

Appendix I: Declaration on Use of GAI (Generative Artificial Intelligence) Assistance in relation to Assignment/Project (to be submitted individually even for group projects)

I Liang Xun Zhi, Brandon, Lim Weijun and Tan Wei Yu (student name),
BLIANG003, LIMW0225, TA0014YU @e.ntu.edu.sg (NTU email) honestly and sincerely make the
following declaration in relation to the following course submission:

1. Name of course: Object-Oriented Programing
2. Course Code: SC2002
3. Instructor: Peng Minyi
4. Title of Assignment/Project Submission: SC2002 Report

In relation to the foregoing I hereby declare that, fully and properly in accordance with the Assignment/Project Instructions I have (check where appropriate):

- i. Used GAI as permitted to assist in generating key ideas only. ☐
- ii. Used GAI as permitted to assist in generating a first text only. ☐
- And/or
- iii. Used GAI to refine syntax and grammar for correct language submission only. ☐

Or

- iv. As it is not permitted: Not used GAI assistance in any way in the development or generation of this assignment or project. ☒

I also declare that I have :

- a. Fully and honestly submitted the digital paper trail required under the assignment/project instructions; and that
- b. Wherever GAI assistance has been employed in the submission in word or paraphrase or inclusion of a significant idea or fact suggested by the GAI assistant, I have acknowledged this by a footnote; and that,
- c. Apart from the foregoing notices, the submission is wholly my own work.

Liang Xun Zhi, Brandon
Tan Wei Yu
Lim Weijun

Student Name & Signature

26/11/2023

Date




APPENDIX B:

Declaration of Original Work for CE/CZ2002 Assignment

We hereby declare that the attached group assignment has been researched, undertaken, completed, and submitted as a collective effort by the group members listed below.

We have honoured the principles of academic integrity and have upheld Student Code of Academic Conduct in the completion of this work.

We understand that if plagiarism is found in the assignment, then lower marks or no marks will be awarded for the assessed work. In addition, disciplinary actions may be taken.

Name	Course (CE2002 or CZ2002)	Lab Group	Signature /Date
LIANG XUN ZHI, BRANDON	SC2002	SCEB	26.11.23 
LIM WEIJUN	SC2002	SCEB	26.11.23 
TAN WEI YU	SC2002	SCEB	26.11.23 

Important notes:

1. Name must **EXACTLY MATCH** the one printed on your Matriculation Card.
2. Student Code of Academic Conduct includes the latest guidelines on usage of Generative AI and any other guidelines as released by NTU.



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SINGAPORE

SC2002

OBJECT ORIENTED DES & PROG

Report

Lab Group SCEB

Group 3

Names	Matriculation Number
LIM WEIJUN	U2222129A
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a) Design considerations

Usage of OO concepts and principle - correctness and appropriateness

1. Encapsulation

We used private access modifiers for class attributes to prevent unauthorised access. We also used mutators and accessors to access and update the value of these private variables.

```
... public String getName() {  
...     return this.name;  
... }  
  
... public void setName(String name) {  
...     this.name = name;  
... }
```

2. Inheritance

Staff and student inherits from the user class, showing a “is-a” relationship.

```
public class Student extends User{
```

3. Polymorphism (method overriding)

The generateCampReport in User class is overridden in staff and student classes, showing method overriding in which the same method has different implementations in different classes

```
... public void generateCampReport(Camp camp, int number){  
...     try {  
...         FileWriter myWriter = new FileWriter(fileName:"student.txt");
```

```
... public void generateCampReport(Camp camp, int number){  
...     try {  
...         FileWriter myWriter = new FileWriter(fileName:"staff.txt");
```

4. Abstraction

User class is abstract, serving as a base class. This shows abstraction as it focuses on the essential qualities of an object rather than its specific details.

```
public abstract class User {  
... private String userId;  
... private String name;  
... private String password;  
... private Faculty facultyInfo;
```

5. Single Responsibility Principle

Camp class is solely responsible for managing camp details, staff and student manages their own functions according to their roles respectively.

6. Open-closed Principle

Open for extension, closed for modification. Adding a new type of user(eg. Non-student participants) would require creating a new class that extends the user class, but the user class does not need to be modified.

7. Interface Segregation Principle

All of the menu classes(StaffMenu, StudentMenu, NewUserMenu) implement methods that they all need, there are no methods that are being implemented by them that they don't need. Additionally, the mainUI interface does not have many methods, avoiding the “fat” interface.

8. Dependency Inversion Principle

High level modules like Staff and Student should not depend on low level modules. They both depend on an abstract class called User.

Explanation of design choices and how it fits the project requirements

1. Usage of Arraylist

We used arraylist to manage collections of students, staff and camps. This is a flexible choice to handle varying amounts of data entries, fitting the dynamic nature of camp management.

2. Separating Enquiries and Suggestions

Creation of separate classes for enquiries and suggestions. This makes it clear that there is a distinct difference between enquiries and suggestions and both these classes can be reused in potential future implementations of the application.

Coupling and cohesion of classes

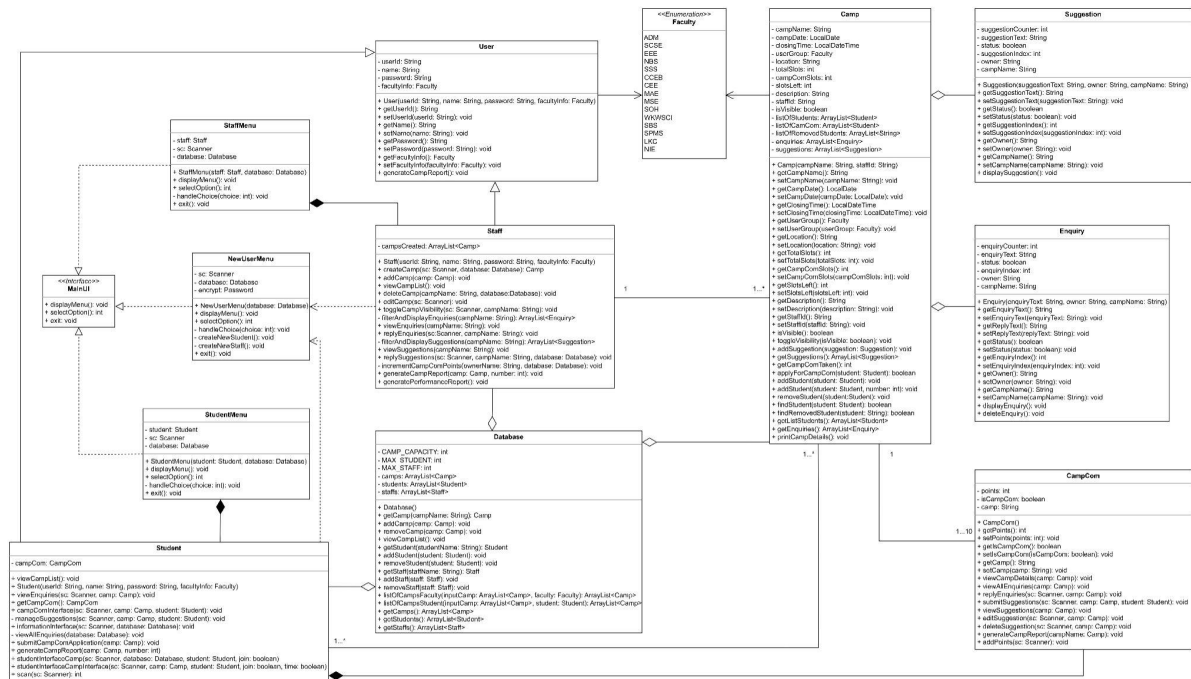
1. Loose Coupling

There is loose coupling. Camp com interacts with camp but does not need to know its internal details. Campcom can operate independently of camp but can interact with it. This reduces dependencies among classes.

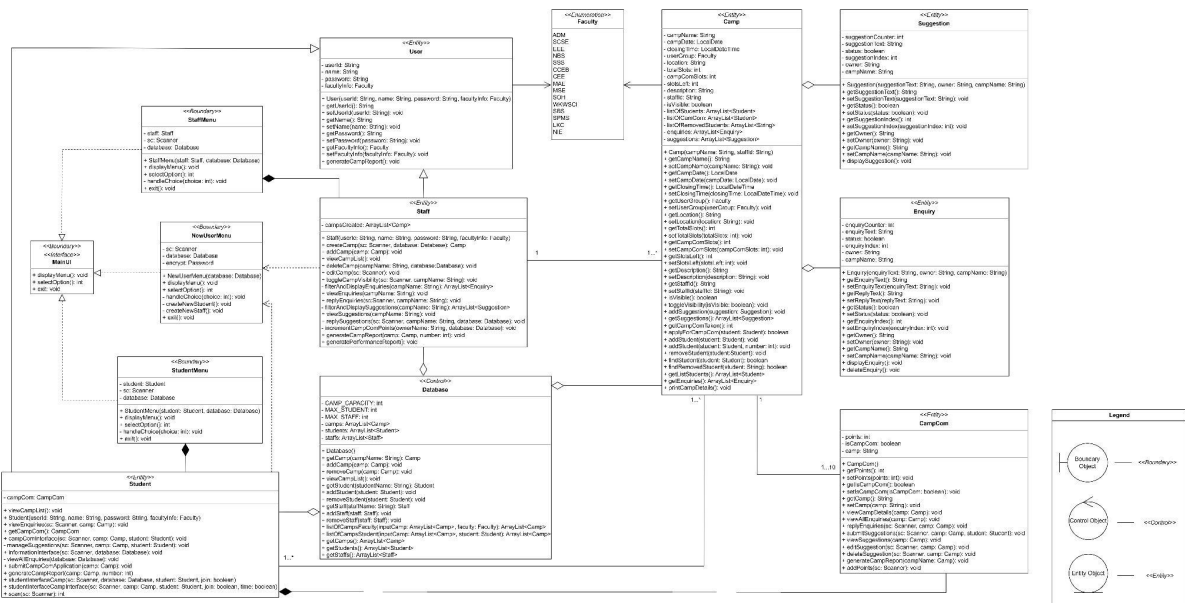
2. High cohesion

Highly cohesive, camp handles all attributes and behaviour to a camp, student and staff handles user-specific functionalities and database handles data storage and retrieval.

UML Class diagram



Class Stereotypes



c) Test cases and results

Test case 1: Cannot login(staff and student)

<pre>//////////////////// Login Page 1: Student Login 2: Staff Login 3: Return //////////////////// 1 Username: test user No user found.</pre>	<pre>//////////////////// Login Page 1: Student Login 2: Staff Login 3: Return //////////////////// 1 Username: YCHERN Password: not his password Student Login Failed!</pre>
--	---

Test case 2: Display menu(staff and student)

<pre>//////////////////// Login Page 1: Student Login 2: Staff Login 3: Return //////////////////// 1 Username: YCHERN Password: YCHERN Student Interface - Choose an option: 1: See available list of camps 2: List of camps that you have joined 3: Student information 4: Return</pre>	<pre>//////////////////// Login Page 1: Student Login 2: Staff Login 3: Return //////////////////// 2 Username: HUKUMAR Password: HUKUMAR Staff Interface - Choose an option: 1: Create camp 2: Edit camp 3: Delete camp 4: Change camp visibility 5: View all camps 6: View camps that I created 7: View Enquiries 8: Reply to Enquiries 9: View Suggestions 10: Approve/Reject a Suggestion 11: Generate camp report 12: Generate performance report of camp committee 13: Change Settings 14: Return</pre>
---	---

Test case 3: Student functions

Student changing password and Student joining camp(slots decrease by 1)

<pre>//////////////////// Login Page 1: Student Login 2: Staff Login 3: Return //////////////////// 1 Username: YCHERN Password: YCHERN Student Interface - Choose an option: 1: See available list of camps 2: List of camps that you have joined 3: Student information 4: Return 3 Information 1: Change password 2: View enquiries 3: View Suggestions 4: Return //////////////////// 1 Enter new password: YCHERN2 Re-enter password: YCHERN2 New password set!</pre>	<pre>//////////////////// Camp name: SCSEcelebration Location: SCSE office Total Slots: 50 Slots remaining: 49 Camp Committee Slots Taken: 0 Camp Committee Slots Left: 5 Date: 2024-01-01 Closing Date time: 2024-01-01T20:00 Visibility: true You have not joined this camp 1: Join this camp 2: Manage enquiries 3: Camp Committee tasks 4: Return //////////////////// 1 You have joined the Camp! //////////////////// Camp name: SCSEcelebration Location: SCSE office Total Slots: 50 Slots remaining: 48 Camp Committee Slots Taken: 0 Camp Committee Slots Left: 5 Date: 2024-01-01 Closing Date time: 2024-01-01T20:00 Visibility: true You have joined this camp 1: Leave this camp 2: Manage enquiries 3: Camp Committee tasks 4: Return ////////////////////</pre>
--	---

Student cannot join camp(date clash and no slots left respectively)

```
////////////////////////////////////
Camp name: Test
Location: SCSE hall2
Total Slots: 40
Slots remaining: 40
Camp Committee Slots Taken: 0
Camp Committee Slots Left: 5
Date: 2024-02-02
Closing Date time: 2024-02-02T20:00
Visibility: true
You have not joined this camp
1: Join this camp
2: Manage enquiries
3: Camp Committee tasks
4: Return
////////////////////////////////////
1
You cannot register as the timings clash with another register camp
////////////////////////////////////
Camp name: Test
Location: SCSE hall2
Total Slots: 40
Slots remaining: 40
Camp Committee Slots Taken: 0
Camp Committee Slots Left: 5
Date: 2024-02-02
Closing Date time: 2024-02-02T20:00
Visibility: true
You have not joined this camp
1: Join this camp
2: Manage enquiries
3: Camp Committee tasks
4: Return
////////////////////////////////////

////////////////////////////////////
Camp name: Test
Location: SCSE hall2
Total Slots: 0
Slots remaining: 0
Camp Committee Slots Taken: 0
Camp Committee Slots Left: 0
Date: 2024-02-02
Closing Date time: 2024-02-02T20:00
Visibility: true
You have not joined this camp
1: Join this camp
2: Manage enquiries
3: Camp Committee tasks
4: Return
////////////////////////////////////
1
There are no more slots left in the camp
////////////////////////////////////
Camp name: Test
Location: SCSE hall2
Total Slots: 0
Slots remaining: 0
Camp Committee Slots Taken: 0
Camp Committee Slots Left: 0
Date: 2024-02-02
Closing Date time: 2024-02-02T20:00
Visibility: true
You have not joined this camp
1: Join this camp
2: Manage enquiries
3: Camp Committee tasks
4: Return
////////////////////////////////////
```

Student submitting enquiry

```
1
Enter new enquiry:
This is a new enquiry for SCSE
New enquiry set!

Enquiry Index: 1
Enquiry: This is a new enquiry for SCSE by BLIANG003
Status: Not Replied
1: Edit Enquiry
2: Delete Enquiry
3: Return
```

Student unable to join camp once he left the camp

```
////////////////////////////////////
1
Do you want to leave this camp?
You will be unable to rejoin this camp.
1: Leave the camp
2: Return
1
You have left the Camp.
////////////////////////////////////
Camp name: SCSE
Location: SCSE Lounge
Total Slots: 100
Slots remaining: 97
Camp Committee Slots Taken: 1
Camp Committee Slots Left: 2
Date: 2024-02-02
Closing Date time: 2023-01-01T12:00
Visibility: true
You have not joined this camp
1: Join this camp
2: Manage enquiries
3: Camp Committee tasks
4: Return
////////////////////////////////////
1
You have left the camp before
////////////////////////////////////
```


Test case 4: CampCom functions

Student becoming CampCom

```
3
You are not a member of this camp committee
Submit an application?
1: Yes
2: Return
1
Congratulations you are now a camp committee of this camp!
```

CampCom submit and viewing suggestions

```
Manage suggestions
1: Submit Suggestions
2: View Suggestions
3: Edit Suggestions
4: Delete Suggestions
5: Return
1
Enter your suggestion for the camp:
We should have more drinks
Suggestion submitted successfully for camp SCSE.
////////////////////////////////////
```

```
Manage suggestions
1: Submit Suggestions
2: View Suggestions
3: Edit Suggestions
4: Delete Suggestions
5: Return
2
Suggestions for camp: SCSE
Suggestion Index: 1
Suggestion: We should have more drinks by YCHERN
Status: Rejected
```

CampCom view and reply to enquiries

```
You are a member of this camp committee
1: View camp details
2: View enquires
3: Reply to enquiries
4: Manage Suggestions
5: Print camp details
6: Return
////////////////////////////////////
2
Enquiries for camp: SCSE
Enquiry Index: 1
Enquiry: Can we wear our own tshirts by YCHERN
Status: Not Replied
////////////////////////////////////
```

```
3
Enquiries for camp: SCSE
Enquiry Index: 1
Enquiry: Can we wear our own tshirts by YCHERN
Status: Not Replied
Enter the number of the enquiry you wish to reply to:
1
Enter your reply:
No
Reply sent successfully.
Updated Enquiry:
Enquiry Index: 1
Enquiry: Can we wear our own tshirts by YCHERN
Status: Replied
Reply: No
////////////////////////////////////
```

CampCom printing report for camp

```
////////////////////////////////////
5
How to print?
1: Attendees only
2: Camp committee only
3: Both
3
Successfully wrote to the file.
```

```
≡ student.txt
1  Camp name: SCSE
2  Location: SCSE Lounge
3  Total Slots: 100
4  Slots remaining: 96
5  Camp Committee Slots Taken: 1
6  Camp Committee Slots Left: 2
7  Date: 2024-02-02
8  Closing Date time: 2023-01-01T12:00
9  Visibility: true
10 CHERN is a camp committee member
11 DENISE is a participant
12 Brandon Liang is a participant
13 LEE is a participant
14
```

Test case 5: Staff functions

Staff creating camp and editing camp

```
1
Enter camp name:
SCSE Orientation
Enter new camp date (yyyy-MM-dd):
2024-01-01
Enter new closing time (yyyy-MM-ddTHH:mm):
2024-01-01T00:00
Enter new user group (e.g., SCSE, LKC):
SCSE
Enter new location:
Lt19
Enter new total slots:
100
Enter new camp committee slots:
5
Enter new description:
SCSE Orientation for Freshmen
Camp created successfully!
```

```
2
Enter the name of the camp you want to edit:
SCSE Orientation
Select what you want to edit:
1. Camp Name
2. Camp Date
3. Closing Time
4. User Group
5. Location
6. Total Slots
7. Camp Committee Slots
8. Description
8
Enter new description:
SCSE Orientation for all
Camp updated successfully!
```

Staff viewing all camps and viewing camps he created and editing not his camp

```
5
All camps:
1: SCSE
2: EEE
3: SCSEcelebration
4: Test
5: SCSE Orientation
```

```
6
All camps:
1: SCSE
2: Test
3: SCSE Orientation
```

```
2
Enter the name of the camp you want to edit:
EEE
Camp not found.
```

Staff view suggestion and accepting suggestion

```
9
Enter camp name to view suggestions:
SCSE
Suggestions for camp: SCSE
Suggestion Index: 1
Suggestion: We should have more drinks by CHERN
Status: Rejected
```

```
10
Enter camp name:
SCSE
Suggestions for camp: SCSE
Suggestion Index: 1
Suggestion: We should have more drinks by CHERN
Status: Rejected
Enter the index of the suggestion to reply:
1
Do you want to approve or reject the suggestion?
1: Approve
2: Reject
1
Updated Suggestion:
Suggestion Index: 1
Suggestion: We should have more drinks by CHERN
Status: Approved
```

Staff viewing all enquiries to camp and replying enquiries

```
7
Enter camp name to view enquiries:
SCSE
Enquiries for camp: SCSE
Enquiry Index: 1
Enquiry: Can we wear our own T-shirts by YCHERN
Status: Not Replied
```

```
8
Enter camp name to reply to enquiry:
SCSE
Enquiries for camp: SCSE
Enquiry Index: 1
Enquiry: Can we wear our own T-shirts by YCHERN
Status: Not Replied
Enter the number of the enquiry you wish to reply to:
1
Enter your reply:
Yes, for the first day
Reply sent successfully.
Updated Enquiry:
Enquiry Index: 1
Enquiry: Can we wear our own T-shirts by YCHERN
Status: Replied
Reply: Yes, for the first day
```

Staff generating report for both participants and CampCom

```
Enter camp name to generate report:
SCSE
How to print?
1: Attendees only
2: Camp committee only
3: Both
3
Successfully wrote to the file.
```

```
≡ staff.txt
1  Camp name: SCSE
2  Location: SCSE Lounge
3  Total Slots: 100
4  Slots remaining: 96
5  Camp Committee Slots Taken: 1
6  Camp Committee Slots Left: 2
7  Date: 2024-02-02
8  Closing Date time: 2023-01-01T12:00
9  Visibility: true
10 CHERN is a camp committee member
11 DENISE is a participant
12 Brandon Liang is a participant
13 LEE is a participant
14
```

Staff generating CampCom performance report

```
Enter camp name to generate report:
SCSE
Successfully wrote to the file.
```

```
≡ performanceReport.txt
1  Camp name: SCSE
2  Camp Committee Slots Taken: 1
3  Camp Committee Slots Left: 2
4  CHERN is a camp committee member with 1 points.
5
```

Staff changing password

```
13
What do you want to change?
1: Password
2: StaffId
3: Faculty
1
Enter new password:
HUKUMAR2
Re-enter password:
HUKUMAR2
Password successfully changed!
```

Test case 6: Prompting user to change password for first login(assume password is “password”)

```
1
Username:
YCHERN
Password:
password
Enter new password:
YCHERN
Re-enter password:
YCHERN
New password set!
```

d) Reflection

Difficulties encountered and the way we conquered them

1. Difficulties encountered

- It is very difficult to work on the code together, especially when everyone has different ideas and logic on how to implement the code.
- When implementing the code, we realised that our code violated some of the SOLID principles and we had to relook at it again, on top of debugging the code.
- Debugging the code was difficult as our code had a lot of connecting methods that may have caused an unwanted output.
- UML diagram needs constant updates during code improvement

2. How we overcame difficulties

- Writing out the pseudo code before doing any group coding, discussing coding logic with groupmates
- Constantly rechecking and changing of the code to implement the SOLID principles
- Have a pseudo-code UML class diagram to help us improve our code and also not waste time and manpower to constantly change the UML diagram

3. Knowledge learnt

- Learnt how to save data on excel sheets from online resources
- I learnt that in order to not violate any of the SOLID principles, most codes or apps have a lot of interfaces. This resolidifies our aforementioned solution to preplan which interfaces we want to implement.
- Once a scanner is closed in the same function(local variable), it cannot be reopened again. This is one of the many debugging errors.
- A UML class diagram is very important for understanding where various classes fit into the system, giving us an easier visualisation of our system implementation

4. Further Improvement suggestion

- Release the assignment details earlier so as to give students more time to do the assignment. It is harder to find time for everyone to meet physically, with online discussions serving as a less effective method to convey information
- Better planning of the demonstration would allow for a clearer picture of how our code interacts with all the objects that were generated.