COLLEGE OF COMPUTER AND INFORMATION SCIENCE
MAPÚA MALAYAN COLLEGES MINDANAO

Massage Parlor Booking System

In Partial Fulfillment of the requirements in
CS106P: Data Structures and Algorithms

Presented by:
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Presented to:
MARTZEL P. BASTE

October 11, 2022

I. Introduction

A. *Problem Scenario*

Massage therapy has been shown to have beneficial effects on varying conditions. This is also considered an alternative treatment. The field of massage therapy has not only grown but also the availability of massage therapists. Getting a massage can improve health and wellness.

During the surge of COVID-19 cases, frequent massage clients cannot book an appointment for a massage because of fear of being infected by the virus from physical contact. Because of that, businesses such as massage parlors lose their clients. With this program, people would be able to book a massage even if they were to book for home service because of the change in the situation brought about by the COVID-19 pandemic. Operating massage parlors can also implement this system to avoid overcrowding the massage parlors with walk-in clients that didn't have any reservations.

Without an efficient massage booking system, massage therapists would find it hard to book appointments and make schedules. Though there is a staff that can handle and manage appointments, there are difficulties in reaching clients. As the scheduling is done manually, the massage therapist faces many problems. The communal problem of massage therapists is that clients sometimes just go to the massage parlor without prior notice, which is why they will bump into other customers wanting the same massage therapist from time to time.

B. *Objectives*

This program aims to assist massage parlors in implementing a booking system that will enable them to book a client's appointment, cancel, and pay in advance. Paying in advance is necessary to secure their appointment within 12 hours. After confirming the reservation, the system should be able to notify the client of a time slot with their massage therapist details which will be sent to their phone number shortly. The proponents developed this solution to provide a massage booking system for massage therapists.

C. ***Project Definition***

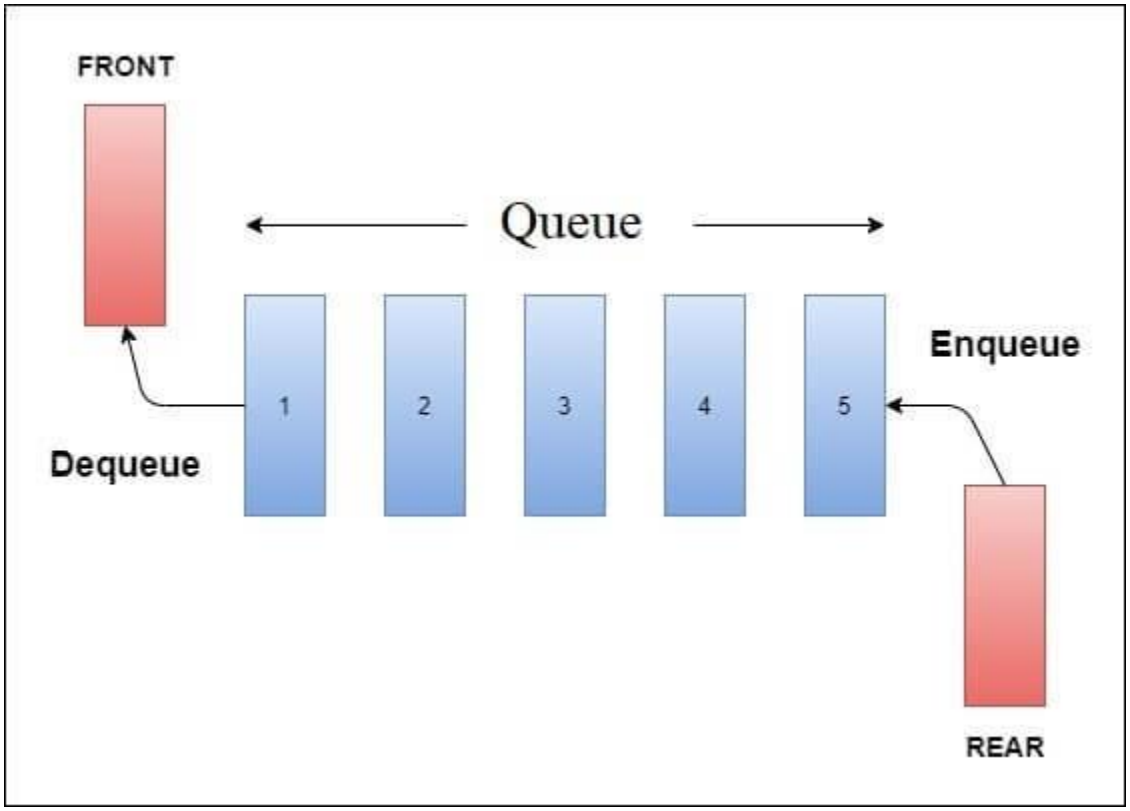


Figure 1.

Massage booking system implements the queue data structure. This data structure is open on both ends and the operations are performed in a First in First Out (FIFO) order. Shown in figure 1, a queue is a list in which all additions are made at one end, and all deletions from the list at the other end. The massage booking system allows the user to book an appointment using the enqueue function that asks for the information of the client. While the cancelling feature uses the dequeue function. Our program also has a feature where you can check the current list of appointments made by the user.

The Application - The application produced by the team is called Zen Den Booking System. It is an application that will enable users to book a massage reservation along with its management functions that enable the one who oversees the program to organize and delete appointments in the queue which has been reserved by the clients.

Features - The proponents introduced the following features to incorporate into the software:

Book Reservation – this feature uses the enqueue function and asks the users to input their name, contact number, and type of service before adding the data to the list.

PAY & TIP IN ADVANCE – this feature allows the user to pay for their appointments in advance to secure their appointments and would also allow them to tip their massage therapists.

Delete Reservation in-order – this allows the one who oversees the system to delete the appointment in order that was booked after asking for the password. This feature uses the dequeue function.

List of Clients – This option enables the one who oversees the program to view the list of client appointments and details booked by the user.

D. ***Time and Space Complexity***

Queue

Time complexity in big O notation

Algorithm	Average	Worst case
Space	$O(n)$	$O(n)$
Search	$O(n)$	$O(n)$
Insert	$O(1)$	$O(1)$
Delete	$O(1)$	$O(1)$

Figure 2

Time complexity is defined as the amount of time taken by an algorithm to run, as a function of the length of the input while Space Complexity on the other hand, refers to the total amount of memory space used by an algorithm or program, including the space of input values for execution. Shown in figure 2 is the Queue's time and space complexity. The space complexity of the Queue is O(n) because each input element has a fixed number of k bytes allocated. The time complexity of the enqueue and dequeue in queue operation is 0(1) because we have only changed a few pointers in both operations and there is no looping.

II. **Project/System Prototyping**

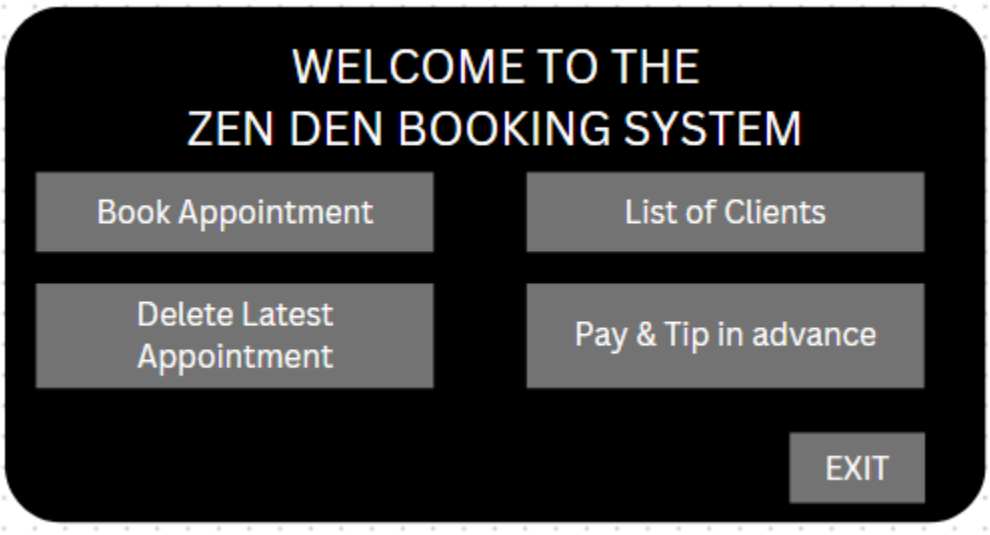


Figure 2. Booking System Main Menu

Figure 2 shows the main menu for the massage booking system. When the user runs the program, they can pick whether they will book an appointment, delete the latest appointment, view the list of clients, and have the option to pay & tip in advance.

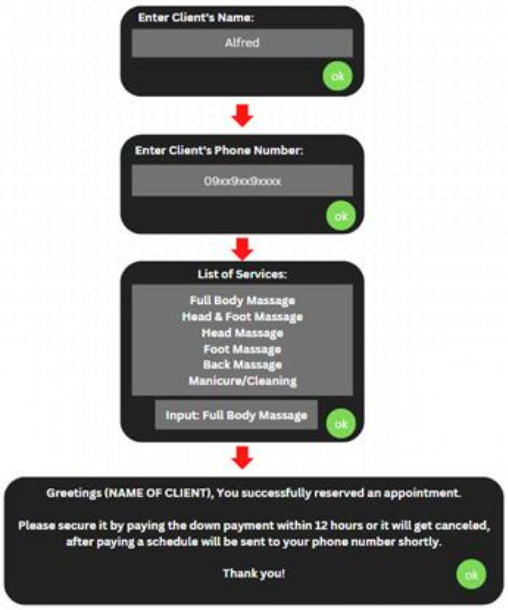


Figure 3. Booking an Appointment

Figure 2 shows the detailed steps to input the client's details. After pressing the button "Book Appointment" in figure 2, different panels will prompt you to ask for the name, contact detail, and the type of service the client would like to avail. Afterward, a system message would notify the client that they need to pay the down payment within 12 hours.

If successful, a text message would be forwarded to the client afterward, or the reserved appointment would be canceled.

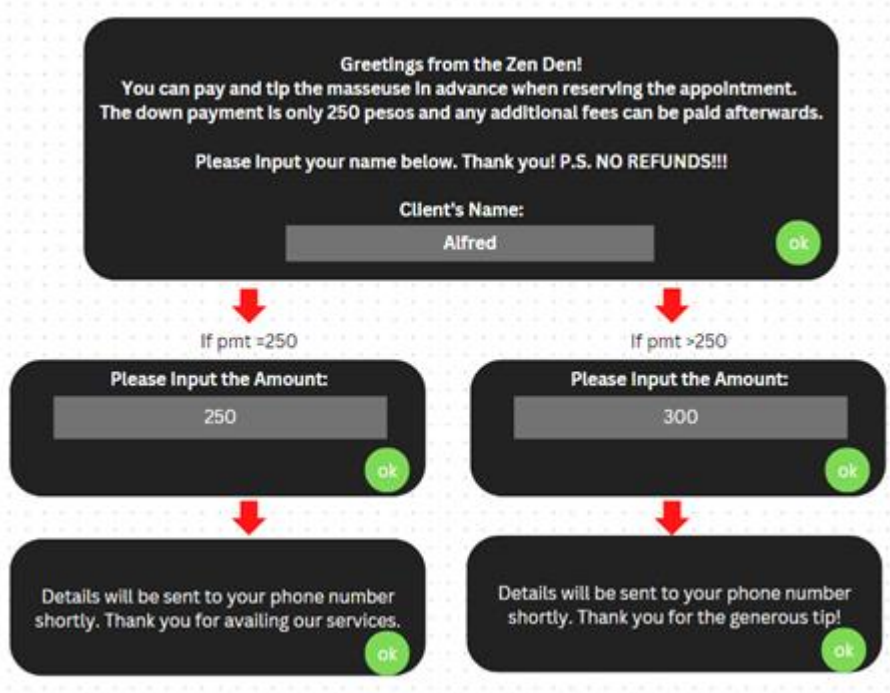


Figure 4. Pay & Tip in advance

Figure 4 will prompt the user how much the down payment is, and any additional fees can be paid afterward if the client is available at the massage time. We also noted that there could be no refunds once the appointment is officially booked. It will also say that the client can tip the massage therapist in advance; therefore, it would prompt two different messages if the client does or does not tip in advance. If the payment equals 250 pesos, the message "Details will be sent to your phone number shortly. Thank you for availing us of our services." But if the amount is more than 250pesos, which counts as a tip, the message "Details will be sent to your phone number shortly. Thank you for the generous tip!" will prompt.

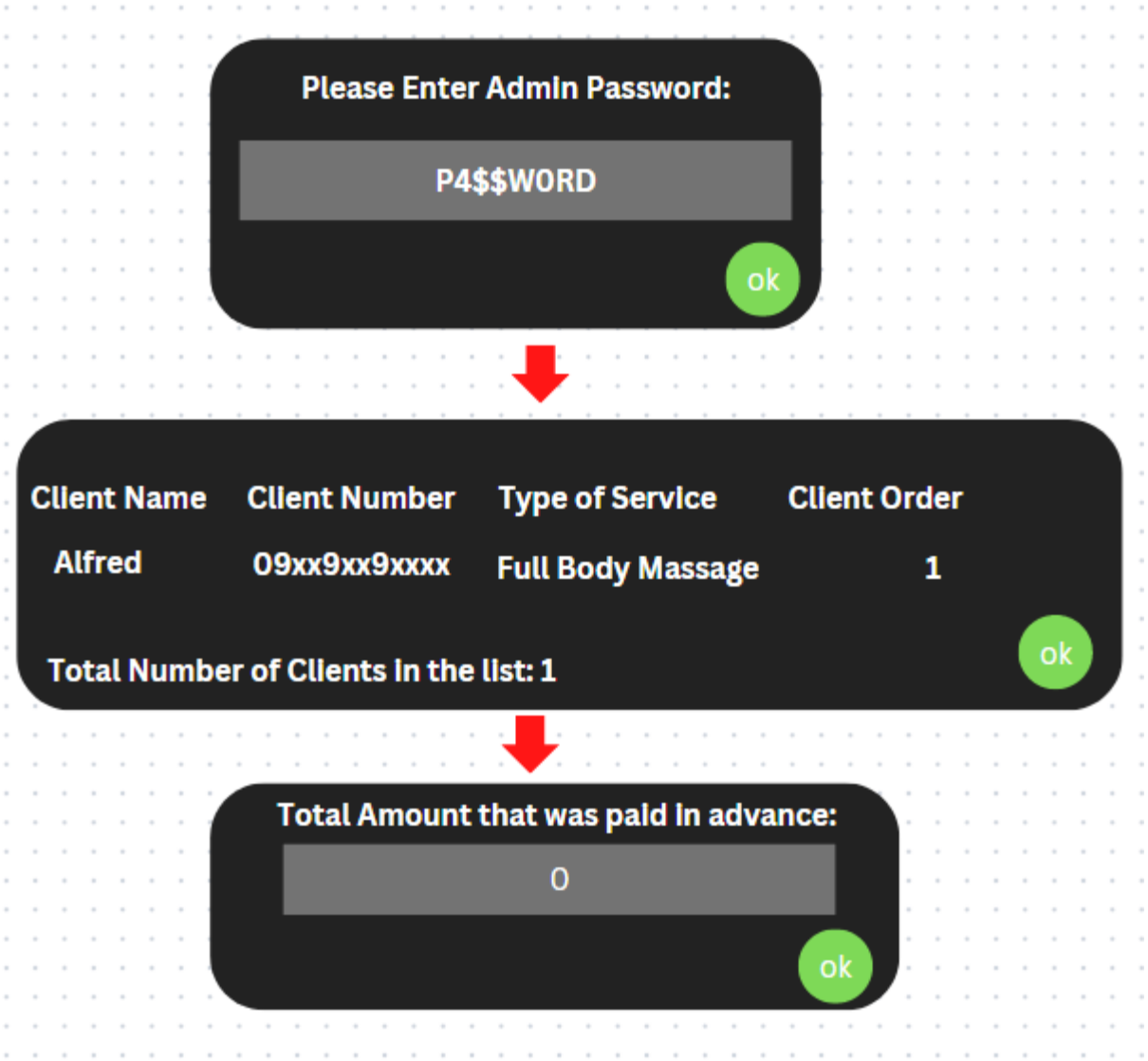


Figure 5. List of Clients

Figure 5 will show the list of clients that have already booked in the system. This option can only be accessed by the massage parlor employees or if whoever oversees the program. This option will only show the details of the client which is important and whether there is already payment done which can be seen as “Total Amount that was paid in advance:” It will first ask for the admin password which locks the whole option.

Figure 6. Delete Appointment

Since the program is of a queueing system, only the first reservation that got through will be the first to get deleted in deleting an appointment. Along the process, it will ask for the administrator password, delete the clients' position orderly, and show the client's details that got their reservation deleted

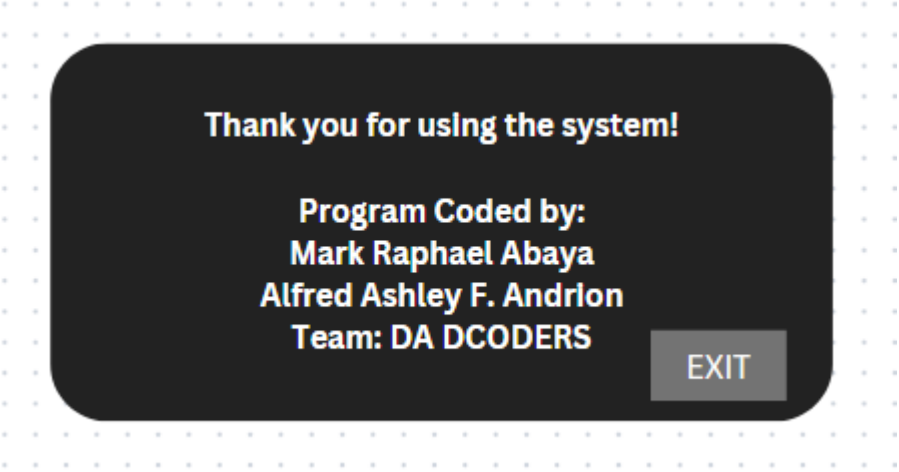


Figure 7. Exit

After clicking the exit button on Figure 2, the details within Figure 7 will prompt showing the name of the team and its members with the message "Thank you for using the system!".

III. Sample Input/Output

MAIN MENU BY: DA DCODERS

Figure 8. Main Menu

Book Reservation:

Figure 9. Booking a reservation

With booking an appointment, you would be asked to input details such as the client's name, contact information, and type of service they want to avail. after inputting the necessary details, a message would prompt where they should secure the down payment within 12 hours, or their reservation might get cancelled. The console below will also take note of the data in time units of editing the clients' details(enqueue).

PAY & TIP IN ADVANCE:

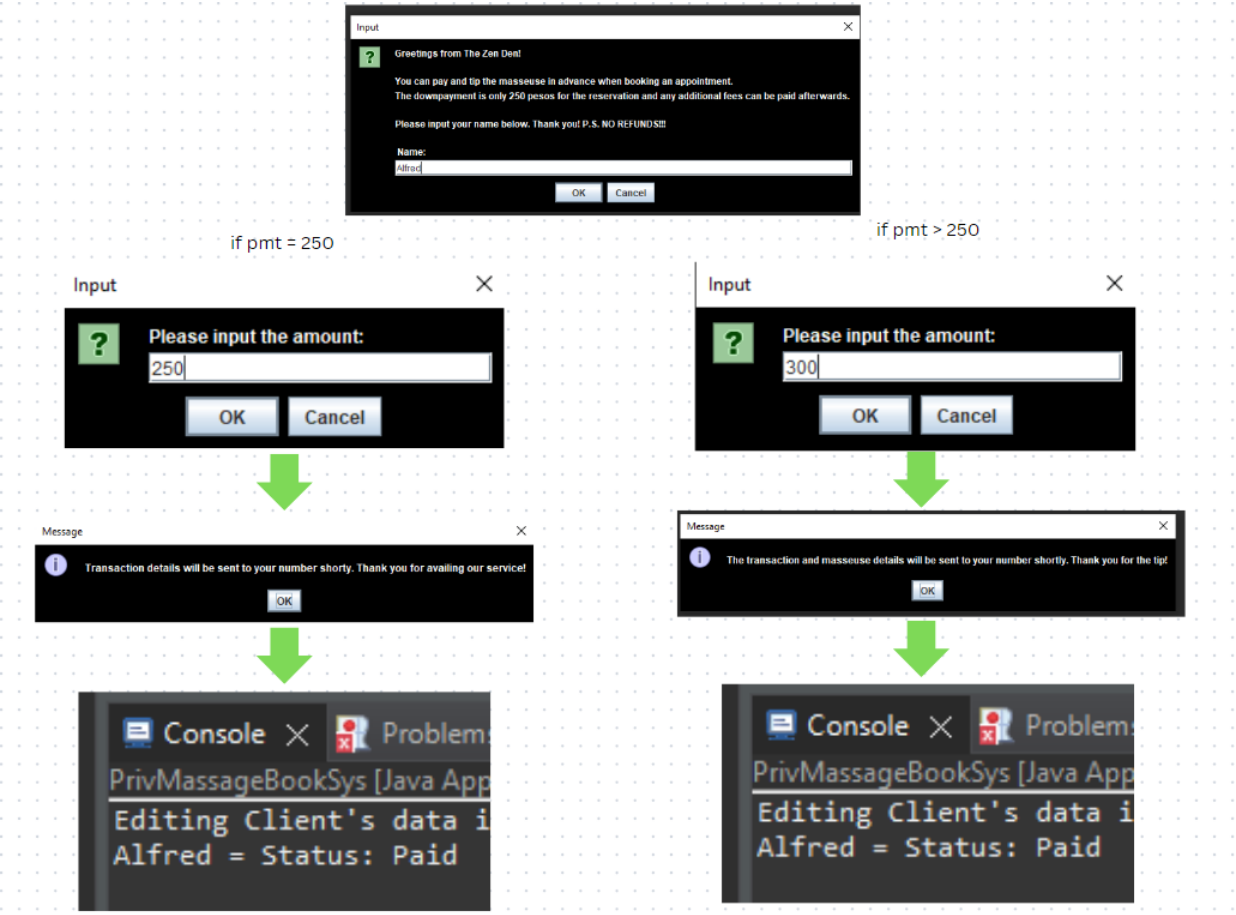


Figure 10. Paying and tipping in advance if payment is greater than and equal to 250

The first prompt will show the user how much the down payment is, and any additional fees can be paid afterward if the client is available at the massage time. We also noted that there could be no refunds once the appointment is officially booked. It will also say that the client can tip the massage therapist in advance; therefore, it would prompt two different messages if the client does or does not tip in advance. If the payment equals 250 pesos, the message "Transaction details" will be sent to your number shortly. Thank you for availing our service." But if the amount is more than 250pesos, which counts as a tip, the message "Details will be sent to your phone number shortly. Thank you for the tip!" will prompt. It will also show in the console the status of the payment of the client.

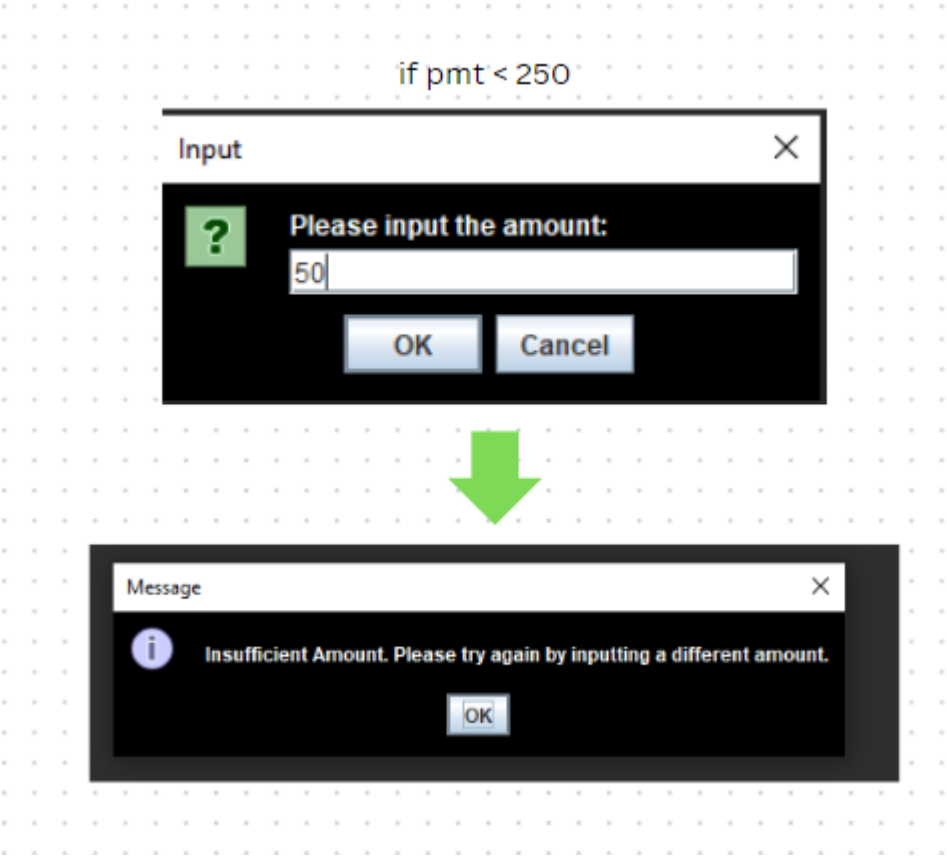


Figure 10.1 If payment is less than 250

On the other hand, if the payment is less than 250 then a prompt will show saying the user inputted an insufficient amount and will be asked to input a different amount.

Delete Reservation in-order:

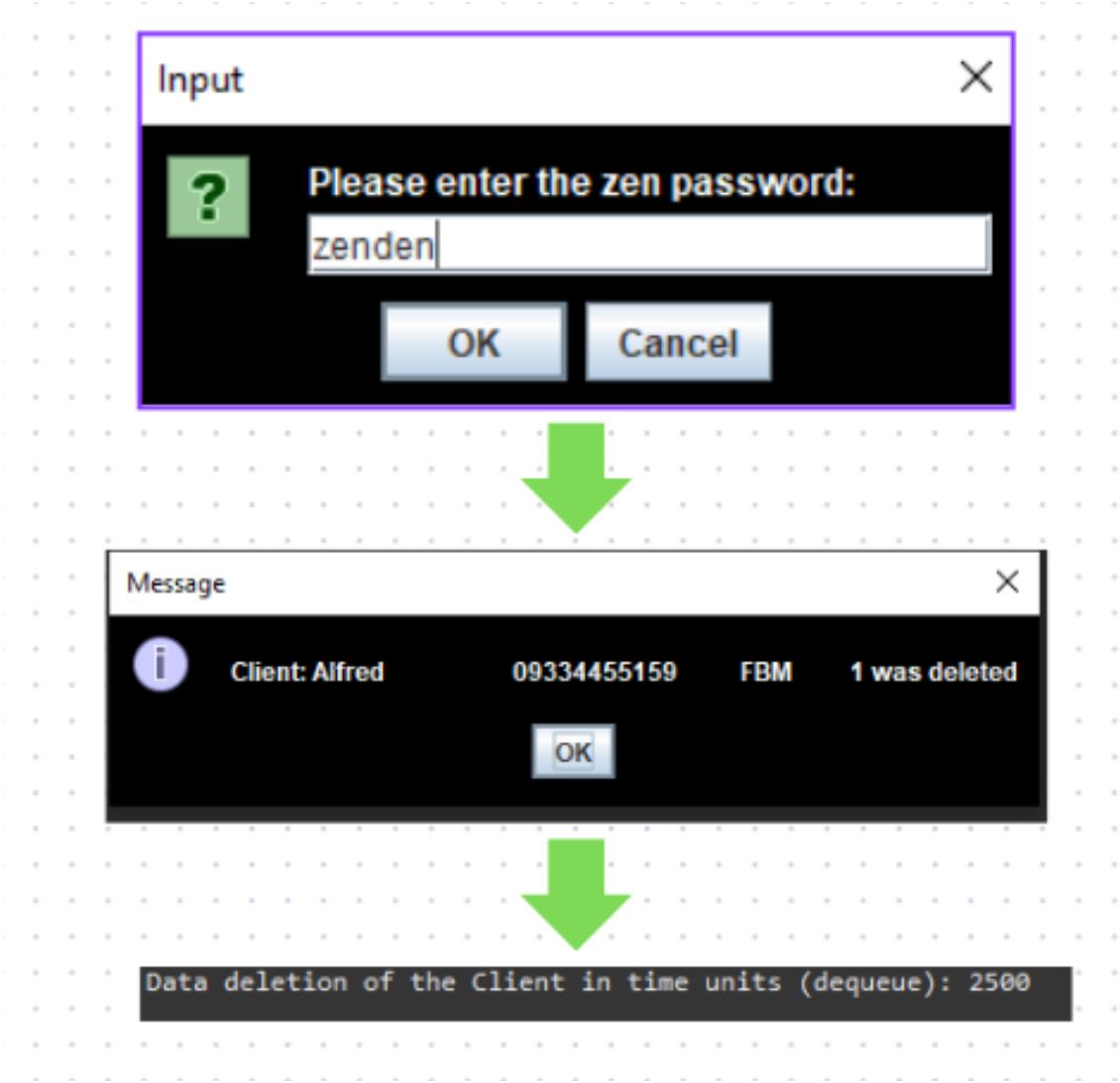


Figure 11. Deleting a reservation with the correct password

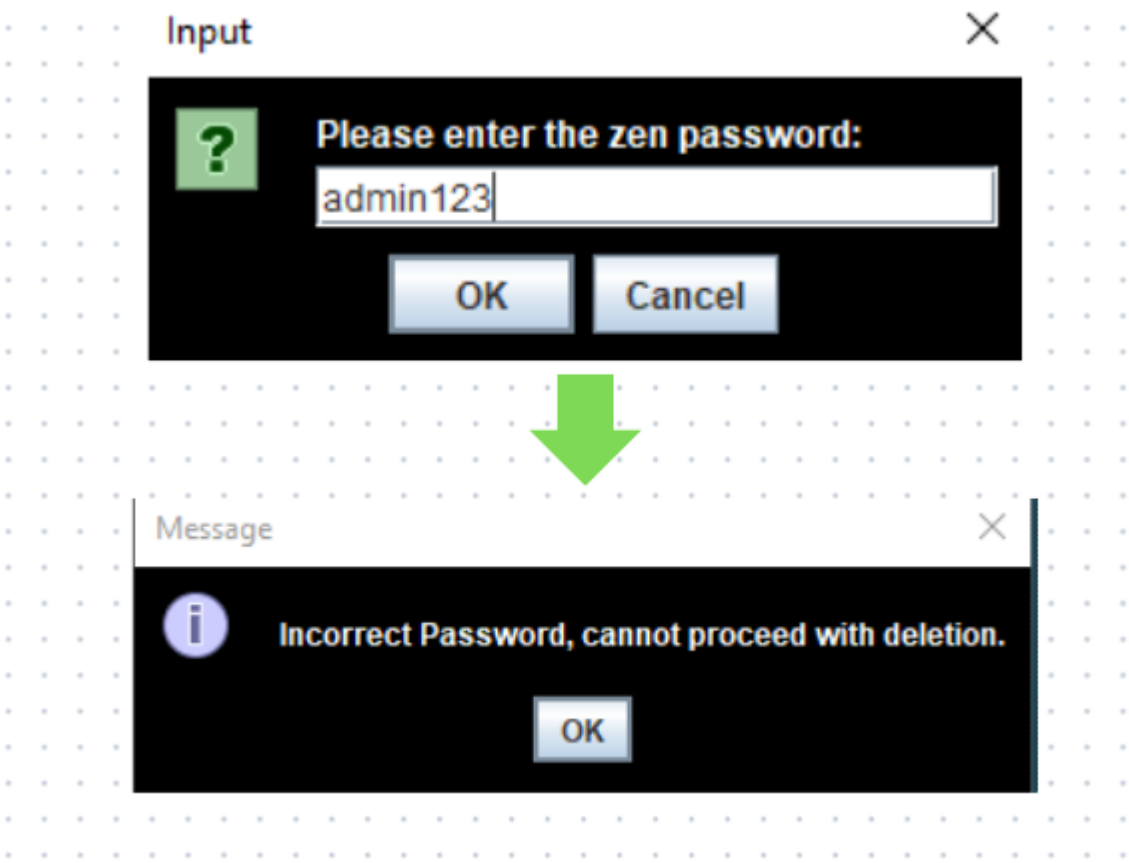
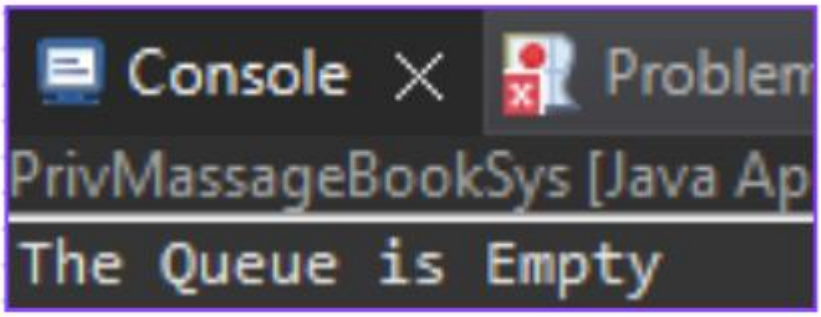


Figure 11.1 Deleting a reservation with the incorrect password

In deleting the reservation in-order the user would be asked for the password for this option. If you input the incorrect password, it will prompt a message that says, "Incorrect Password, cannot proceed with deletion." Afterwards it will prompt you back to the main menu. If you input the correct password, the client in-order will be deleted and at the same time the console below will take note of the data deletion of the Client in time units(dequeue).



On the other hand, if you would try to delete with an empty queue it will show in the console that “The Queue is Empty.”

List of Clients:

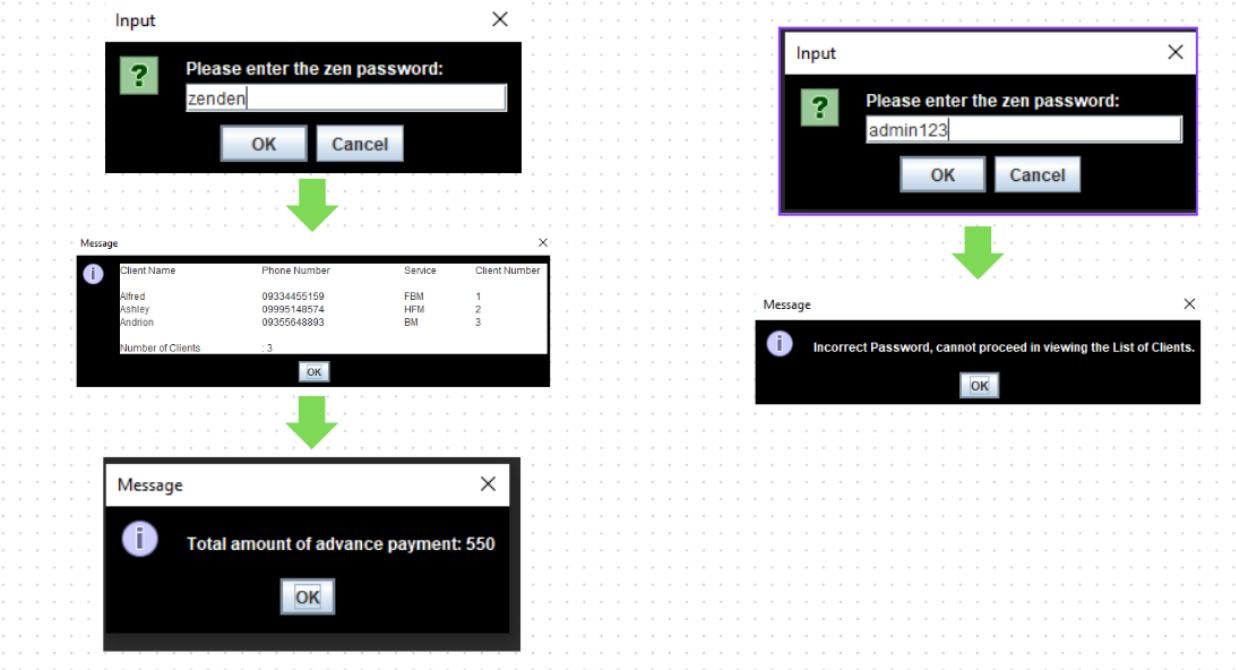


Figure 12. List of Clients

The List of Clients will show the list of customers that have already booked in the system. This option can only be accessed by the massage parlor employees or if whoever oversees the program asks for the admin password which protects the whole option. This option will only show the details of the client which is important and whether there is already payment made which can be seen as “Total Amount that was paid in advance.” If you input the incorrect password, then it will return the user to the main menu.

EXIT:

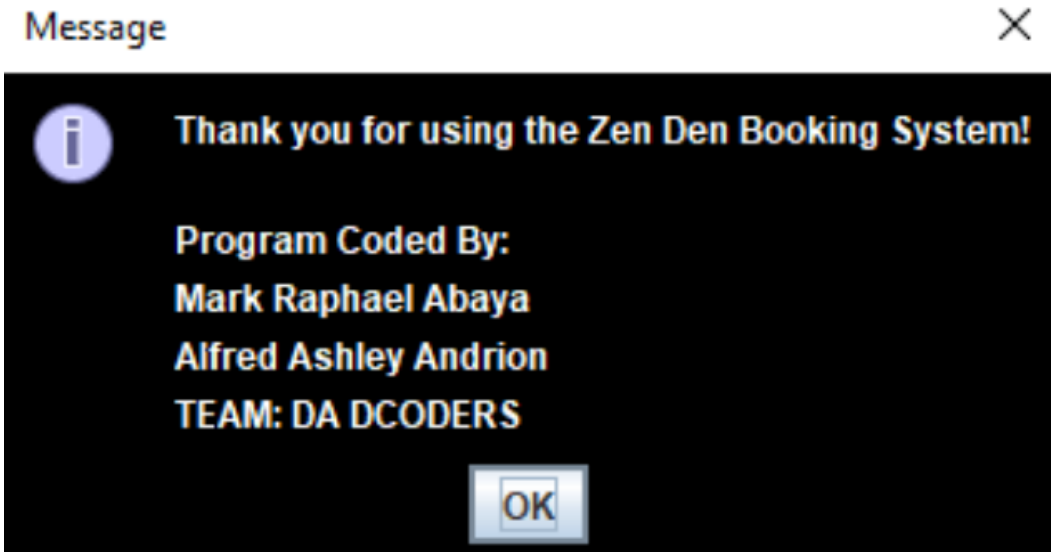


Figure 13. Exit Message

After clicking the exit button, it will prompt showing the name of the team and its members along with the message "Thank you for using the Zen Den Booking System!".

IV. Source Codes

PrivMassageBookSys.java

```
import javax.swing.UIManager;
import java.awt.Color;
import java.awt.Font;
import javax.swing.*;

public class PrivMassageBookSys {

    public static void main(String[] args) {
        UIManager.put("OptionPane.background", Color.BLACK);
        UIManager.put("OptionPane.messagebackground", Color.BLACK);
        UIManager.put("Panel.background", Color.BLACK);
        UIManager.put("listForeground", Color.WHITE);
        UIManager.put("OptionPane.messageForeground", Color.WHITE);
        PrivMassageBookSysADT q= new PrivMassageBookSysADT(10);

        String menu[]= {"Book Reservation", "Delete Reservation in-order",
                "List of Clients", "Pay and tip in Advance", "Exit"};
        String namesPaid[]= {};
        String choose = "";
        String numEnqueue;
        String clientNum;
        String hold = "";
        String service;
        String message;
        String ask_Client;
        int count = 0;
        int clientPMT;
        int amt = 0;


        do {
            hold = q.showInfo();
            message = q.message();
            JTextArea textArea = new JTextArea(message);
            Font font = new Font("Lucida Handwriting", Font.BOLD, 25);
            textArea.setFont(font);
            textArea.setBackground(Color.black);
            textArea.setForeground(Color.white);


            choose = JOptionPane.showInputDialog(null, textArea, "Main Menu by:
DA DCODERS", 1, null, menu, menu[0]).toString();
```

```
            switch(choose) {

                case "Book Reservation":
                    numEnqueue = JOptionPane.showInputDialog("Clients Name: ");
                    clientNum = JOptionPane.showInputDialog("Contact
Information: ");
                    service = JOptionPane.showInputDialog("Services:\n"+"\nFull
Body Massage: FBM \nHead and Foot Massage: HFM "
                            + "\nBack Massage: BM \nFoot Massage: FM \nHead
Massage: HM");

                    count ++;
                    q.enqueue(numEnqueue + "          \t" + "          \t" +
clientNum + "          \t"
                    + service + "         \t" + count);
                    JOptionPane.showMessageDialog(null, "Greetings " +
numEnqueue + ", you successfully booked an appointment.\n"
                            + "\nPlease secure it by paying the downpayment
within 12 hours or it might get cancelled, afterwards an open time slot "
                            + "will be sent to your number after
payment.\n\nThank you!");
                    break;

                case "Delete Reservation in-order":
                    ask_Client = JOptionPane.showInputDialog("Please enter the
zen password: ");

                    if (ask_Client.equals("zenden")) {
                        JOptionPane.showMessageDialog(null,"Client: "+
q.dequeue() + " was deleted" );
                        break;
                    }else {
                        JOptionPane.showMessageDialog(null, "Incorrect
Password, cannot proceed with deletion.");
                        break;
                    }


                case "List of Clients":
                    ask_Client = JOptionPane.showInputDialog("Please enter the
zen password: ");
                    if (ask_Client.equals("zenden")) {
```

```
                        JOptionPane.showMessageDialog(null,  new
JTextArea(hold));
                        JOptionPane.showMessageDialog(null,  "Total amount of
advance payment: " + amt);
                        break;
                    }else {
                        JOptionPane.showMessageDialog(null, "Incorrect
Password, cannot proceed in viewing the List of Clients.");
                        break;
                    }

                case "Pay and tip in Advance":
                    ask_Client = JOptionPane.showInputDialog("Greetings from
The Zen Den!\n\n"
                            + "You can pay and tip the masseuse in advance when
booking an appointment.\n"
                            + "The downpayment is only 250 pesos for the
reservation and any additional fees can be paid afterwards. "
                            + "\n\nPlease input your name below. Thank you!
P.S. NO REFUNDS!!!\n\n Name:");

                    clientPMT =
Integer.parseInt(JOptionPane.showInputDialog("Please input the amount:"));

                    if (clientPMT == 250) {
                        amt += clientPMT;
                        JOptionPane.showMessageDialog(null, "Transaction
details will be sent to your number shorty. Thank you for availing our
service!");
                    }else if(clientPMT > 250) {
                        @SuppressWarnings("unused")
                        int tip = clientPMT - 250;
                        amt += clientPMT;
                        JOptionPane.showMessageDialog(null, "The transaction
and masseuse details will be sent to your number shortly. "
                                + "Thank you for the tip!");


                    }else {
                        JOptionPane.showMessageDialog(null, "Insufficient
Amount. "
                                + "Please try again by inputting a different
amount.");
                        break;
                    }
```

```
                    String arrNew[] = new String [namesPaid.length+ 1];
                    int i;
                    for (i = 0; i < namesPaid.length; i++) {
                        arrNew[i] = namesPaid[i];
                    }
                    arrNew[i] = ask_Client + " = " + "Status: Paid";

                    for (String s: arrNew) {
                        System.out.println(s);
                    }
                    break;
            }

        }while (!choose.equals("Exit"));
        JOptionPane.showMessageDialog(null, "Thank you for using the Zen Den
Booking System!\r\n"
                + "\r\n"
                + "Program Coded By:\r\n"
                + "Mark Raphael Abaya\r\n"
                + "Alfred Ashley Andrion\r\n"
                + "TEAM: DA DCODERS");

    }

}
```

PrivMassageBookSysADT.java

```
public class PrivMassageBookSysADT {
    private String num[];
    private int front;
    private int rear;
    private int capacity;

    public PrivMassageBookSysADT() {
        capacity = 5;
        front = -1;
        rear= -1;
        num = new String[capacity];
```

```
    }

    public PrivMassageBookSysADT(int capacity) {
        this.capacity = capacity;
        front = -1;
        rear = -1;
        num = new String[capacity];
    }

    public void enqueue(String data) {
        String all = "";
        long start = System.nanoTime();
        if(isFull()) {
            System.out.print("The Queue is Full");
        }else {
            rear++;
            num[rear] = data;
            front = 0;
        }
        long end = System.nanoTime();
        all += "Editing Client's data in time units (enqueue): " +  (end -
start);
        System.out.println(all);
    }


    public String dequeue() {
        String all = "";
        long start = System.nanoTime();
        String val = "";
        if(isEmpty()) {
            System.out.println("The Queue is Empty");
        }else {
            val = num[front];
            for (int i = 0; i < rear; i++) {
                num[i]= num[i+1];
            }
            rear--;
        }
        long end = System.nanoTime();
        all += "Data deletion of the Client in time units (dequeue): " +  (end
- start);
        System.out.println(all);
        return val;
```

```
    }

    @SuppressWarnings("unused")
    private Object JtextArea(String all) {
        return null;
    }


    public String display() {
        String hold = "";
        for(int i = 0; i <= rear; i++) {
            hold += "\n" +num[i] + "";
        }
        return hold;
    }

    public String showInfo() {
        return "Client Name          \t" + "Contact Information          \t"
    + "Service          \t"+ "Client Number\t\n" + display() + "\n\nNumber of
Clients\t: " + getCurrentSize();
    }

    public String message() {
        return "THE ZEN DEN BOOKING SYSTEM\n\n\n";
    }

    public String frontValue() {
        return num[front];
    }

    public String rearValue() {
        return num[rear];
    }

    public String peek() {
        if(isEmpty()) {
            System.out.print("The Queue is Empty ");
            return "";
        }else {
            return num[front];
        }
    }

    public String last() {
```

```
        if(isEmpty()) {
            System.out.print("The Queue is Empty ");
            return "";
        }else {
            return num[rear];
        }
    }

    public int count() {
        int count = 0;
        for (int i=0; i <= rear; i++) {
            count += 1 ;
        }
        return count;
    }

    public int getCurrentSize() {
        return capacity - (capacity - (rear+1));
    }

    public int getCapacity() {
        return capacity;
    }

    public boolean isEmpty() {
        return rear == -1;
    }

    public boolean isFull() {
        return rear == capacity - 1;
    }
}
```

V.**Curriculum Vitae**

Alfred Ashley Andrion

aaAndrion@mcm.edu.ph 09995148574 Matina, Davao City, 8000 Davao

Education

Grade School 2006 - 2012
Ateneo de Davao University, Davao City

Junior High School 2012 - 2016
Ateneo de Davao University, Davao City

Senior High School 2016 - 2018
Ateneo de Davao University, Davao City

College 2018 - 2019
Ateneo de Davao University, Davao City

College 2019 - 2022
Mapua Malayan Colleges Mindanao, Davao City
Present

Certificates

Java Object-Oriented Programming Oct 2022
Certificate of Completion

Profile

I am a hardworking and motivated CCIS student who has acquired knowledge through the field of Information Systems study. I have strengthened my skills over time under the guidance of my peers' teachers, which immensely contributed to most of my success. I am approachable and eager to learn to help the organization and my peers. I am also not scared to be mentored or corrected.

References

References available upon request.

I consent to the processing of my personal data for the purpose of recruitment to which I am applying.

Personal details

Date of birth
July 9th, 1999

Nationality
Filipino

Civil status
Single

Skills

- Good Communicator
- Creative
- Media Literate
- Self Motivated

Languages

- Tagalog
- Visaya
- English

Hobbies

- Video Games
- Watching movies or TV series
- playing with dogs

CCIS
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No. 4, Road 29, Project 6, Quezon City, 1100 Quezon City

Education

College 2021 - Present
Malayan Colleges Mindanao, Davao City

Highschool 2005 - 2009
Philippine Women's College of Davao, Davao City

Grade school 2004 - 2005
Philippine Women's College of Davao, Davao City

Grade school 1999 - 2004
Notre Dame University Elementary Training Department, Cotabato

Profile

A student of the program Bachelor of Science of Entertainment and Multimedia Computing in Malayan Colleges Mindanao. I am responsible and hardworking. Can work with a team.

Certificates

Java Object Oriented Programming Oct 2022
Certificate of Completion

References

Felshyl Van Perez
Curie Point Scientific Center, Inc., Quezon City
09369024103

Treb Paule
Narrative Ads LLC, Metro Manila
09266775854, treb@narrativeads.com

Personal details

Date of birth
May 30th, 1993

Place of birth
Cotabato City

Gender
Male

Nationality
Filipino

Civil status
Single

Skills

Communication Skills

Computer Proficiency

People Skills

Languages

English

Tagalog

Bisaya

VI. References

• ***What is Time Complexity And Why Is It Essential?*** **(September 26,2022), By: Great Learning Team, Retrieved from: https://www.mygreatlearning.com/blog/why-is-time-complexity-essential/#:~:text=Time%20complexity%20is%20defined%20as,execution%20time%20of%20an%20algorithm.**

• ***Time and Space Complexity in Data Structure: A Simplified and Complete Guide*** **(August 8,2022), By: Soni Upadhyay, retrieved from: https://www.simplilearn.com/tutorials/data-structure-tutorial/time-and-space-complexity#:~:text=Space%20complexity%20refers%20to%20the,Space%2Dcomplexity%20with%20auxiliary%20space.**