6728584/download?download_frd=1)
- [TestDonorBank.java](https://canvas.cmu.edu/courses/25253/files/7058650/download?download_frd=1) ↓ (https://canvas.cmu.edu/courses/25253/files/7058650/download?download_frd=1)
- Roster.csv [Roster.csv](https://canvas.cmu.edu/courses/25253/files/7025465/download?download_frd=1) ↓ (https://canvas.cmu.edu/courses/25253/files/7025465/download?download_frd=1)

2. Copy/import java files into a package named lab4

3. Copy/import Roster.csv into the project folder

4. Complete and test your code

5. Write your name and Andrew id in ALL java files that are to be submitted.

6. Zip only those java files that are marked as partially-coded or to-be-coded in Fig.3 into AndrewId-lab4.zip.

Do not zip fully-coded files. Submit the zip file.

Rubric:

- Test cases: 4 points
- Console output: 4 points
- 2 points for correct implementation of abstract methods, interface, and polymorphism.
- Please note that the data file will be changed to detect hardcoding
- Any submission issue may cost you up to 2 points.