A Project Report

On

**Restaurants Billing System**

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**DECLARATION**

We ***Aditya Kumar B.tech CSE and 2023 Roll no-6, Jyotsna Yadav B.tech CSE and 2023 Roll no-34, Charvi Vijay B.tech CSE and 2023 Roll no-24, Gunjan Sirohi B.tech CSE and 2023 Roll no-30, Kunal Sharma B.tech CSE and 2023 Roll no-38, Akash Gaur B.tech CSE and 2023 Roll no-7*** hereby declare that the work presented in this project report entitled “Restaurant Billing System” is an authentic record of our own work carried out under supervision of Mr. Vikash Sawan.

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**CERTIFICATE**

This is to certify that the above statement made by the students are correct to the best of my knowledge and belief.

Date:

Place: Mathura

Name and Signature with Affiliation of Supervisor

**Contents**

|  |  |  |
| --- | --- | --- |
| Certificate & Declaration | | iii |
|  |
| Table of Contents | | iv |
| 1. **Introduction, Motivation and Objective**   i) Objectives  ii) Features | | **v-vi** |
| 1. **Project Description and Work done** 2. Problem Definition 3. Project Overview 4. Scopes and limitation 5. Module 6. Project and Activity 7. Flow chart | | **vii-xiii** |
| 1. **Geotagged Images of Students at the place of work** | | **ix** |
| 1. **Findings and Conclusion** | | **xx** |
| Bibliography/ References | | **xxi** |



**Chapter - 1**

**Introduction, Motivation and Objective**

The **" Restaurant Billing System"** project presents a comprehensive and efficient software solution tailored to meet the billing and transaction management needs of the hospitality industry. This project, developed using the C programming language, addresses this critical aspect by providing a sophisticated system that streamlines order placement, computes accurate bills, and maintains meticulous records of transactions. This project is all about making life easier restaurants. By automating billing and focusing on accuracy and speed, we're helping these businesses provide excellent service to their customers.

Billing is a financial accounting concept for business organizations such as industry to bill their customers for services rendered and the billing report is utilized by management to know the income generated. billing record system is used to capture the bill record of customers to come up with a total amount to be paid by the customer. The information is saved to a database to enable management or users to retrieve saved billing records. The service rendered by industry are associated with charges. It is therefore pertinent that accurate billing of the service rendered is properly documented. The application of the computer system to aid business transaction is very significant. This is because the computer system provides features such as storage, computation, easy retrieval of information etc. in addition; the computer system is very fast and accurate as against manual systems of recording and retrieving information. Virtually all organizations are now shifting from their manual systems to computerized systems as a result of the benefits it presents. industries are among the league of organization that can make use of the computer system and software solution to manage their billing records. The manual billing system is time consuming: It takes time to compute the bill of customers in the existing system due to the manual process being used. Human error due to miscalculations: Miscalculations can occur as a result of human It is difficult to easily manage and update billing information: If there is need to correct a billing record or make changes, it will be difficult to instantly find and update the bill record of the particular customer.

## **Objectives:**

The aim of the study is to develop a billing system for restaurants. This will aid in the computation of customers billing information pertaining to services offered so that billing reports can be presented when needed. The following are the objectives:

1. To design a system to compute billing information of customers of the industry.
2. To design a system that can be used to store customers billing records.
3. To implement a system that can be used to retrieve and update customer billing records easily.
4. To generate a receipt when performing a service.
5. Provides a convenient solution of billing pattern.

## Features:

1. It increases operational efficiency.
2. It is designed to help you cost your recipes and track inventory saving your Money and Time and maximizing profit.
3. It helps the restaurant manager to manage the restaurant more effectively and efficiently by computerizing Meal Ordering, Billing, and Sales Management.
4. Accounting.
5. It increases the security.
6. It avoids paper work.
7. It is Simple to learn and easy to use.
8. It is portable.



**Chapter - 2**

**Description and Work done**

## Problem Definition:

The billing process is done manually by manpower. It results in delayed time for the consumer and to the organization while the bill is being processed. So, there is a room for improvement here. A certain computer based billing system could aid the organization to utilize its resources better. Computerized Billing System provide capabilities for entering client, employee and payment information, building a record and managing other related data needs in the organization. The currently used system contains the following problems which are listed below:

* + Inability of modification of data
  + Manual operator control
  + Lots of paperwork
  + Difficult to record information systematically
  + Difficult to retrieve information in time
  + Wastage of paper

Based on the given problems, management of the information and billing process can be more efficient with the help of **" Restaurant Billing System"**.

## Project Overview:

Restaurant Billing System is a computer based billing system with user friendly interface which automatically manages the billing process of the customer very easily taking only a short period of time. The system can large amount of data and also generates bill for the customer. Billing history, reservation information and staff information can also be obtained with the use of **" Restaurant Billing System"**.

It is an automated desktop based software which has a simple design and very easy to use also. This project’s main focus is on proper management of information regarding the staffs, billing and reservation records. It is also specialized in automatically processing the customer bills and discounts.

The proposed system either does not require paper work or very few paper works are required. All the data is fetched into the computer immediately and various bills can be generated through computers. Since all the data is kept in a database, no data of the organization can be destroyed. Moreover, works become very easy because there is no need to keep data on papers.

## C:\Users\admin\AppData\Local\Microsoft\Windows\INetCache\Content.Word\gla logo 12 b.pngScopes and Limitations:

The software has a lot of features and advantages over the paper based billing system. It has the following scopes:

* + This project will help the employee in fast billing.
  + The project will enable to see free reservation available.
  + Quality and faster service can be given to the customers.
  + Easy to maintain in future prospect.
  + This project enable employees to maintain a great database of information regarding the billing and reservation.

The limitations of this system are as follows:

* + It is a desktop based software. A wider reach of customers cannot be obtained.
  + Insufficient time for development.
  + Need further more improvements for high class restaurants.
  + Employees/staffs should be trained at first to use this system.

## Module:

The Restaurant Billing Management System project is divided into different modules for better understanding of the project. The modules help us to handle with errors easily and access each and every class properly. Menu management is done by using following features:

* + **Changing rate/price of items:** In this, we can change rate/price of our menu items according to situations or circumstances.
  + **Choosing items:** In this, we can select multiple items from different categories according to the choice and respectively having a look on the price of it.
  + **Billing:** In this we can see the resultant bill of the items selected by the user and accordingly the user can verify the items and the price and can be sure of no mistake.
  + **Generating invoice:** in this we will generate invoice.
  + **Searching:** in this we can search the invoice.

# C:\Users\admin\AppData\Local\Microsoft\Windows\INetCache\Content.Word\gla logo 12 b.pngProject & Activity

The **"Restaurant Billing System"** is a basic program used in restaurants. The main aim is to perform basic function that a waiter and the owner of the restaurant can do. As the name of the project suggest, the project is about billing but it also covers the job of a waiter who takes the order, as the program will show the menu as well, which will make user to select an item to order and side by side the billing will be performed.

The advantage of the program is that there is no need to hire a person for the same only a system is required to execute it. The Customer can work on the program and select the items which he/she wants to order and accordingly can delete the items if required. It is user friendly as it works as a calculator, a user can simply add or delete some item if required and accordingly a new bill will be generated.

This program is coded in C language and includes header file like standard input output (stdio.h), input output stream, standard library (string.h) etc. Also, this program contains conditional statements like if, if…else, nested if…else, goto and loops like for loop, do loop, do while loop, as well as user defined functions like without argument without return type.

The conditional statements, loops and functions used in project are defined below:

**If statement:** It is one of the powerful conditional statements. If statement is responsible for modifying the flow of execution of a program. If statement is always used with a condition. The condition is evaluated first before executing any statement inside the body of If. The syntax for if statement is as follows:

if (condition) instruction;

**The If-else statement:** The if-else is statement is an extended version of If. The general form of if-else is as follows:

if (test-expression)

{

True block of statements

}

Else

{

False block of statements

}

Statements

n this type of a construct, if the value of test-expression is true, then the true block of statements will be executed. If the value of test-expression if false, then the false block of statements will be executed. In any case, after the execution, the control will be automatically transferred to the statements appearing outside the block of If.

**Nested Else-if statements:** Nested else-if is used when multipath decisions are required. The general syntax of how else-if ladders are constructed in ‘C’ programming is as follows:

if (test - expression 1) { statement1;

} else if (test - expression 2) { Statement2;

} else if (test - expression 3) { Statement3;

} else if (test - expression n) { Statement n;

} else {

default;

}

Statement x;

This type of structure is known as the else-if ladder. This chain generally looks like a ladder hence it is also called as an else-if ladder. The test-expressions are evaluated from top to bottom. Whenever a true test-expression if found, statement associated with it is executed. When all the n test-expressions becomes false, then the default else statement is executed.

**Goto statement:** This type of statement will provide a user with an unconditional jump (in the C programming language) to a labeled statement from the ‘goto’ in the very same function. The syntax used for the goto statement in the C language:

goto label;

..

.

label: statement;

**Do while loop:** The do-while loop is similar to the while loop, except that the test condition occurs at the end of the loop. Having the test condition at the end, guarantees that the body of the loop always executes at least one time. It also executes the code until condition is false. In this at least once, code is executed whether condition is true or false but this is not the case with while. While loop is executed only when the condition is true.

Syntax:

do{

statements;

}while(condition);

**For loop:** In C a for loop is a programming language statement which allows code to be repeatedly executed. A for loop is classified as an iteration statement. Syntax:

for (initialization; condition; increment/decrement) { statements;

}

**Structure:** A structure in the C programming language is a complex data type declaration that defines a physically grouped list of variables to be placed under one name in a block of memory, allowing the different variables to be accessed via a single pointer, or the structure declared name which returns the same address. The structure can contain many other complex and simple data type in an association, so is a natural organizing type for records like the mixed data types in lists of directory entries reading a hard drive (file length, name, extension, physical (cylinder, disk, head indexes) address, etc.), or other mixed record type (patient names, address, telephone... insurance codes, balance, etc.). Syntax:

struct structurename {

datatype member1; datatype member2;

...

};

**Functions:** Functions that a programmer writes will generally require a prototype. When I say that the function returns a value, I mean that the function can be used in the same manner as a variable would be. Syntax:

* Function declaration:

return\_type function\_name (argument list);

* Function call:

function\_name (argument\_list);

* Function definition:

return\_type function\_name(argument list) { function body;

}

**Flowchart:**

Flowchart in C is a diagrammatic representation of a sequence of logical steps of a program. Flowcharts use simple geometric shapes to depict processes and arrows to show relationships and process/data flow. A flowchart in C language is a graphical representation of an algorithm. Programmers often use it as a program-planning tool to solve a problem. It makes use of symbols that are connected among them to indicate the flow of information and processing. The process of drawing a flowchart for an algorithm is known as “flowcharting”.

**What do you mean by flowchart?**

The Flowchart is the most widely used graphical representation of an algorithm and procedural design workflows. It uses various symbols to show the operations and decisions to be followed in a program. It flows in sequential order.

**Types of Flowchart**

The various types of the flowchart are given below.

* Horizontal Flowchart
* Panoramic Flowchart
* Vertical Flowchart
* Architectural Flowchart

**Rules or guidelines of Flow**

**chart:**

The various Rules or Guidelines for drawing the flowchart

are given below.

* Only conventional flowchart symbols should be used.
* Proper use of names and variables in the flowchart.
* If the flowchart becomes large and complex, use connector symbols.
* Flowcharts should have start and stop points.

**Flowchart symbols:**

The different flowchart symbols have different conventional meanings.

**The various symbols used in Flowchart Designs are given below.**

* **Terminal Symbol:**

In the flowchart, it is represented with the help of a circle for denoting the start and stop symbol. The symbol given below is used to represent the terminal symbol.

A black background with blue and white lines

Description automatically generated

* **Input/output Symbol:**

The input symbol is used to represent the input data, and the output symbol is used to display the output operation. The symbol given below is used for representing the Input/output symbol.

A blue rectangle with black background

Description automatically generated

* **Processing Symbol:**

It is represented in a flowchart with the help of a rectangle box used to represent the arithmetic and data movement instructions. The symbol given below is used to represent the processing symbol.

![A black rectangular frame with blue and white lines

Description automatically generated](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAAZAAAACfBAMAAAAlsJKeAAAAD1BMVEUAAAAVR2PE0djw8/WYrrrqKFAmAAAAAXRSTlMAQObYZgAAAMJJREFUeNrt3EEBQFAUAEEVRCCCBvqXcqXBvm+mwRbYDQAA/uY6J3uFHPtkQmqE1HxDtqEOITFCaoTUCKkRUiOkRkiNkBohNUJqhNQIqRFSI6RGSI2QGiE1QmqE1AipEVIjpEZIjZAaITVCaoTUCKkRUiOkRkiNkBohNUJqhNQIqRFSI6RGSI2QGiE1QmqE1AipEVIjpEZIjZAaITVCaoTUCKkRUiOkRkiNkBohNUJq1g05h7qX/cYPJqRmxRAAAGCOB2jZ7vP9IsVnAAAAAElFTkSuQmCC)

* **Decision Symbol:**

Diamond symbol is used for represents decision-making statements. The symbol given below is used to represent the decision symbol.

A diagram of a start and a start

Description automatically generated

* **Connector Symbol:**

The connector symbol is used if flows discontinued at some point and continued again at another place. The following symbol is the representation of the connector symbol.

A blue circle with black background

Description automatically generated

* **Flow lines:**

It represents the exact sequence in which instructions are executed. Arrows are used to represent the flow lines in a flowchart. The symbol given below is used for representing the flow lines:

A blue arrows in a square

Description automatically generated

* **Hexagon symbol (Flat):**

It is used to create a preparation box containing the loop setting statement. The symbol given below is used for representing the Hexagon symbol.

A black background with blue rectangles

Description automatically generated

* **On-Page Reference Symbol:**

This symbol contains a letter inside that indicates the flow continues a matching symbol containing the same letters somewhere else on the same page. The symbol given below is used for representing the on-page reference symbol.

A blue circle with black background

Description automatically generated

* **Off-Page Reference:**

This symbol contains a letter inside indicating that the flow continues on a matching symbol containing the same letter somewhere else on a different page. The symbol given below is used to represent the off-page reference symbol.

A blue and black logo

Description automatically generated

* **Delay or Bottleneck:**

This symbol is used for identifying a delay in a flowchart. The alternative name used for the delay is the bottleneck. The symbol given below is used to represent the delay or bottleneck symbol.

A blue rectangle with black border

Description automatically generated

* **Document Symbol:**

This symbol is used in a flowchart to indicate a document or report. The symbol given below is used to represent the document symbol.

A blue rectangle with black border

Description automatically generated

* **Internal storage symbol:** The symbol given below is used to represent the internal storage symbol.

A blue flag with black background

Description automatically generated

**Advantages of Flowchart in C:**

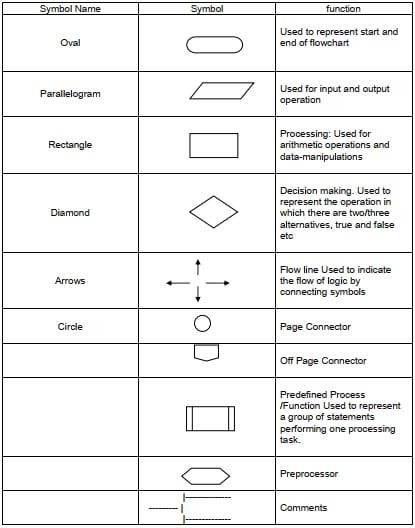
**Following are the various advantages of flowchart:**

* **Communication:** A flowchart is a better way of communicating the logic of a program.
* **Synthesis:** Flowchart is used as working models in designing new programs and software systems.
* **Efficient Coding:** Flowcharts act as a guide for a programmer in writing the actual code in a high-level language.
* **Proper Debugging:** Flowcharts help in the debugging process.
* **Effective Analysis:** Effective analysis of logical programs can be easily done with the help of a related flowchart.
* **Proper Documentation:** Flowchart provides better and proper documentation. It consists of various activities such as collecting, organizing, storing, and maintaining all related program records.
* **Testing:** A flowchart helps in the testing process.
* **Efficient program maintenance:** The maintenance of the program becomes easy with the help of a flowchart.

**Disadvantages of Flowchart in C:**

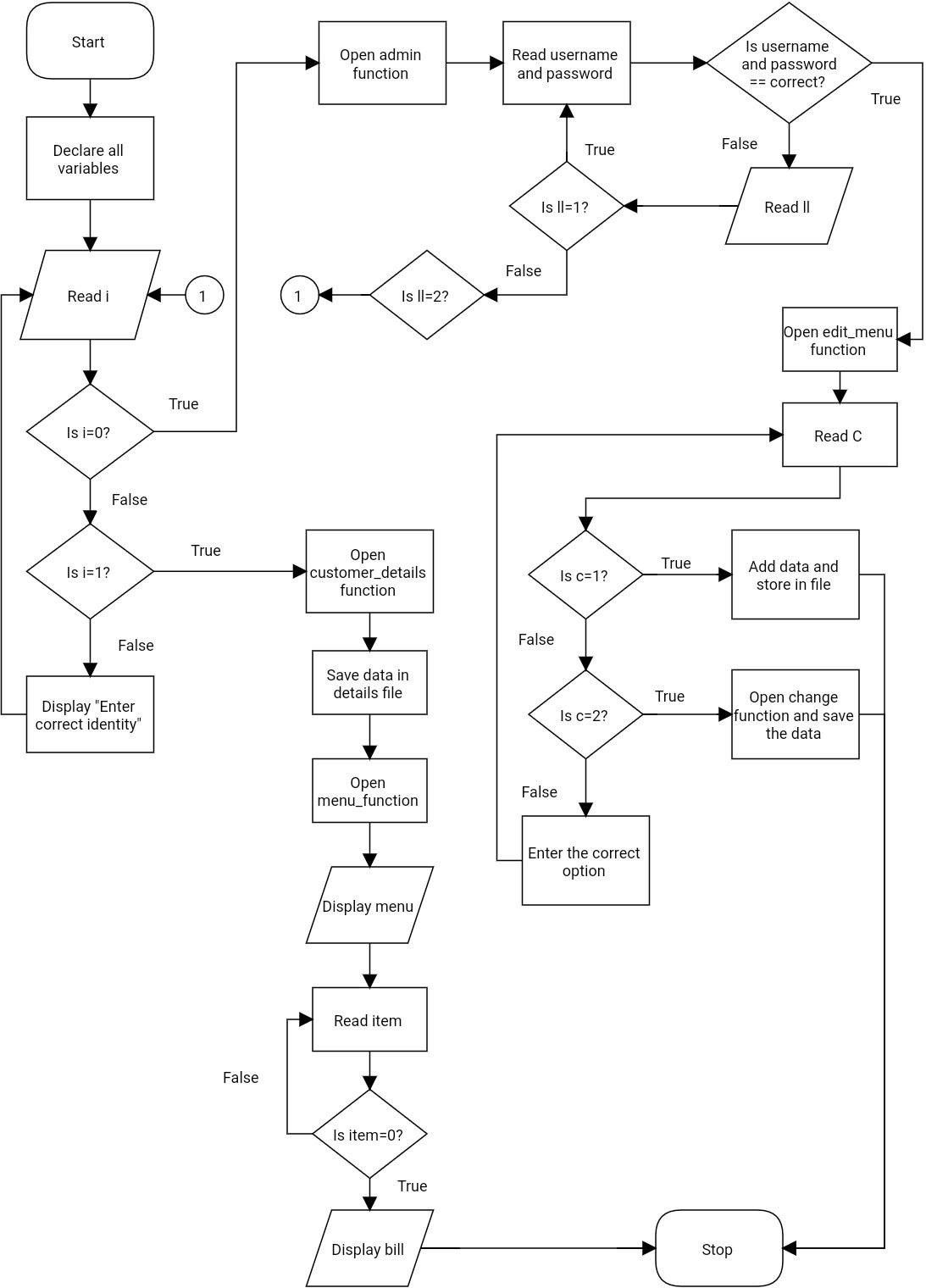
**Following are the various disadvantages of flowchart:**

* **Time-consuming:** Designing **a** flowchart is a very time-consuming process.
* **Complex:** It isn't easy to draw a flowchart for large and complex programs.
* **There is no standard** in the flowchart; there is no standard to determine the quantity of detail.
* **Difficult to modify:** It is very difficult to modify the existing flowchart.



## C:\Users\admin\AppData\Local\Microsoft\Windows\INetCache\Content.Word\gla logo 12 b.pngFLOWCHART FOR THE PROGRAM:

The flowchart for the program is presented below:





 **Chapter – 3**

**Geotagged Images of Students at**

**the place of work**

|  |  |
| --- | --- |
| **Geotagged Image 1** | **Geotagged Image 2** |
| **Geotagged Image 3** | **Geotagged Image 4** |

**Chapter - 4**

**Findings and Conclusion**

Talking about the discussion, we addressed the problem of billing system in Restaurant where we got this opportunity to work on a project of some applicable program used in the daily life using C programming language so we got hit by the idea of using this opportunity to write a program to solve this billing system in our Restaurant. So, we as a group decided to make **" Restaurant Billing System"** as our topic and started working in this. While going through the development process, it wasn’t that much easy task as we are assuming, as we have to put our 100 percent of knowledge, hard work, time and very important a good team effort. But we are have to say that we all passed these all challenge and reached here where we are presenting our project among you all guys. Facing the problem of reading data from data file, writing the data, changing the data was a kind of difficult task for us. We also got a lot of problem while calculating the total bill of the data item which is chosen by the customer. Dividing the part of the customers and the admin (which will be performed by the owner) helps us for reaching this long way. The knowledge of the classroom wasn’t enough to complete this particular project, so we went through the various articles and online sources which helped us a lot to reach here. Talking about the source code of the project we defined various user defined function which perform particular task like menu is a function which show the menu to customer as well as to admin. So, this period of completing this project helps us to research, critical thinking, data analysis, problem detecting and solving.

Conclusion, in our Project entitled **" Restaurant Billing System”,** we have tried our best to fulfill all the requirements of restaurant. The project being simple and flexible is running successfully. The main advantage of our project is that its simplicity attracts a lot of users. Our software can be used in any kind of restaurant (Sandwich Shop, Catering business, Doughnut or Pastry Shop, College Canteen and more). The Restaurant Billing Management System helps the restaurant manager to manage the restaurant more effectively and efficiently by computerizing meal ordering, billing and inventory control. This project when implemented it will remove all the security issues. Also, there will be speedy and secured authentication procedure for the maintenance of records. Data entry is fast and simple. Therefore, our software will definitely prove to be a successful stepping stone in replacing the outdated manual method of maintaining secure records. The work plan also includes the detailed features of the technology used in the project defining the front end and back end. The objectives and scope of the project in future have been elaborated.



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