De La Salle University-Manila
Gokongwei College of Engineering
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In Partial Fulfillment of the
Course Requirements for

COMPUTER FUNDAMENTALS & PROGRAMMING 2 LAB (LBYEC2B)
1st Term, AY 2023-2024

Event Ticket Reservation System

An event ticket reservation system that helps users reserve tickets and view a seating chart

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December 4, 2023

I. Introduction

C is a programming language that utilizes step-by-step procedures to develop various systems (C Language Introduction, 2023). It is an environment with excellent performance that is frequently used in data analysis, scientific computing, and engineering. Moreover, C language programming is widely used by the majority and other languages take and use features from this language. It also serves as the foundation for all other programming languages and is considered the "mother of programming" (Lemonaki, 2023; Ravikiran, 2023). C language is an excellent tool for creating intricate systems that involve numerical calculations and data visualization, which makes it a perfect fit for an event ticket reservation system. The goal of the C programming-based event ticket reservation system is to make the process of purchasing tickets for different events more efficient.

II. Objectives

With the efficient use of C programming in everyday life, an event ticket reservation system replicating a real-world event ticket system was made with the aim:

1. To create a C programming language online event ticket reservation system that is effective and easy to use so that users can check seating charts, make reservations, and track their progress.
2. To guarantee a smooth and fulfilling user experience, the system should place a high priority on accuracy, efficiency, user-friendliness, error handling, scalability, dependability, security, performance, usability, and maintainability.

III. Related Work

Multiple previous works are readily available containing similar features to the event ticketing system presented, in fact, three different works presented below were found to be similar in terms of nature, however, the project presented focuses more on an event more like a concert. A key feature that differentiates and sets the project apart from the related work is that it contains an additional feature of updating an already made reservation, as well as displaying the seating chart for each reservation. Furthermore, the ticket reservation system is easy to navigate, contains sufficient information for the user to easily understand, and is efficient and less time-consuming.

Railway Reservation

A railway ticket booking system was created using the C programming language, similar to any online booking system. The system provides the ticket information

containing the passenger data, together with the total number of passengers. The user is given the option to select between two classes, sleeper or a.c., depending on whether they prefer to be on a railway with an air conditioning unit or not. A list of the available trains is provided and the user selects which train and ride they prefer depending on the source and destination. The ticket price is assessed and a seat matrix appears prompting the user to select their desired seat. A receipt is given to the user containing a summary of all the necessary information. The system made use of various functions, the details, seat, and bill functions that store the information the user enters. Structure and for loops were used to get information such as the number of passengers, name, gender, and age (Railway Reservation System in C, 2022).

Movie Ticket Booking System

A project containing limited features that allow a user to easily reserve a movie ticket, similar to the concept of an actual booking of a movie ticket, was made utilizing a C programming source code. The simple system works by asking the user to select a movie title based on a limited pool of movie titles presented. The user is entailed to enter their important information, namely, name and phone number. The user may select and enter a seat number, thus completing the booking process. Additional features include altering the ticket price, viewing reservations using an admin password, and canceling bookings by entering the booking ID provided (Ros, 2023).

Theatre Seat Reservation

A theatre seat reservation system using the C programming language was designed to contain limited features, replicating a real-world seat reservation system. The system provides the total number of available seats and displays the total reservation record. It contains features that allow the user to reserve seats depending on their preferences and cancelation of made reservations. The limitation is that it only provides results for a single movie, in this case, the movie The Avengers: Endgame. The system utilizes various functions to store information, as well as for loops and switch cases (Adminastro, 2021).

IV. Methodology

Flowchart

A. Construct and update the seating chart of the event
B. Gather customer information
C. Display selection of seating chart
D. Updating of the seating chart availability
E. Confirm reservation

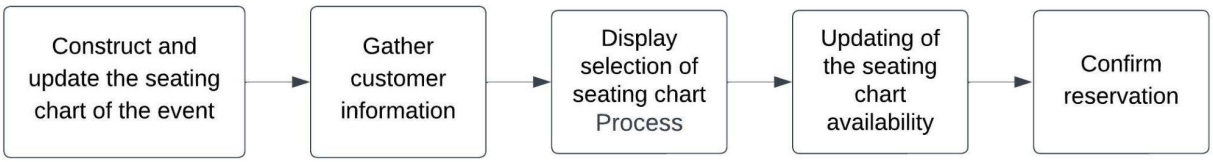

Figure 1. Flowchart of Current System

V. Results and Discussion

A. Scope and Limitations

1. The system incorporates only the process of reserving a ticket and seat.
2. The system does not include price and cost parameters.
3. The system allows the reservation of a ticket one at a time.

B. Functionalities

1. Construct and update the seating chart of the event

- This functionality allows the system to create and maintain a dynamic seating chart for events, ensuring an accurate representation of available seating.

2. Gather customer information

- This feature enables the system to collect and store essential customer details, facilitating smooth transactions and personalized service.

3. Display selection of seating chart

- This functionality presents a visual interface for users to view and choose their preferred seats from the available seating chart, enhancing the user experience.

4. Updating of the seating chart availability

- This feature dynamically updates the seating chart in real-time, reflecting changes in seat availability as reservations are made or canceled.

5. Confirm reservation

- The system confirms and secures reservations, providing users with instant verification of their chosen seats and ensuring a seamless ticketing process.

C. Evaluation of the System

1. Accuracy

a) Present the correct availability of seating chart

- Figure 1 shows the availability or the seating capacity chart of a specific event. Since the current code was made to supply 100 seats for the event, a random layout of 10 x 10 was created. Each has a number 0 for seats not taken and X if taken.

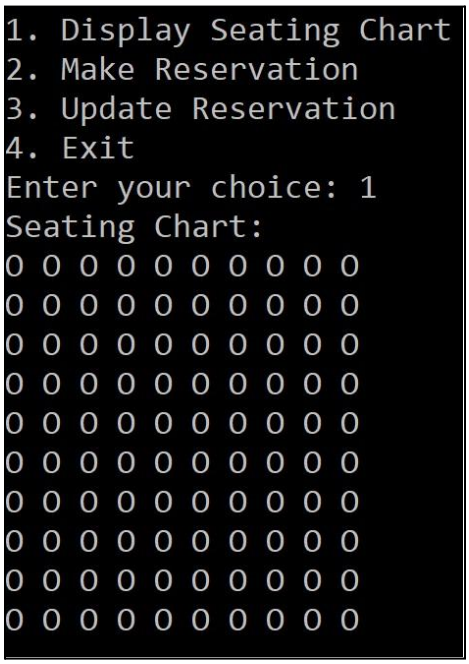

Figure 1. Seating Chart

b) Update information on seats

- Figures 2 and 3 show the accuracy of the functionality - updating of the seating chart availability. The seat selection process is done by selecting a row and a column. There were 3 reservations made. Seat numbers (1,4), (1,5), and (1,3) were selected. Seat number (1,4) was an updated seat from a customer who changed the decision from his original seat (1,2). It can be seen that the chart was able to update all the three reservations when choosing the option to display the updated chart with the three reserved seats.

```
Enter your choice: 3
Enter the current row and number for the reservation to update: 1 2
Enter the new row and number for the updated reservation: 1 4
Seating Chart:
O O O X O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
```

Figure 2. Seating Chart Update

```
1. Display Seating Chart
2. Make Reservation
3. Update Reservation
4. Exit
Enter your choice: 2
Enter the row and number for your reservation: 1 5
Enter your name: trisha
Enter your age: 24
Enter your gender (M/F): f
Reservation confirmed for trisha! You have reserved seat 1-5.

1. Display Seating Chart
2. Make Reservation
3. Update Reservation
4. Exit
Enter your choice: 2
Enter the row and number for your reservation: 1 3
Enter your name: mika
Enter your age: 23
Enter your gender (M/F): f
Reservation confirmed for mika! You have reserved seat 1-3.

1. Display Seating Chart
2. Make Reservation
3. Update Reservation
4. Exit
Enter your choice: 1
Seating Chart:
O O X X X O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
O O O O O O O O O O
```

Figure 3. Seating Chart Update

c) Correct information about the customer

- The correct information was displayed for the customer's name when he or she is notified that the preferred seat is reserved already. Figure 3 shows the accuracy of the customer's information.

```
Enter your name: lance
Enter your age: 24
Enter your gender (M/F): m
Reservation confirmed for lance! You have reserved seat 1-2.
```

Figure 4. Customer Information

2. Efficiency

a) Total time of the system to run and Total time of user to reserve

- Starting the code takes 4 seconds to run in Visual Studio software. Depending on how fast the user chooses his or her seat and how fast the user inputs, the average time to complete a reservation can be anywhere from 10 to 30 seconds. If the average time is 20 seconds and there are 100 seats, this can take 2000 seconds or 33 minutes to complete. We should account for the additional time it takes for customers in case they change their plans and also the queuing time. Therefore, if the system accommodates for an event that has a seating capacity of 100, the total time would take around 1 hour. This takes around 36 seconds per seat. The computation can be seen in the table below.

Table 1. Efficiency Computation

20 seconds x 100 seats = 2,000 seconds or 33.33 minutes = Total Process Time for 100 seats
33.33 minutes + 26.77 minutes (additional allowance time for customer queuing and decision-making)
60 minutes or 1 hour / 100 seats = **0.6 minutes or 36 seconds**

VI. Conclusion and Future Work

C programming language is flexible and it possesses multiple features that can develop systems and softwares that are user-friendly. Due to these advantages, this programming language was used to create an easy-to-use event ticketing system that allows the end user to input their customer information and reserve their selected seats. Other features of the system include canceling and or updating a made reservation. The accuracy of the system was determined by ensuring that only the correct information was displayed, and the efficiency was computed to be 0.6 minutes or 36 seconds, which was

based on the run time of the system and the user time, signifying that the system is generally fast and not time-consuming.

Recommendations for future work would be to enhance the ticket reservation system by adding features such as allowing multiple seat reservations per booking, as well as including the computation of costs per reservation. Future researchers may also delve into incorporating the selection of the event and creating multiple seating charts for each event.

VII. Contributions

Author/s	Contributions
Betina Margaret D. Ching	Introduction, Related Work, Conclusion and Future Work, Project Code
Lance Joseph Nathaniel R. Kilayko	Objectives, Methodology, Results and Discussion, Project Code

VIII. References

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