BTech Computer Science Engineering (Data Science 311)

Semester – IV

INTRODUCTION TO BUSINESS ANALYTICS AND MODELLING

Video Games Store Analysis System

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CHAPTER- 01

Problem Statement-

The video game store "Game Haven" is an international brand of video game stores looking to improve their inventory management system to increase profitability and customer satisfaction. Currently, the store struggles with identifying which games to purchase, limited understanding of their customers' preferences, which hinders their ability to offer personalized recommendations and promotions. This leads to overstocking certain games and understocking others, causing missed sales opportunities and frustrated customers.

The goal of this project is to develop a Decision Support System (DSS) that can help Game Haven optimize their inventory management processes by analysing sales data, customer preferences, and industry trends. The DSS should be able to provide recommendations on which games to purchase, how many copies to stock, and when to restock based on predictive analytics. It should also be able to identify patterns and trends in customer behaviour, allowing the store to offer personalized recommendations and promotions to increase customer satisfaction and loyalty.

Overall, the DSS should enable Game Haven to make data-driven decisions that improve their inventory management processes, increase profitability, and enhance the customer experience.

CHAPTER- 02

Decision System Development Process

Decisions Systems Development Life Cycle is a systematic approach which explicitly breaks down the work into phases that are required to implement either new or modified Information System.
The possible lifecycle for our system would contain-

1. Planning

The DSS's goals and objectives are defined during this phase, and the resources required for the project are determined. Also, the project's viability is assessed, and the project's scope is established.
Start by identifying the specific problem or challenge that the DSS will address. In this case, the problem is managing the store's inventory and understanding customers' preferences to improve sales.
Identify the relevant data sources for the DSS, such as sales data, inventory data, customer data, and external market data. The data contains- name, publisher, sales in different regions, critic score, user score, etc.

2. Analysis

The DSS requirements are categorised and examined in this phase. The system's stakeholders and users are located, and their needs and demands are compiled. The system also identifies the data sources it will employ.
Once the data is analysed, the company will know which video games should be supplied to which stores worldwide increasing customer satisfaction and sales.

3. Design

In this phase, the architecture and functionality of the DSS are defined. The design of the user interface is also created, and the system's database and datamodel are designed.

We will design a dashboard to provide insights about the data, and design userforms for a client to place an order of video games along with a customer feedback form.

4. Coding

In this phase, the DSS is developed and tested. The software code is written andthe system is integrated with the hardware and software platforms it will be deployed on.
We will code our DSS using a combination of languages like python, SQL, andVBA.

5. Deployment

Once the DSS has been refined and tested, deploy it to the company's management and store's employees to use in their day-to-day operations. Provide training and support to ensure that users are able to take full advantage of the DSS and its capabilities.

6. Maintenance

In this phase, the DSS is maintained and updated to ensure that it continues to meet the needs of its users. This may involve fixing bugs, making enhancements, or upgrading the system to newer hardware or software platforms.
Finally, maintain the DSS by ensuring that it continues to function as expected and is updated as needed to reflect changes in the store's inventory, customers, or market conditions.

CHAPTER- 03

Dashboard Design-

Step 1- Data

Our dataset contains the following fields:

- Rank - Ranking of overall sales
- Name - Name of the game
- Platform - Platform of the game (i.e. PC, PS4, XOne, etc.)
- Genre - Genre of the game
- ESRB Rating - ESRB Rating of the game
- Publisher - Publisher of the game
- Developer - Developer of the game
- Critic Score - Critic score of the game from 10
- User Score - Users score the game from 10
- Total Shipped - Total shipped copies of the game
- Global_Sales - Total worldwide sales (in millions)
- NA_Sales - Sales in North America (in millions)
- PAL_Sales - Sales in Europe (in millions)
- JP_Sales - Sales in Japan (in millions)
- Other_Sales - Sales in the rest of the world (in millions)
- Year - Year of release of the game

Step 2- Insights

1. Comparison of sales by region:

   We can interpret the region with the most sales to know which regions are profitable and we can open new stores in those places for expansion accordingly.

2. Comparison of global sales by genre:

   We can identify the genres that sell the most to know which games will sell the most and stock up inventory accordingly.

3. Critic score of different genres:

   The critic score again helps us identify games that are performing the best in the market.

4. User score of different genres:

   The critic score again helps us identify games that are performing the best in the market.

5. Global sales by year:

   To see the market trends of video games sales over the years.

6. Publisher wise sales in different regions:

   To see which publishers are performing great and to accordingly make deals with them to buy their stock.

Step 3- Dashboard design

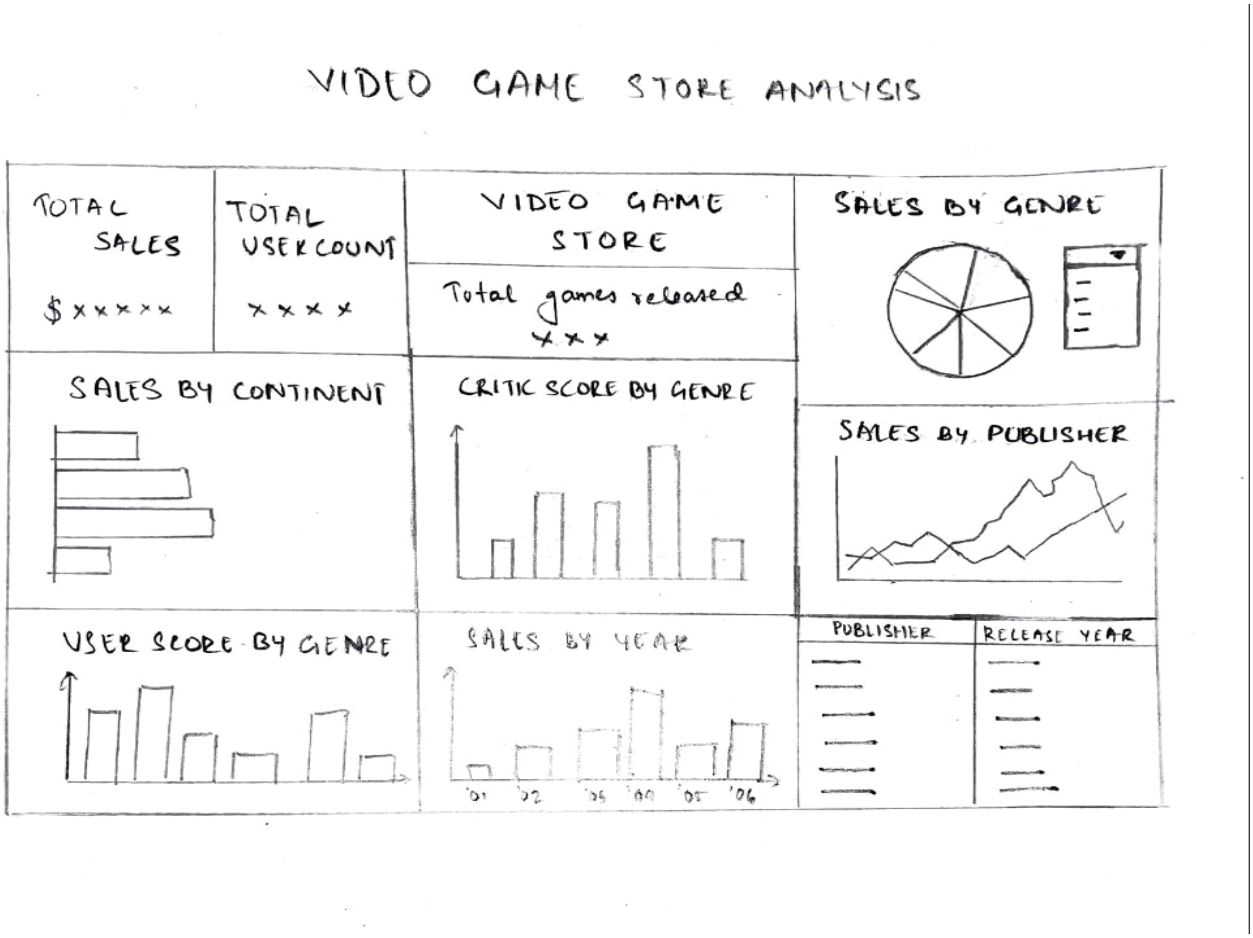

Fig. 3.1. Rough Diagram of Dashboard

CHAPTER- 04

User form-

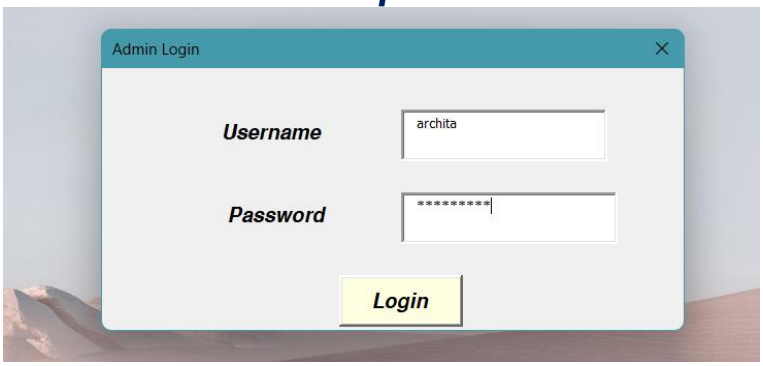

Fig. 4.1. Login page when workbook is opened

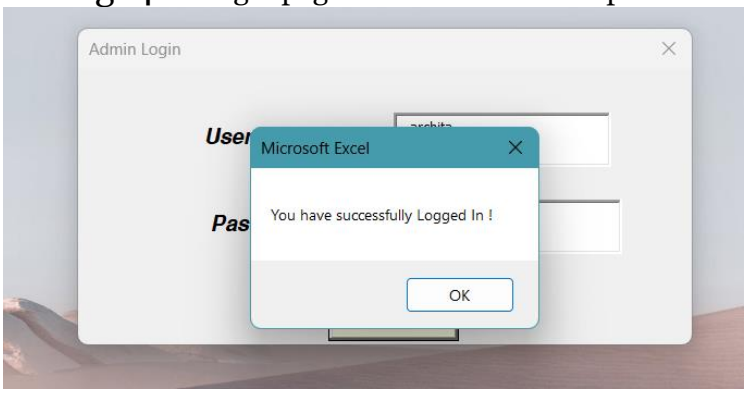

Fig. 4.2. Login page after correct username and password

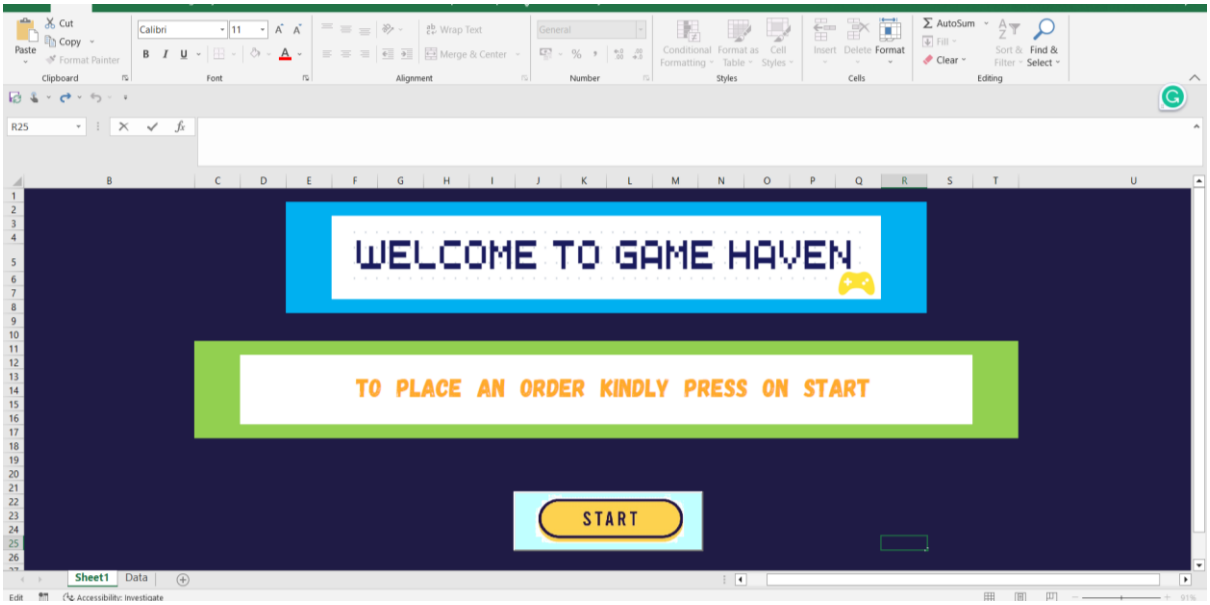

Fig. 4.3. Home page for placing an order

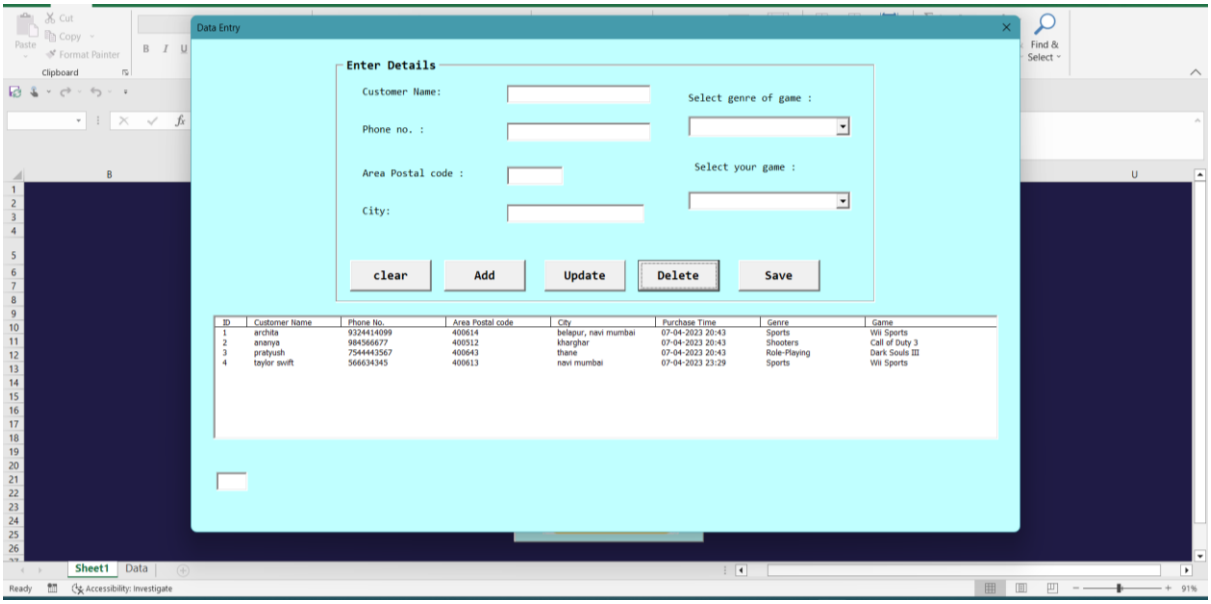

Fig. 4.4. Userform to place an order

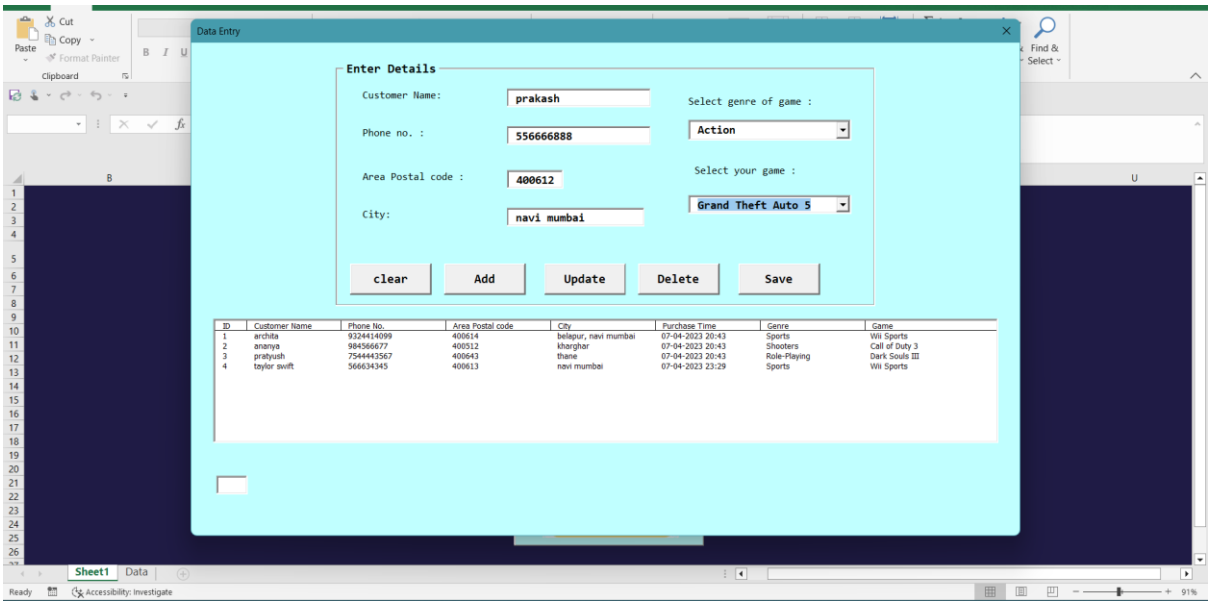

Fig. 4.5. Filling the user form to place an order

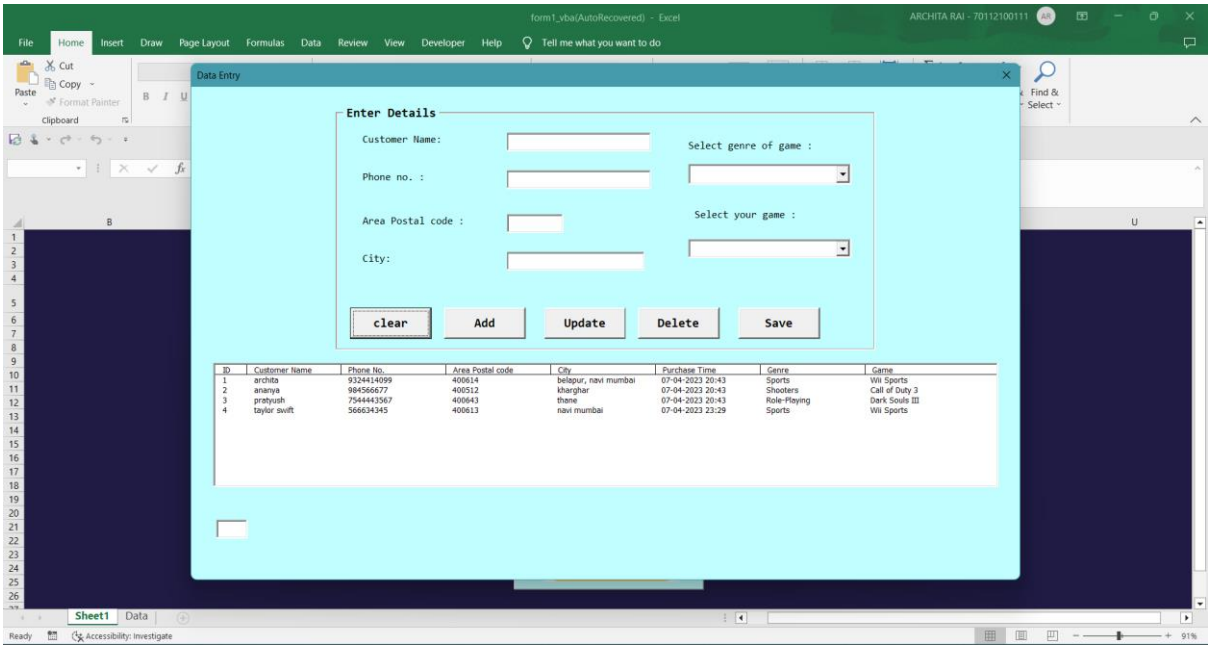

Fig. 4.6. Using clear button to clear all data and selections

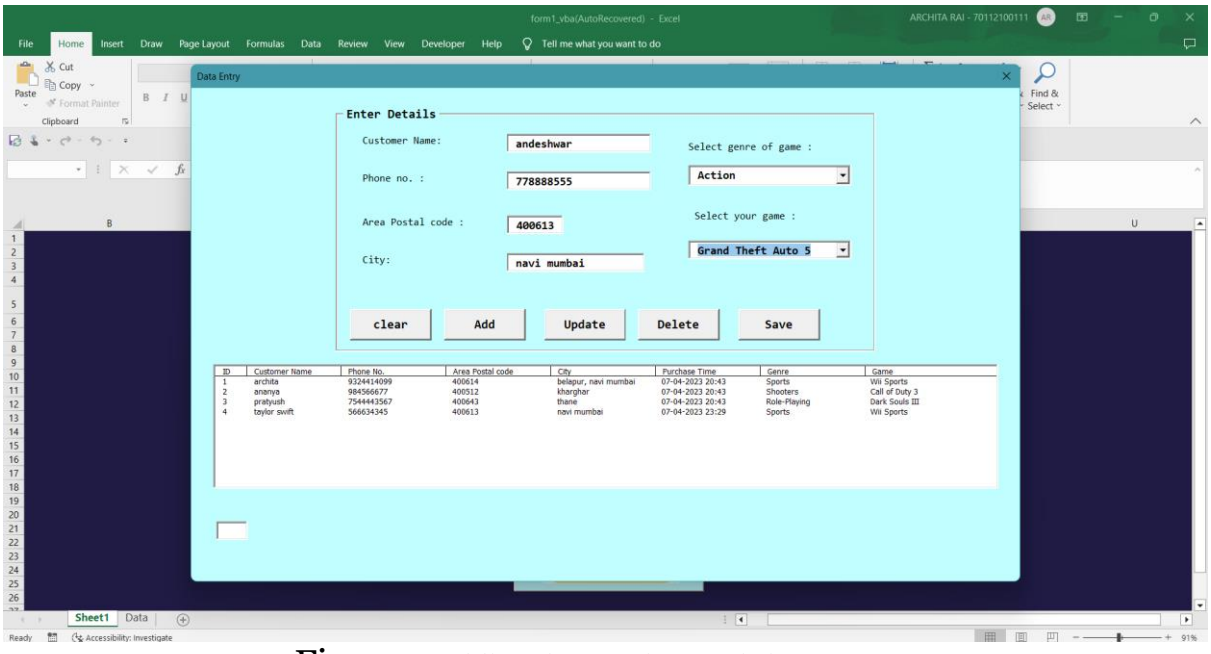

Fig. 4.7. Adding data to the excel sheet

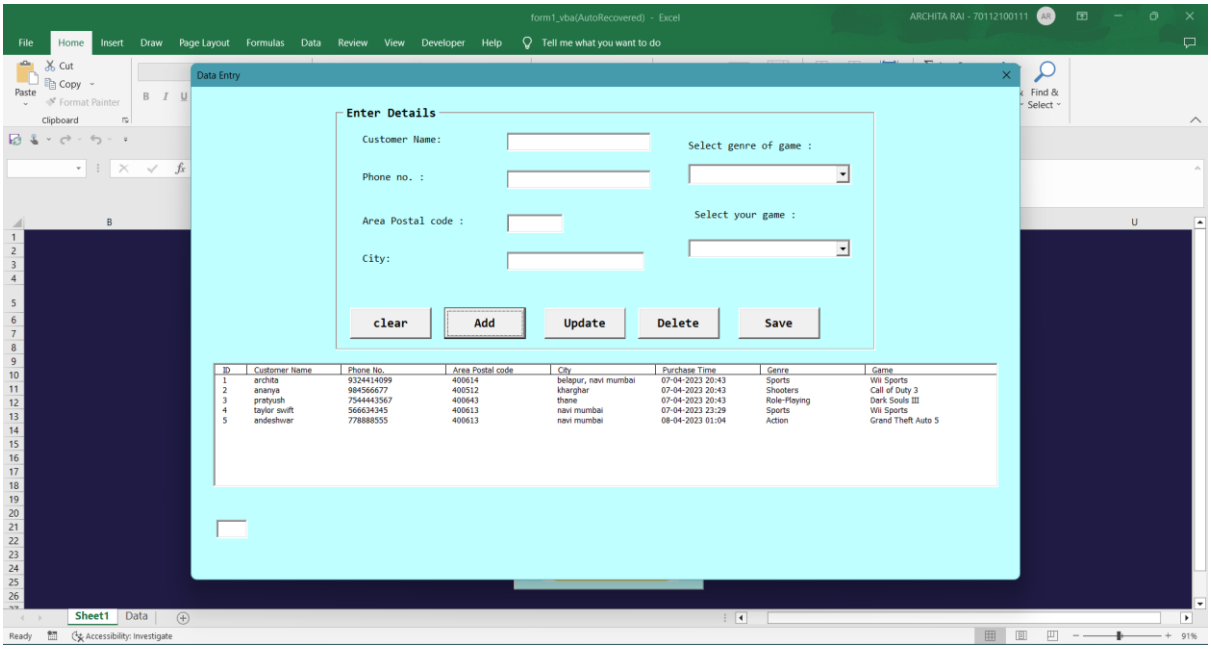

Fig. 4.8. Data saved

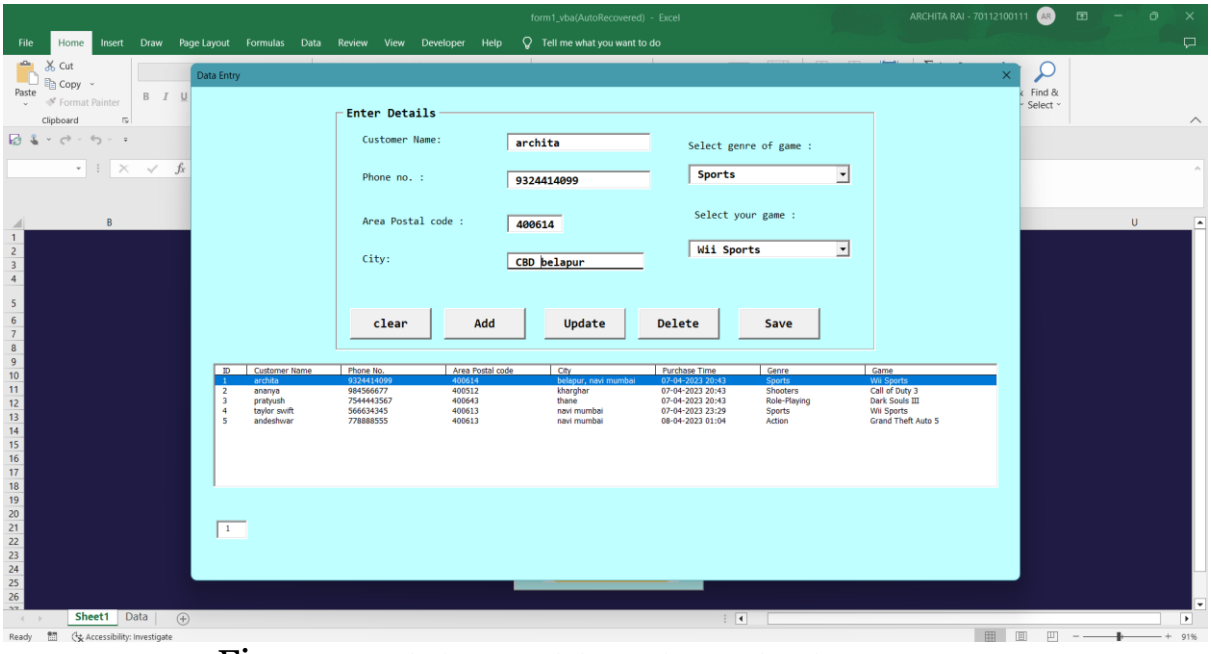

Fig. 4.9. Updating saved data using Update button

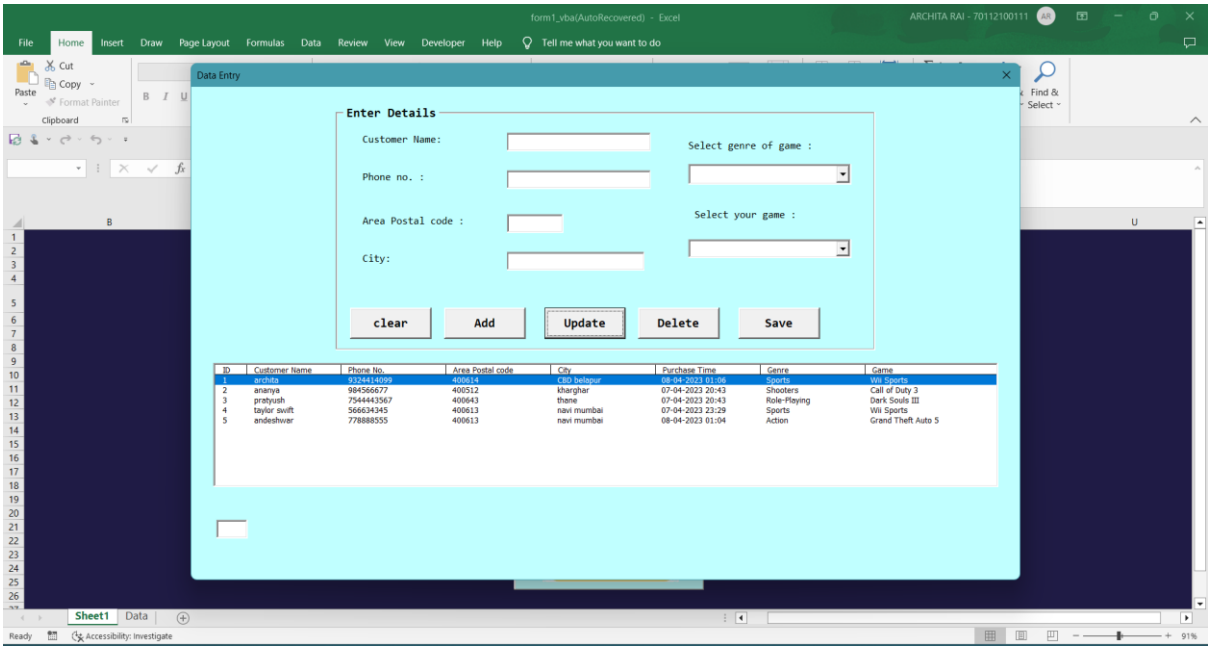

Fig. 4.10. Data updated and saved

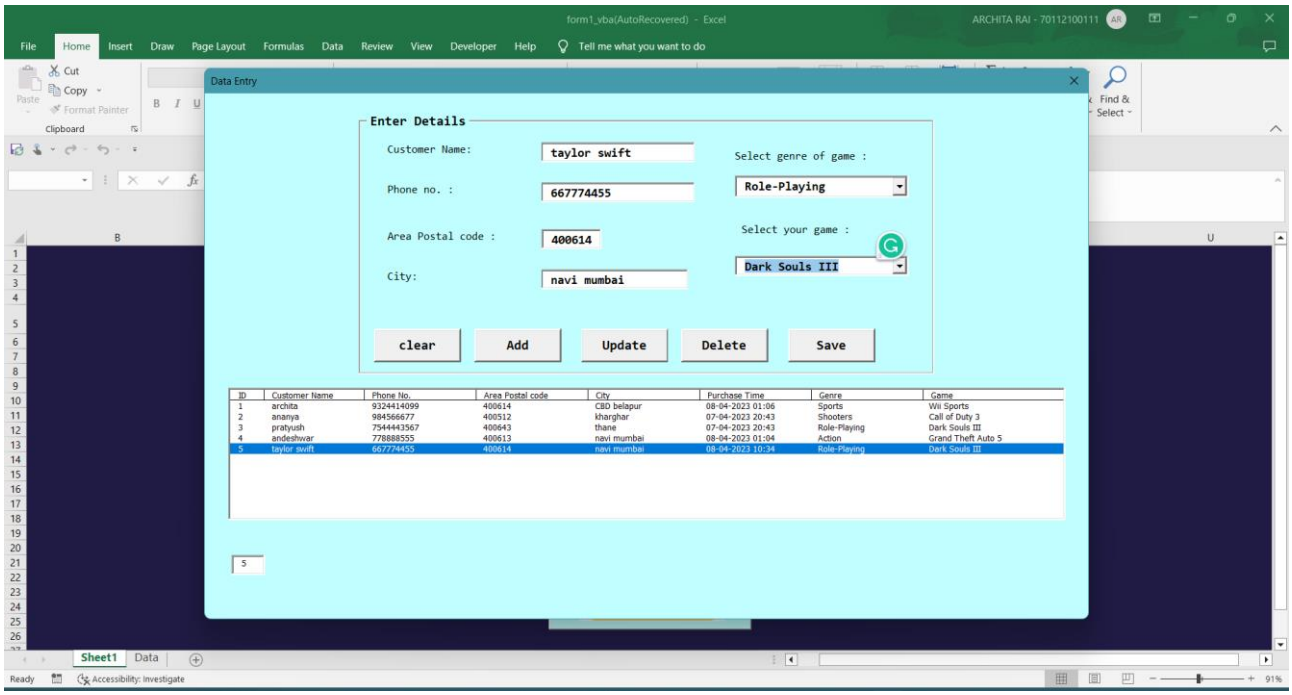

Fig. 4.11. Selecting record to delete

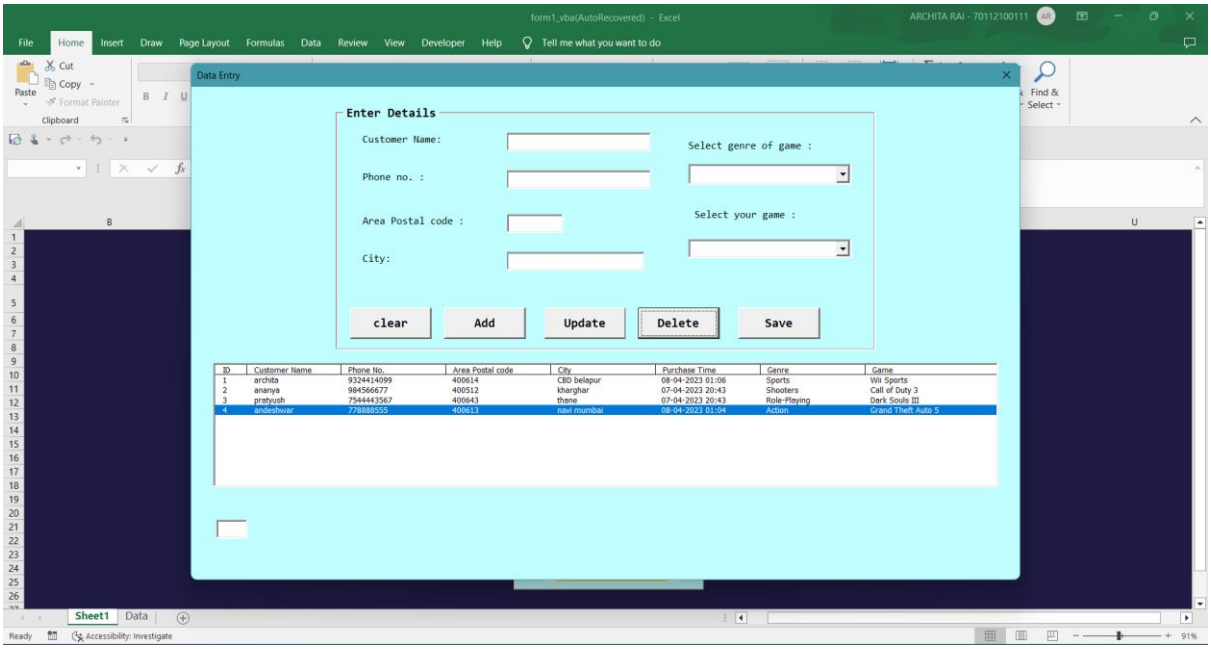

Fig. 4.12. Data deleted using Delete button.

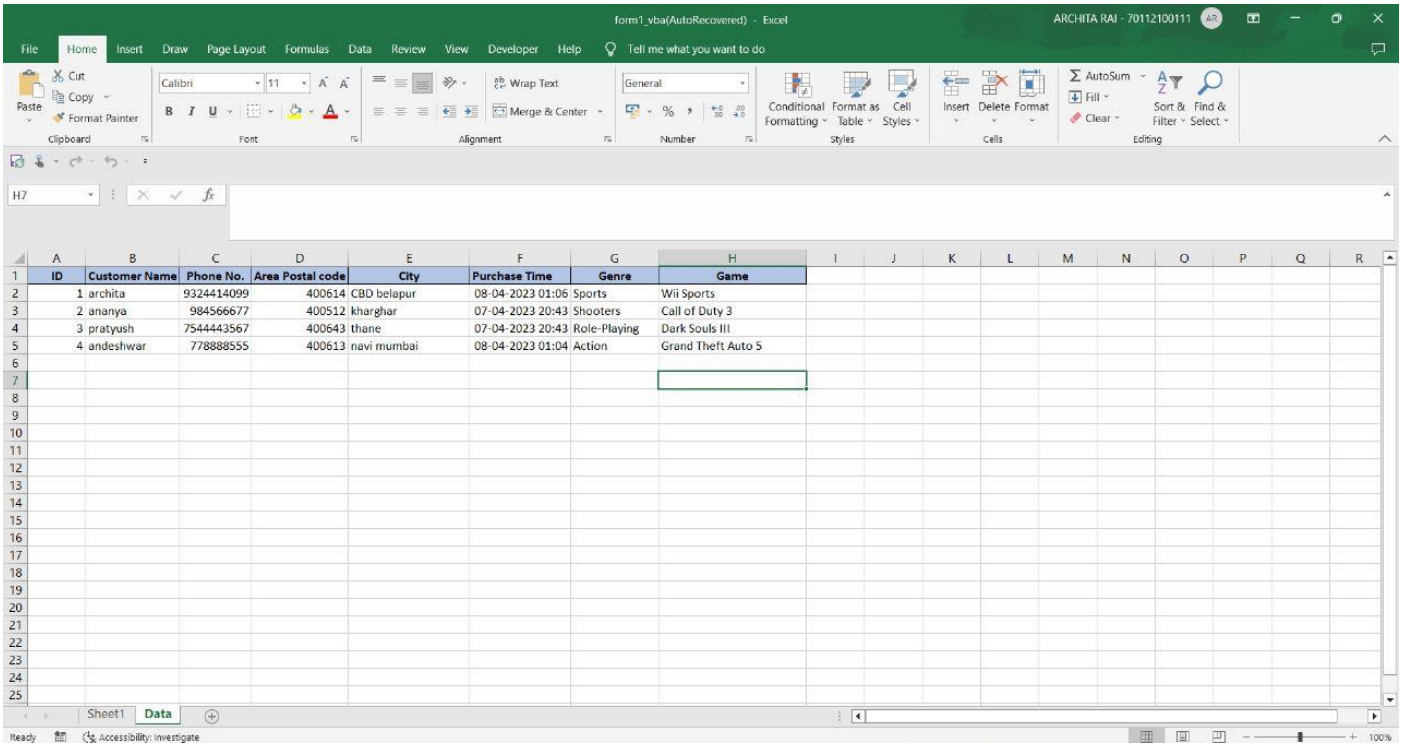

Fig. 4.13. Data deleted using Delete button.

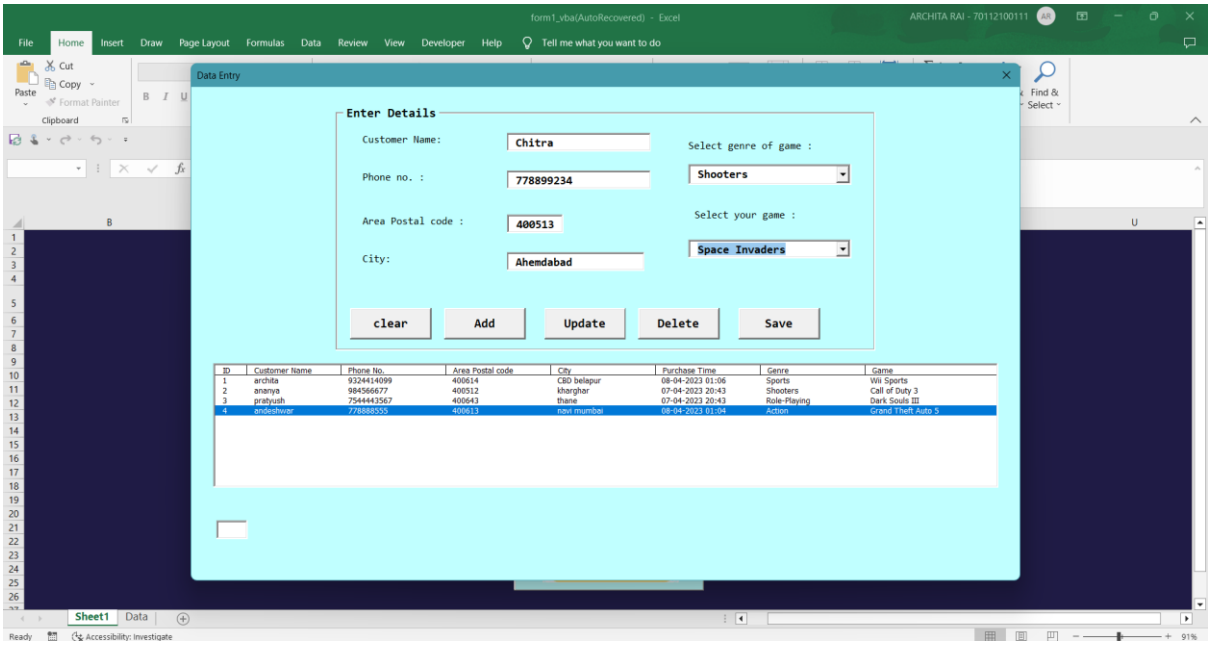

Fig. 4.14. Using save button to save data.

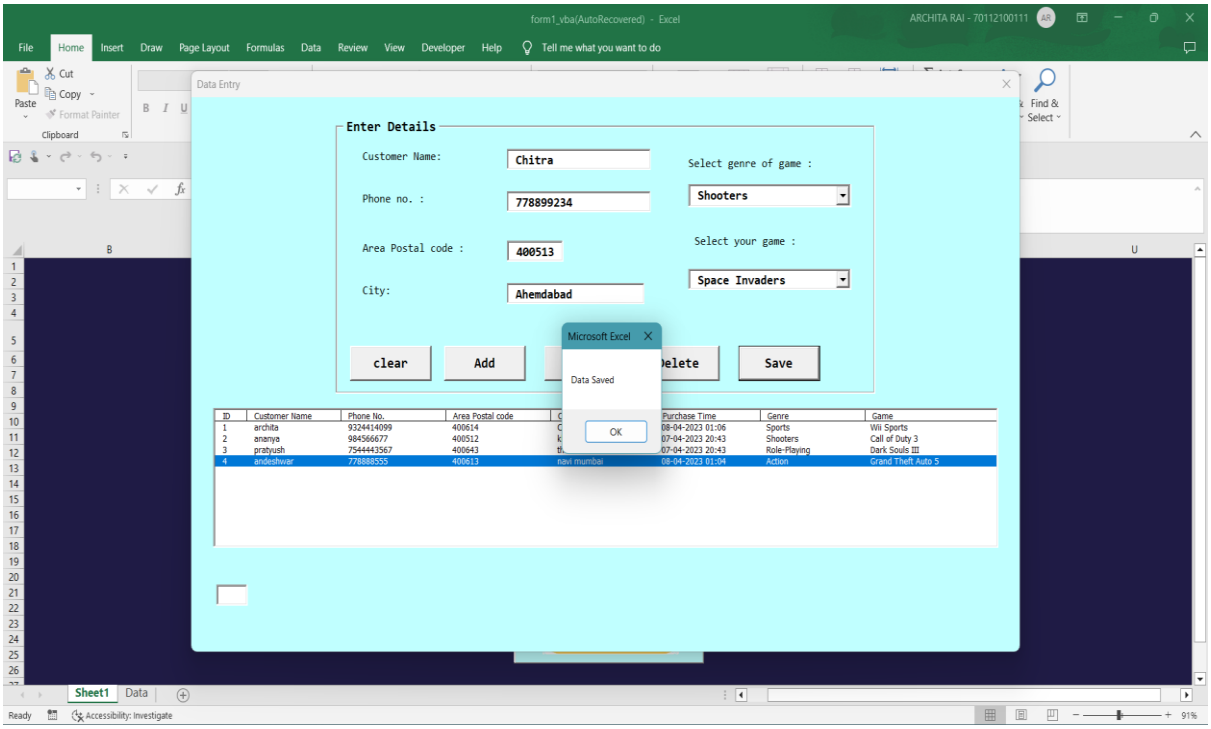

Fig. 4.15. Message box displaying that the data is saved in the form.

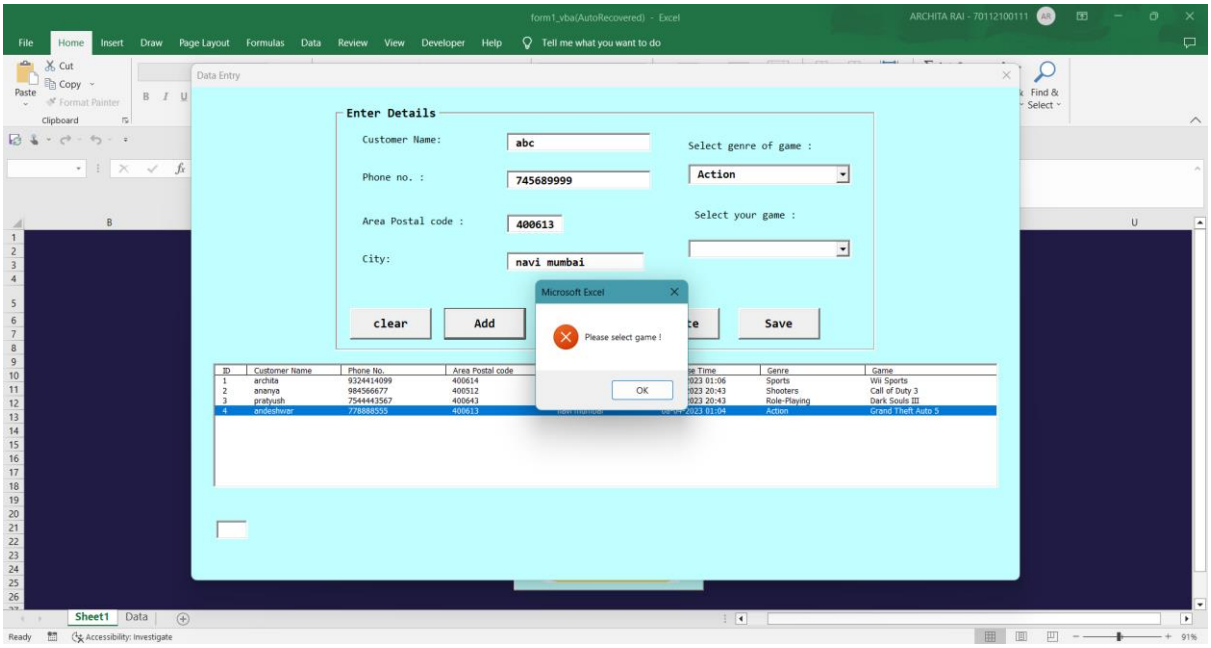

Fig. 4.16. Warning displayed when required field is not inputed.

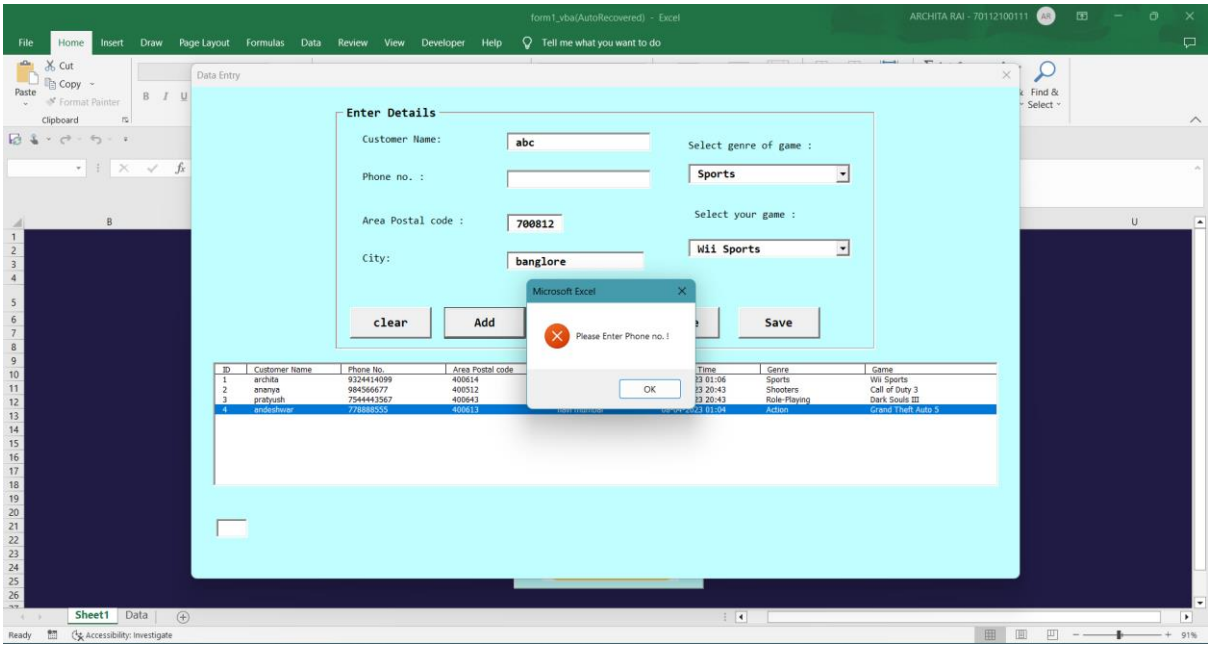

Fig. 4.17. Warning displayed when required field is not inputed.

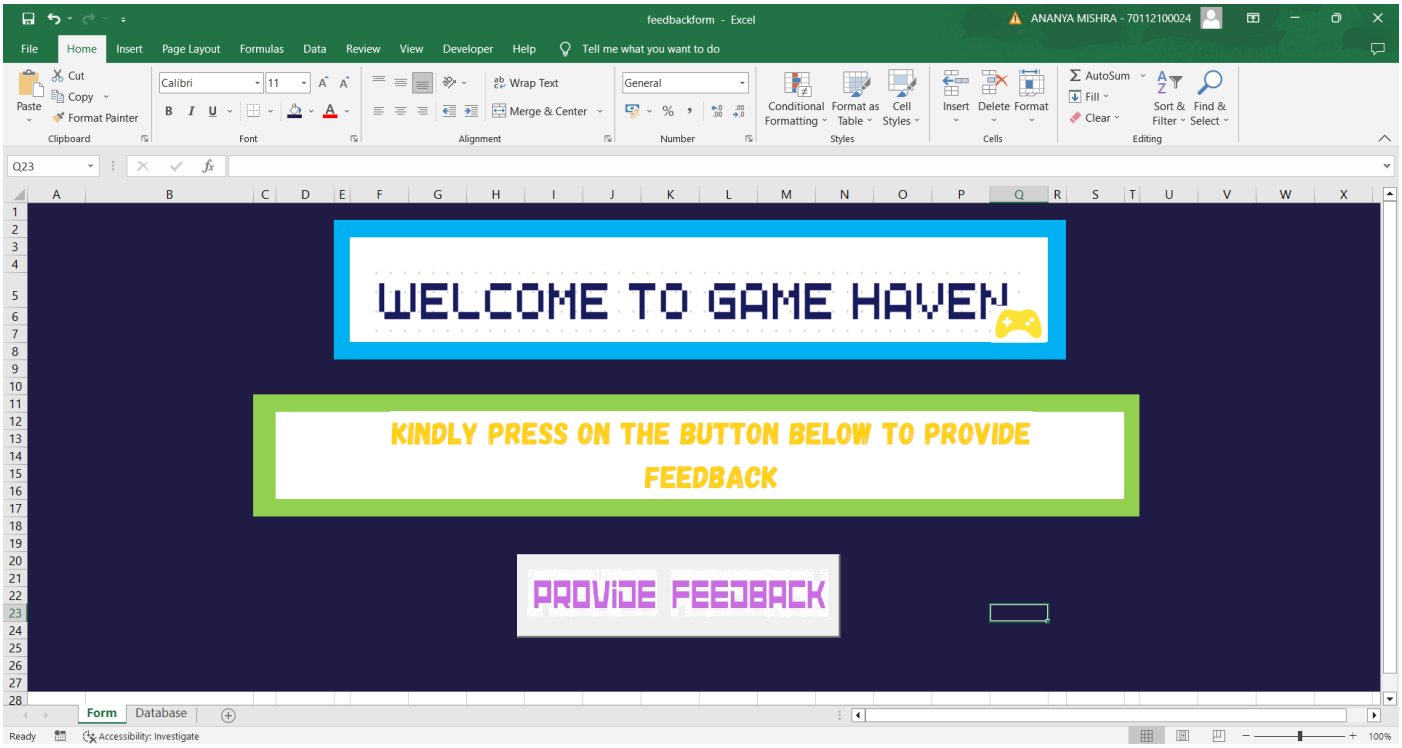

Fig. 4.18. Home Page for customer feedback form

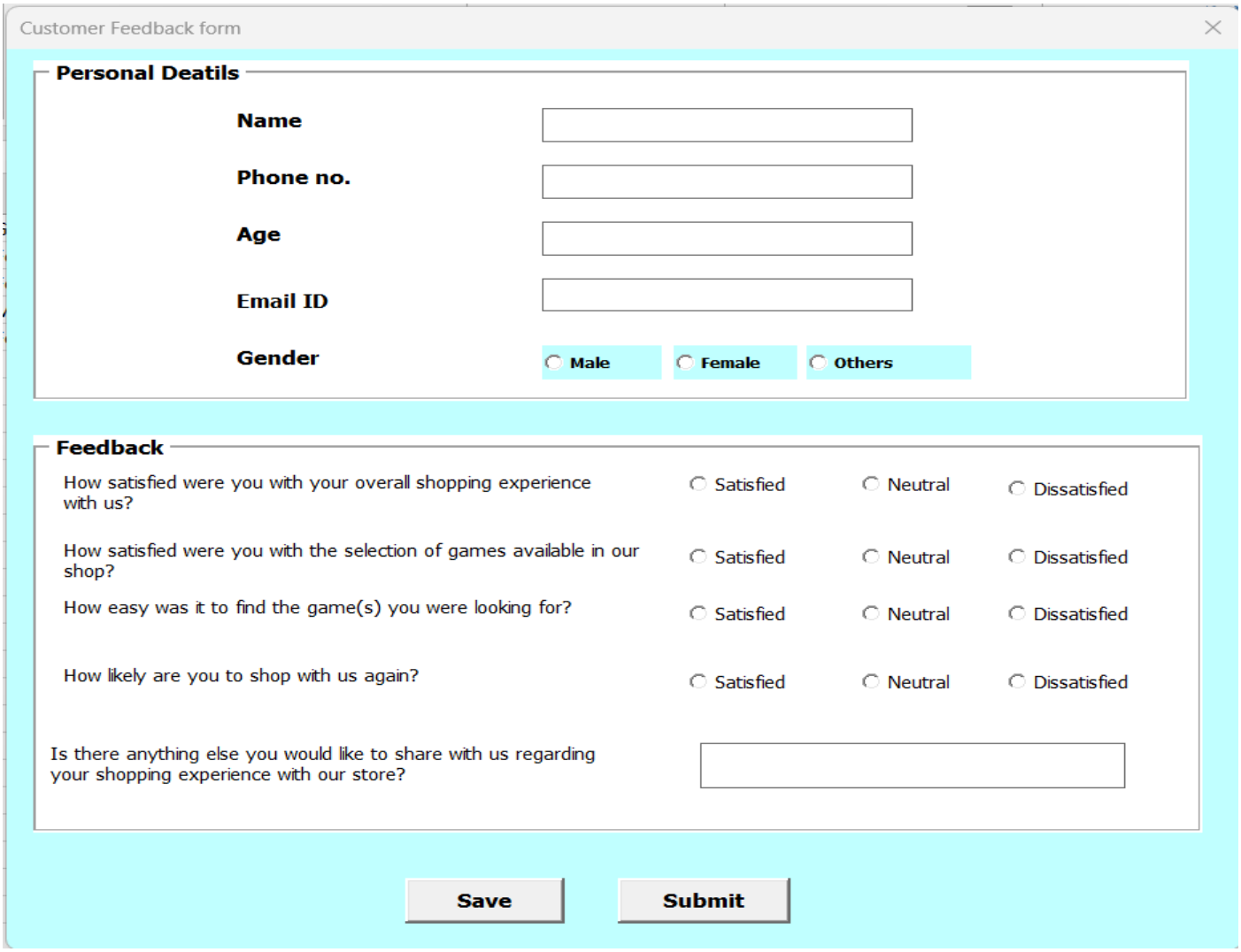

Fig. 4.19. Userform for customer feedback

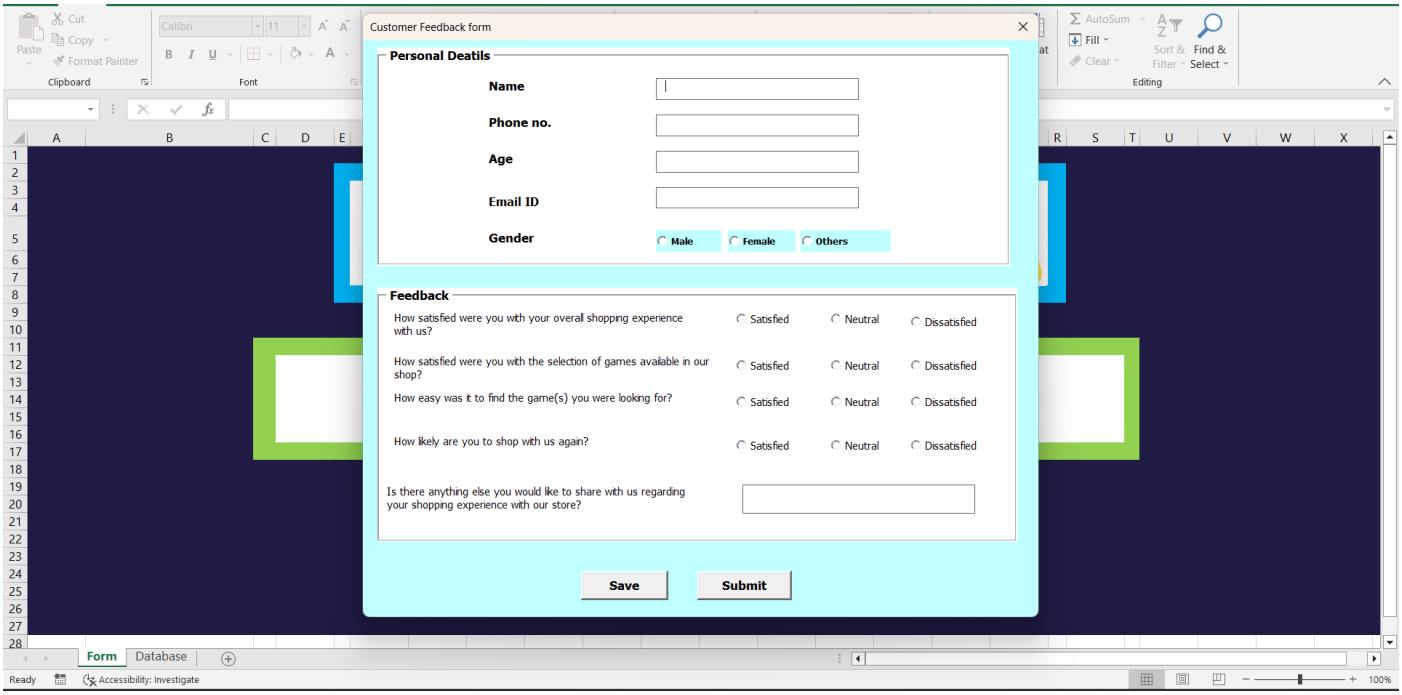

Fig. 4.20. Userform to input customer feedback.

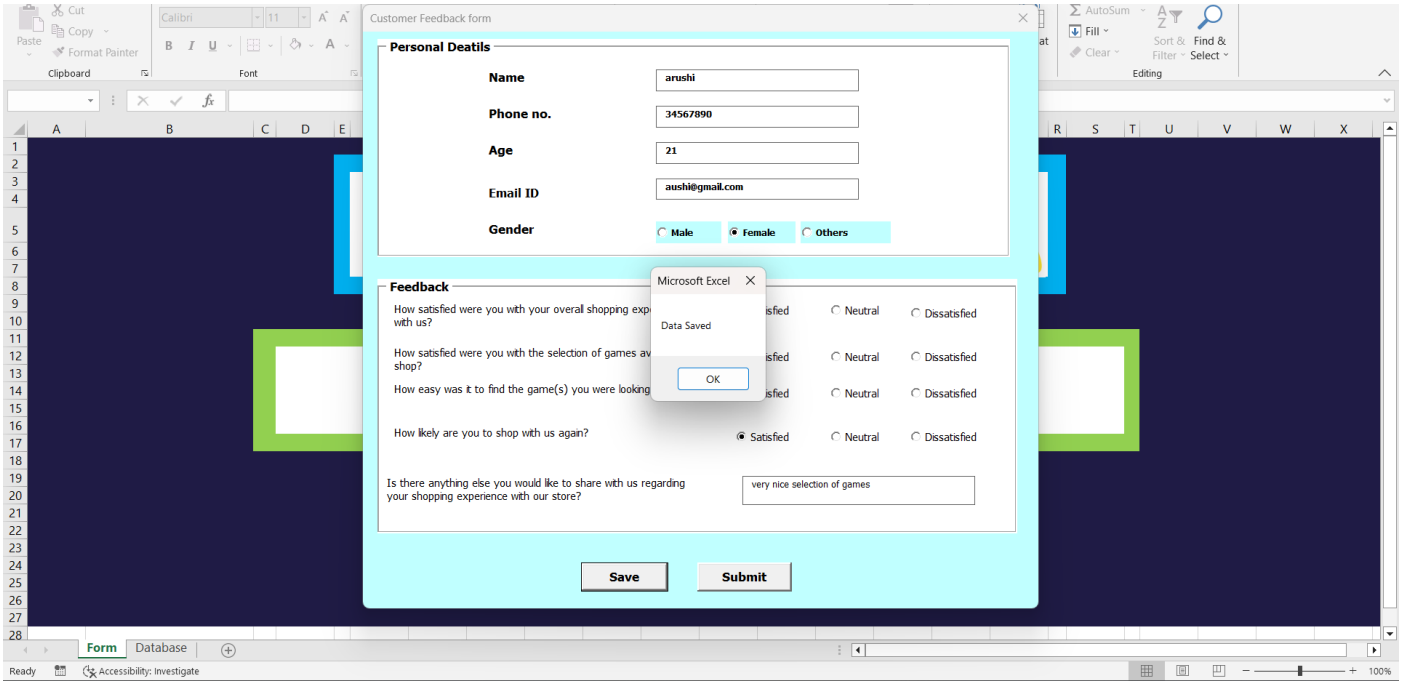

Fig. 4.21. Saving data in the form.

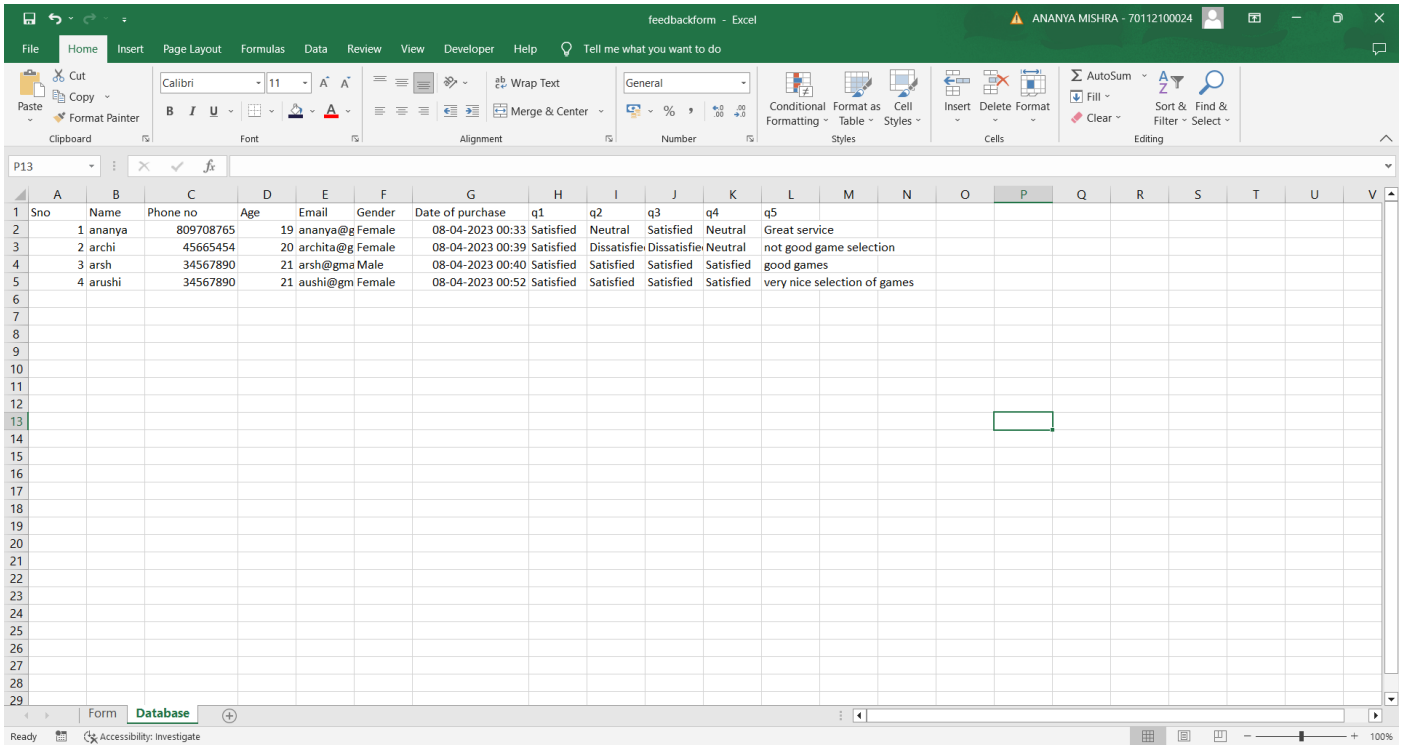

Fig. 4.22. Data gets saved on excel

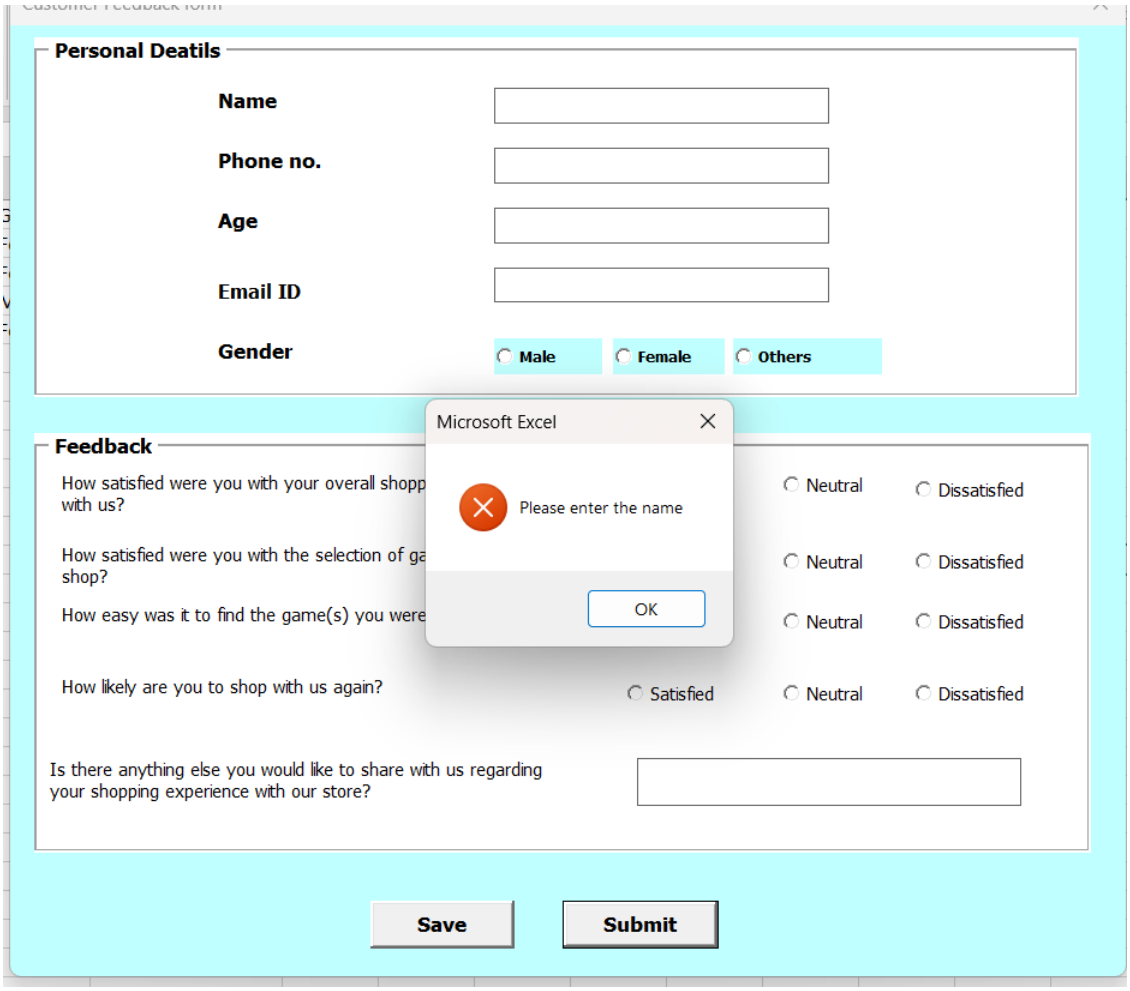

Fig. 4.23. Warning displayed when required feels are not entered

CHAPTER- 05

Implementation of Dashboard-

Fig. 5.1 Main Dashboard with slicer

Fig.5.2 Dashboard with Year of release Slicer

Fig.5.3 Dashboard with Publisher Slicer

CHAPTER- 06

Learning Outcomes-

1)Problem Statement-

While deciding our problem system we had to thoroughly think through about how we can use the insights derived from our dashboard to make a Decision support System.

2)Decision Support system Development Process -

We were able to learn more about the several phases of decision system development, such as requirements collecting, design, development, testing, deployment, and maintenance, through our project. This made it easier for us to comprehend the significance of each stage and how they all work together.

3)Dashboard Design -

We learned how to choose the best dataset and determine the insights that will be useful in everyday life, and we also learned how to create dashboards that effectively convey data and insights to end users. This included taking factors like visual design, layout, and usefulness into account. We were able to get hands-on experience with the tools and methods required to create a useful system by actually developing a dashboard.

4) GUI design/End-User Form -

We also learned about how to build forms that satisfy end-user requirements, taking usability, accessibility, and data gathering demands into account. While we developed our userform, we learned how to use several Excel controls like CommandButton, TextBox, ListBox, OptionButton, etc. We also learned how to connect many forms using a single control. In addition to creating an interface for our supermarket and making it simple to add new data to the dataset, we were able to execute the VBA code, by using various conditional statements, switch cases , Loops, Exit and End statements, using arrays , applications etc..

5)Actual Implementation Of Dashboard-

We implemented the concepts we had learnt in semester I , which included making pivot tables , slicers , different graphs and using proper dashboard design principles to make our dashboard. So that we could get proper insights from it.

Overall, these learning outcomes have assisted us in gaining a thorough understanding of the steps and abilities needed to create a successful DSS centred on superstore data analysis.

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