BIT205 - Assignment

Due date: 19 December 2022 by 2pm

Output: Source Code and Exe Files
Test Document

Value: 10%

Late Penalty: 5 marks per working day

Type of Assignment: INDIVIDUAL

Expected Learning Outcomes Assessed

CLO1 : Develop solutions to problems demonstrating usage of control structures, modularity, I/O and other standard language constructs (C4, PLO1)
CLO2 :Design object oriented solutions to programming problems demonstrating usage of data abstraction, encapsulation, inheritance, polymorhism (C6, PLO2)
CLO3:Apply templates and built-in C++ standard templates library to solve problems (C3, PLO3)

Problem statement: **SchoolHELP**

Many children all over the world have been disadvantaged by the COVID pandemic in the last two years. According to UN.org, nearly 1.6 billion children and youth were out of school by April 2020. As schools slowly reopen in 2022, UNESCO, UNICEF and the World Bank have established “Mission: Recovering Education 2021”.

One of the priorities is to provide support to children who need to catch up on ‘lost learning’ – especially those who have not had the digital resources to keep up with online education.

Some of the challenges would be

1. to identify students who require remedial education especially in foundational literacy and numeracy skills;
2. to implement remedial education programmes to support the learners at different levels of education;
3. to provide infrastructure for both schools and learners to benefit from the digital transformation programmes.

SchoolHELP is a system that has been proposed to allow schools to request for help from the general public. The schools may schedule tutorials for students who need remedial education, or request for resources such as mobile devices, network routers or personal computers.

Volunteers can then check SchoolHELP for requests and make an offer to volunteer for any requests that they can fulfill, for example to help out in a tutorial or donate digital devices.

The school administrator will review the offers for their requests and then contact the volunteers themselves.

The class diagram is shown in Fig. 1.

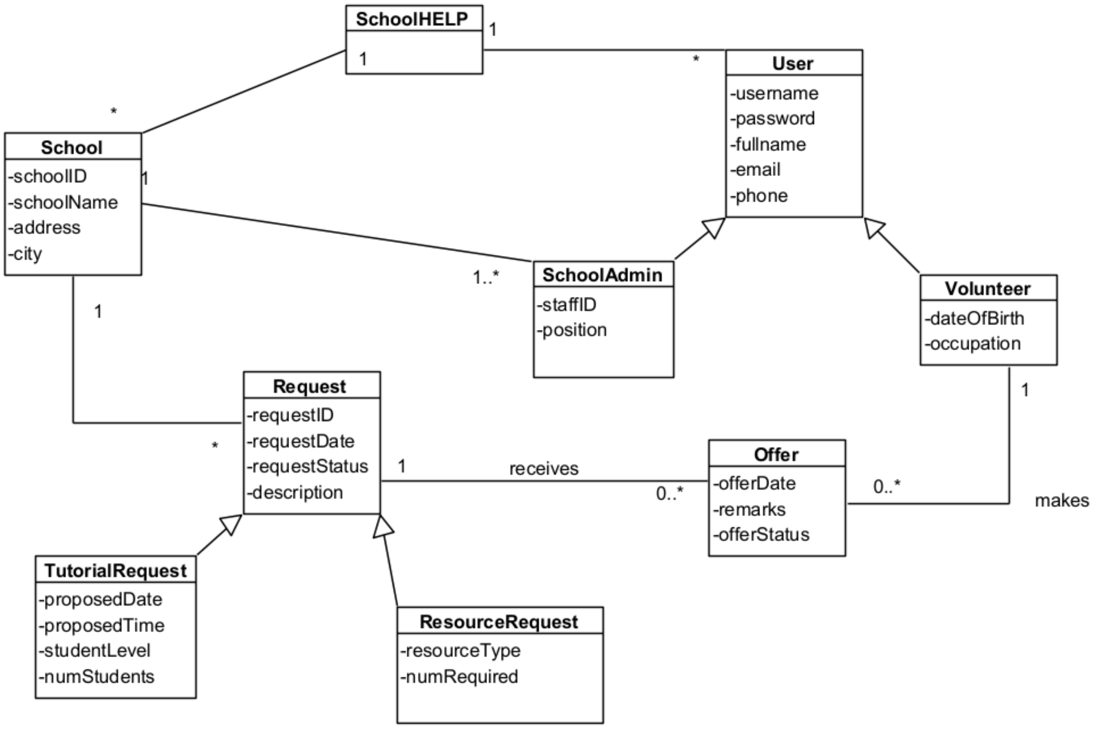
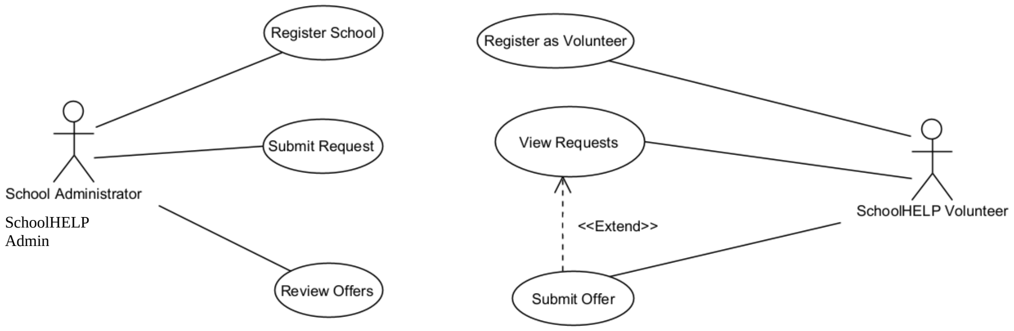


Figure 1: SchoolHELP Class Diagram

Note: The attributes of the classes can be modified to accommodate the implementation/coding.



Use Case 1	Register School
Goal in Context	To allow a SchoolHELP Admin to register a school and school administrator with SchoolHELP
Primary Actor	SchoolHELP Admin School Administrator
Trigger	A SchoolHELP Admin wants to register a school and school administrator
Typical Course of Events Actor Action	**System Response**
1. This use case begins when a SchoolHELP Admin wants to register a school	.
2. The SchoolHELP Admin enters the username and password.	
3. The SchoolHELP Admin enters the name of the school, school address and city.	The schoolID is auto generated.
4. The SchoolHELP Admin creates School Administrator account by entering the username, password, fullname, email, phone, staffID and position.	The school Administrator is recorded for the school.
5. The School Administrator enters the username and password.	
Alternative Course of Events	
Line 3a. If the school details are already recorded, skip to line 4.	
Line 5a. If the School Administrator is logging in, the School Administrator will be able to change the password and update the user profile (fullname, email, phone, staffID and position).	

Use Case 2	Submit Request
Goal in Context	To allow a School Administrator to submit a request for assistance from the general public.
Primary Actor	School Administrator
Trigger	A School Administrator wants to submit a request for assistance.
Typical Course of Events Actor Action	**System Response**
1. This use case begins when a School Administrator wants to submit a request for assistance.	.
2. The School Administrator logs in with a username and password	The School Administrator’s name and position is displayed. The School ID and school name is displayed.

3. The School Administrator enters the description of the tutorial request, the proposed date and time of the tutorial, the student level and the number of expected students in the tutorial.	The request date is set to the current date. The requestID is automatically generated and the request status is set to “NEW”.
Alternative Course of Events	
Line 3a. If the School Administrator would like to submit a resource request, the description of the resource required, the resource type is selected (mobile device, personal computer or networking equipment) and the number required is entered.	
Line 3b. If the School Administrator would like to add another request, repeat line 3.	

Use Case 3	Register as Volunteer
Goal in Context	To allow a Volunteer to register
Primary Actor	Volunteer
Trigger	A Volunteer would like to register with SchoolHELP
Typical Course of Events Actor Action	**System Response**
1. This use case begins when a Volunteer wants to sign up with SchoolHELP.	.
2. The Volunteer enters the username, password, fullname, email, phone, occupation and date of birth.	The Volunteer is recorded in the system.

Use Case 4	View Requests
Goal in Context	To allow a Volunteer to view requests that have been submitted
Primary Actor	Volunteer
Trigger	A Volunteer wants to view requests that have been made
Typical Course of Events Actor Action	**System Response**
1. This use case begins when a volunteer wants to view requests that have been made by schools.	
2. The volunteer can choose to view requests by school, by city, or by request date.	The list of requests with status “NEW” is shown with the request date, description, school name and city.
3. The volunteer selects a requestID to view more details.	The request details (tutorial date and time, student level and numStudents, or resource type and number required) are shown.

Alternative Course of Events
Line 3a. The volunteer can choose to view another request.
Line 3b. If the volunteer would like to make an offer for a request, go to use case “Submit Offer”.

Use Case 5	Submit Offer
Goal in Context	To allow a Volunteer to make an offer for a request.
Primary Actor	Volunteer
Trigger	A Volunteer wants to submit an offer for a request
Typical Course of Events Actor Action	**System Response**
1. This use case begins when a volunteer wants to submit an offer for a request	The requestID has been selected from the use case “View Requests”
2. The volunteer logs in with a valid username and password.	
3. The volunteer enters remarks for the offer.	The offer is recorded for the request. The offerStatus is set to “PENDING”
Alternative Course of Events	
Line 2a. If the volunteer is not registered, go to use case “Register as Volunteer”	
Line 3b. If the volunteer would like to make an offer for a request, go to use case “Submit Offer”.	

Use Case 6	Review Offers
Goal in Context	To allow a School Administrator to review offers for requests.
Primary Actor	School Administrator
Trigger	A School Administrator wants to check the status of requests made by the school.
Typical Course of Events Actor Action	**System Response**
1. This use case begins when a School Administrator wants to check the status of requests from the school.	
2. The School Administrator logs in with a valid username and password.	The School Administrator’s name and position is displayed. The School ID and school name is displayed.

3. The School Administrator selects to view Requests.	The list of requests is shown, sorted by status and date.
4. The School Administrator selects one of the requests by requestID.	The request description is shown together with the list of offers for the request.
5. The School Administrator selects an offer for the request.	The offer date, remarks and name, age and occupation of the volunteer is shown.
6. The School Administrator selects to accept the offer.	An email is sent to the volunteer and the school administrator to inform that the offer has been selected. The status of the offer is set to "ACCEPTED".
7. The School Administrator selects to close the request.	The request status is set to "CLOSED"
8. The School Administrator logs out.	
Alternative Course of Events	
Line 5a. If there are no offers to select, skip lines 5 – 7.	
Line 6a. If the School Administrator would like to accept another offer, repeat lines 5 – 6.	
Line 7a. If the School Administrator would not like to close the request yet, skip line 7.	

References

UN.org (2021). Quality Education. Sustainable Development Goals, https://www.un.org/sustainabledevelopment/education/

WorldBank.Org (2021). Mission: Recovering Education in 2021. https://thedocs.worldbank.org/en/doc/48a431d24d2d23eb1a2fc25a37a00a2b-0140052021/original/Recovery-mission-statement-5-pager-FINAL-4-45pm.pdf

It is your task to decide on the placement, access modifiers and functioning of these and other supporting methods.

Your task is to allow a user of your program to perform the following operations:

- allows SchoolHELP Admin to register a school and school administrator;
- allows a School Administrator to update his/her profile;
- allows a School Administrator to submit a request for assistance;
- allows a Volunteer to register with SchoolHELP;
- allows a Volunteer to view requests;
- allows a Volunteer to submit an offer for a request;
- allows a School Administrator to review offers for requests;
- display detail of all requests, sorted according to school name, followed by requests for assistance (sorted according to from date).

In completing this assignment, you should carefully consider the design of EACH class. Once you have coded each class, test its functionality completely. Work from the base class up. Make exclusive use of 'getters' and 'setters' to access and alter ‘model’ attributes. You should consider the need to include overloaded or over-riding methods in the various classes. You will also need to give careful consideration to access modifiers that you use.

You should include comments in your code stating what each block/code does and explaining any complex sections of code. You should of course use meaningful identifier names so that your code is to some extent self-documenting

Submission Requirements:

- Softcopy Submission to **LMS Turnitin** :
  i. Report with cover-sheet stating your student number. NOTE: Do not put your name on the cover-sheet.
  ii. Compiled Word Document of the source code and test data (using a table format)

- Softcopy Submission of (.cpp/.h/.exe) to LMS
  - Source file(s) and the exe file(s) are to be saved as your STUDENT ID, zipped and uploaded to LMS.

TURNITIN Submission	A Final Compiled report to be submitted to LMS Turnitin: by 2PM.
Late Submission	Please fill out the Late Submission Form to be considered for extension. Penalty of 5 marks per working day will be imposed if: • late submission form is not included; • reason for extension is not given; • extension is not granted.
Cover Sheet	Include the Assignment Cover Sheet
Academic Integrity	You are expected to adhere to the Academic Integrity Policy. All referencing and citation should use APA Style (7th Edition preferred). You do not need to submit the similarity report. Turnitin similarity reports will be generated by the lecturer and penalties imposed for similarity exceeding 15%. You may be subject to additional penalties according to the Academic Integrity Policy.

Marking Scheme

Student ID : ……………………………..

		Marks	Allocated
Coding style: (CLO3)	Your submission makes effective and correct usage of C++ coding constructs and C++ coding conventions. a) Correct Usage of STL template (2) b) Implementation of polymorphism through virtual (2) c) Usage of separate files (2) d) Comments/Appropriate Variable Names/Indentation (2) e) Parameter Passing (2)	10	
Submission completeness : (CLO1, CLO3)	Completion of all of the requirements that are outlined, deducible or desirable from the problem specification. Appropriate choice of data structure a) User (abstract) (3) b) SchoolAdministrator (4) c) Volunteer (4) d) School (4) e) Request (abstract) (3) f) TutorialRequest (4) g) ResourceRequest (4) h) Offer (4)	30	
Program execution: (CLO2, CLO3)	Your system correctly implements all of the tasks that are identifiable. a) Registering School (5) b) Registering School Administrator (5) c) School Administrator update profile (4) d) School Administrator make tutorial request (5) e) School Administrator make resource request (5) f) Volunteers make offer (requests are sorted) (10) g) School Administrator review offers (sorted) (10) h) Appropriate validations (4) i) Menu & Logins for (Admin) (4) j) Menu & Logins for (School Administrator) (4) k) Menu & Logins for (Volunteer) (4)	60	
	Late Penalty (-5 mark per day)		
	Not adhering to the Academic Integrity		
	Total marks allocated to this assignment item:	100	