HARCOURT BUTLER TECHNICAL UNIVERSITY

Nawabganj, Kanpur

Department of Computer Science and Engineering

Session 2023-2024

Industrial Training Report

On

**Full Stack web
development**

Submitted to :   **Submitted by :**

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Acknowledgent

In the initial and foremost juncture, I wish to express my profound gratitude. My indebtedness runs deep as I extend my heartfelt acknowledgments to my supervisor at the Department of Computer Science Engineering, Harcourt Butler Technical University. Their unwavering guidance, endless patience, invaluable insights, and consistent encouragement throughout this critical phase have been indispensable. Their supportive and benevolent demeanor not only paved the way but made it possible for me to bring this endeavor to a successful and punctual completion.

I extend my sincere gratitude for their contributions that significantly enriched my comprehension of the subject matter. A special debt of gratitude is owed to the entire facultyof the Computer Science Engineering Department at Harcourt Butler Technical University, whose collective wisdom, assistance, and enriching discussions have been instrumental.

With profound humility, I invoke the Name of the Almighty, the Merciful, the Creator of the universe, offering boundless praise and gratitude for the empowerment to culminate this study.

In closing, my heartfelt thanks extend to my family, whose unwavering love and support have been a constant beacon of motivation throughout my academic journey. Their enduring affection invariably remains the cornerstone of my inspiration.

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Abstract

The computer has brought revolution in every sphere of human life. Whether it is business, education field, governance, medical science etc. The computer has reduced the human work load, business are going global and every thing is available at the click of mouse. The concept of e-shopping has proposed convinient, more efficient and has made accessible a whole variety of products in the confines of one's comfort.

Presently I am proposing the system "Invoicing System". Manual bill generation tactics are time consuming and less maintainable. An online invoicing system is low maintainence, highly accurate and reliable. Operations like searching, sorting, updating and analyzing the records have been made less time consuming, and more efficient.

Basic objectives are to extend reach to geographically scattered clients, reducing time in activities, centralized data handling and paperless work with reduced manpower. Cost cutting, operational efficiency, consist view of data and integration with other agencies are other factors. Main challenges are effectively syncing internal and external operations in such a manner that job can be finished within time limit and integration with different agencies on an agreed upon common data format.

One of the greatest advantages of this Online Invoicing System is that clients can choose to initiate business at their convenience. All that is required is access to a computer and internet connectivity. Messy handwriting, lack of postal connectivity, delay in courier delivery etc. are unlikely to disrupt the process. This is a great advantage to clients in rural areas and with disabilities.

Online Invoicing System provides a simple user friendly interface for collecting and maintaining client's personal information and order details where on service provider's part, maintains product details, availability etc, necessary for a transaction. It then generates an invoice printable to the user, for the purchase.

Objective

- To develop a system for the management of sales, purchase and stock maintenance processes that will be performed with a click of mouse button.

- To develop a system that has a good management of data along with integrity and minimizing redundancy.

- To develop a system that will be user friendly in all possible ways.

- To develop a system that provides easier work than existing system for the user.

- To develop a secure system that can be accessed only by authorised users.

Why System was built?

- Earlier, data pertaining to payment was maintained manually.
- Manual system wasn't efficient.
- Cost of maintaining data manually was huge.
- Large manpower was required
- Inconvenient for consumers
- Procedure was error prone, unreliable.

Solution?

The solution for all these problems is to automate the system, by letting computer do the work, which enables reduced manpower, accuracy, efficiency and uniformity.

Purpose of the project

The following sections summarize the features and functonalities of each module

Customer module
Project is able to take user's personal details and store it in the database.
Project is able to uniquely identify each customer.
Project is able to take order from the user.
Project is able to present the user with the available products and a printable invoice.

Product module
Project is able to browse products.
Project is able to uniquely identify, search, update, add products but only with authorised access.

Invoice module
Project is able to fetch customer details, product details and brand information from database.
Project is able to perform calculations based on the purchase.
Project is able to present the user with a printable invoice.

Data Flow Diagram

A data flow diagram is graphical representation that depicts the information flow and the transforms that are applied as data moves from input to output. It can be used to represent a software at any level of abstraction. In fact DFDs may be partitioned in to levels. That represents increasing information flow and functional details. DFDs are defined in levels with every level decreasing the level of abstraction as well as defining a greater detail of the functional organs of the system.

A zero level DFD also known as context or fundamental system model represents the entire software elements as a single bubble with input and output data entities which are indicated as incoming and outgoing arrows. Data Flow Diagram help understanding the basic flow of data from one process to another process. This 0 level DFD represents fundamental overview of the invoicing system.
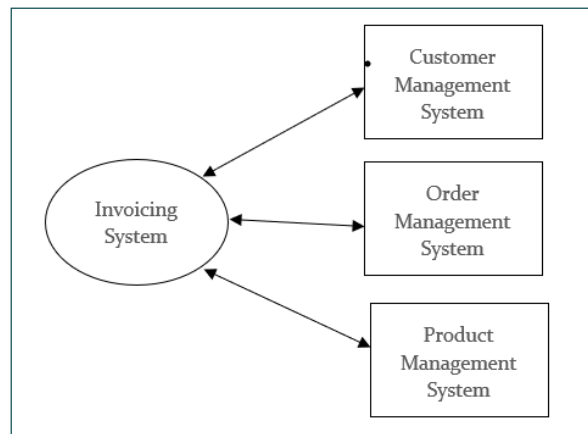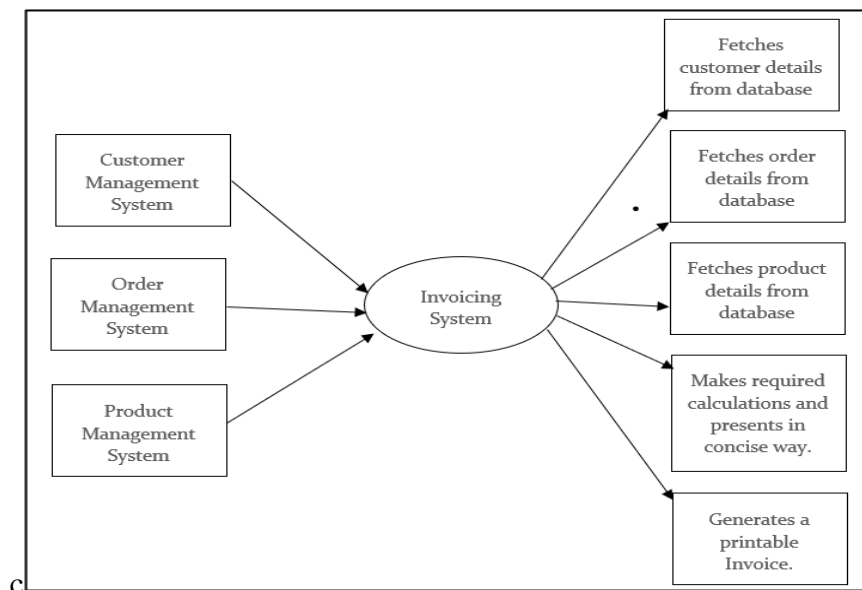
Level O

Fig. 1

Level I

System Analysis

- **Application Overview:**

The application is a web-based tool for tracking income and expenses. It provides users with a dashboard, transaction history, income management, and expense management features.

- **User Interface:**

The user interface is designed with a clean and user-friendly layout. It includes navigation menus, icons, and interactive components.

- **Global Styling:**

Global styles are defined using styled-components, ensuring consistent styling throughout the application. CSS variables are used for theming, making it easy to update the application's appearance.

- **Layout and Structure:**

The application follows a responsive layout structure with main and inner layouts. The use of flexbox allows for flexible arrangement of components.

- **Date Formatting:**

The application uses the moment library to format dates consistently.

- **Icons:**

Icons are imported as Bootstrap components, making it convenient to include them in the UI.

- **Menu Items:**

The application defines a set of menu items for navigation, each associated with an icon and link.

- **Window Size Hook:**

A custom hook, useWindowSize, tracks the dimensions of the user's window.

- **Navigation Component:**

The navigation component displays user information and a menu for navigation. It allows users to switch between different sections (Already Exisiting user, new user, order, invoice).

- **Global Context:**

Global context management is implemented for handling income and expense data. It offers functions for adding, fetching, and deleting transactions from the database. Calculations for total taxes, expenses, and balance are provided. The transaction history is sorted by date.

- **App Component:**

The main App component integrates all other components.It manages the active menu item and renders corresponding sections. Utilizes the global context for data management and retrieval. It provides a well-structured foundation for expanding the application's features.

- **Root Element:**

The root element in index.js renders the main application component. Global styles are applied. The global context is wrapped around the app, ensuring data availability.

- **Scalability and Maintainability:**

The codebase is organized and modular, making it easy to add new features or make changes. The use of global context simplifies state management and data sharing.

- **Overall Impression:**

The application appears to be a well-designed and structured tool for managing financial transactions. It balances aesthetics with functionality and provides a foundation for further development.

- **Future Enhancements:**

Future enhancements could include user authentication, data visualization, and more advanced financial tracking feat.

Software development lifecycle model

Prototyping is defined as the process of developing a working replication of a product or system that has to be engineered. It offers a small-scale facsimile of the end product and is used for obtaining customer feedback. In this model, a prototype of the end product is first developed, tested, and refined as per customer feedback repeatedly till a final acceptable prototype is achieved which forms the basis for developing the final product.

Feasibility analysis

Feasibility report for the computerization of the various activities of the company.

Background: The Company facing the problem of inconsistent and out of time information in its activities. Very much time is consuming for report generation, which is not very helpful for decision making. So we want a system, which provide immediate information.

Method of study: The analysis procedure comprised of field trips in the various departments of the company. The following documents and sources were looked up:

- The purchase order that contain items to be purchased.
- The accounts register.
- Bills given to the customers.
- Customer's suggestions window

The key consideration involve in the feasibility study are:

1. Technical
2. Behavioral
3. Economic

1. Technical Feasibity

Technical feasibility centers on the existing computer system (hardware, software etc) and to what extent it can support the proposed system addition. For example, if the current system is operating at 70% capacity (an arbitrary value), then another application could overload the system or require additional hardware. If the budget is serious constrain then the project is judged not feasible. Technologies used in the project are

- Front-End: Html5, CSS3, JavaScript, Bootstrap5

- Back-End: PHP, TCPDF(PHP library), MySQL (for the database)

System requirements:

	Windows requirements	Mac requirements	Linux requirements
Operating system	Windows 8 or later	macOS High Sierra 10.13 or later	64-bit Ubuntu 14.04+, Debian 8+, openSUSE 13.3+, or Fedora Linux 24+
Processor	Intel Pentium 4 or later	Intel	Intel Pentium 4 or later
Memory	2 GB minimum, 4 GB recommended		
Screen resolution	1280x1024 or larger		
Application window size	1024x680 or larger		
Internet connection	Required		

2. Behavioural Feasibility

An evaluation of the behavior of the end users, which may effect the dnvelopment of the system. People are inherently resistant to change and computers have to know to facilitate changes and computers have to known to facilitate changes. An estimate should be made of how strong a reaction the user and staff is likely to have towards the development of a computerized system. It is a common knowledge that a computer installation has something to do with turnover, transfer, retraining and changes in employee job status, therefore the introduction of a candidate system requires special effort to educate, sell and train the staff on new ways of conducting business.

This system is feasible for organization because it supports of the organization and its strategic plan. The interactive interface enables effective understanding and usability.

3. Economic feasibility

The procedure is to determine the benefits and savings that are expected from a candidate system and compare it with the costs. If a benefit outweighs costs, then the decision is made to design and implement the system.

Otherwise further alterations are made in the proposed system
1. Manpower cost
2. Hardware and software cost

Database design

<u>**Database Name:**</u> mydb

<u>**Tables**</u>:

1. Customers
2. Pricing
3. Order

CUSTOMERS	
Column name	Datatype
CID.	Int, Primary key, AI
INV_NO	varchar(20)
Name	varchar(30)
Address	varchar(50)
Contact No.	varchar(10), Unique
Mail	varchar(20)

PRICING	
Column name	Datatype
PID.	Int, pimary key,AI
Pname	varchar(50)
Price	Float
cgst	float(default: 2)
sgst	float(default: 2)
igst	float(default: 2)
utgst	float(default: 3.5)

ORDERS	
Column name	Datatype
OID.	Int, pimary key, AI
CID.	Int
PID.	Int

Security Measures:

HTTPS (Hypertext Transfer Protocol Secure): HTTPS is essential for encrypting data transmitted between the client (user's device) and the server. It ensures that data is secure during transit. With HTTPS, all communication is encrypted, preventing eavesdropping and man-in-the-middle attacks where attackers intercept and tamper with data.

Input Validation: Input validation involves checking and validating data entered by users to ensure it adheres to expected formats and values. Preventing SQL injection: By validating and sanitizing user inputs, you can ensure that malicious SQL code cannot be injected into database queries. Prepared statements and parameterized queries are commonly used techniques to prevent SQL injection.

Error Handling: Proper error handling is crucial for security and user experience. Avoid exposing sensitive information in error messages: Generic error messages should be displayed to users instead of detailed error messages that might reveal system vulnerabilities or sensitive data. Log detailed errors on the server-side for debugging purposes but present user-friendly messages to the client.

Protection Against Common Web Vulnerabilities: Design the application to mitigate common web vulnerabilities such as Cross-Site Scripting (XSS) and Cross-Site Request Forgery (CSRF). Sanitize user inputs and use anti-CSRF tokens.

Project snippets:

Customer data collection module:

Enter Info

Customer id:

52456

Full Name

Kamakshi Khanna

Address

Nottingham,England

Contact no.

988999755

Email

kama21@gmail.com

Submit

Order placing module:

Product_id	Product Name	Price	
2	The trial-Franz Kafka	399.99	Add
3	The wind up bird chronicle -Haruki Murakami (a summation of all the murakami elments hence the best	295	Add
4	Siddhartha -Herman Hesse	99.99	Add
5	On earth we're briefly gorgeous -Ocean Voung(first novel of voung is as poetically written as his ot	299.99	Add
6	Animal farm- George Orwell(witty analogy artful sattire one of the best war genre writer)	95	Add
7	The Da Vinci code-Dan Brown	295	Add
8	The witch of portobello- Paulo Coelho	299	Add
9	What I talk About when I talk about running- Haruki Murakami	400	Add
10	Kafka on the shore- Haruki Murakami	300	Add
11	The catcher in the rye- JD Salinger	270	Add
14	The great Gatsby- F.Scott Fitzgerald(known for being the great american novella)	100	Add
15	Moby Dick or The whale- Herman Malville	200	Add
16	A story that ends happily -Aastha Singh	199.99	Add
17	My year of rest and relaxation- Otessa Moshfegh	400	Add
18	The picture of Dorian Grey- Oscar Wilde(classic proficiently flawless writing)	200	Add
19	A room of one's own- Virginia Woolf	220	Add
20	To the lighthouse -Virginia Woolf	100	Add

Selected items:

Preferred pagebreak rows: 10   **Print Invoice**

order_id	product_id	Pname	Price	Amt	
438	5	On earth we're briefly gorgeous -Ocean Voung(first novel of voung is as poetically written as his ot	299.99	2	Remove
439	6	Animal farm- George Orwell(witty analogy artful sattire one of the best war genre writer)	95	1	Remove
440	31	Wild sheep chase- Haruki Murakami(third and final of the rat trilogy,prolly the best too.)	300	2	Remove
441	36	The adventures of Huckleberyy Finn- Mark Twain	300	2	Remove
442	37	The adventures of Tom Sawyer- Mark Twain	200	1	Remove
444	8	The witch of portobello- Paulo Coelho	299	1	Remove
445	11	The catcher in the rye- JD Salinger	270	1	Remove
446	18	The picture of Dorian Grey- Oscar Wilde(classic proficiently flawless writing)	200	1	Remove
447	2	The trial-Franz Kafka	399.99	1	Remove
448	9	What I talk About when I talk about running- Haruki Murakami	400	1	Remove
449	26	The myth of Sisyphus- Albert Camus	300	1	Remove
450	29	Letters to Milena- Franz Kafka	300	1	Remove
452	40	A curious case of Benjamin Buttons- F.Scott Fitzgerald(one of the best short classic)	100	1	Remove
453	42	Wuthering Heights- Emily Bronte(the only novel of Bronte)	100	1	Remove
454	27	Crime and Punishment- Fyodor Dostoevsky	200	1	Remove
455	4	Siddhartha -Herman Hesse	99.99	1	Remove

Remove functionality:

order_id	product_id	Pname	Price	Amt	
438	5	On earth we're briefl [Are you surely wanting to remove the item?] ritten as his ot	299.99	2	Remove
439	6	Animal farm- G [OK] [Cancel] re writer)	95	1	Remove
440	31	Wild sheep chase- Haruki Murakami(third and final of the rat trilogy,prolly the best too.)	300	2	Remove
441	36	The adventures of Huckleberyy Finn- Mark Twain	300	2	Remove
442	37	The adventures of Tom Sawyer- Mark Twain	200	1	Remove
444	8	The witch of portobello- Paulo Coelho	299	1	Remove
445	11	The catcher in the rye- JD Salinger	270	1	Remove
446	18	The picture of Dorian Grey- Oscar Wilde(classic proficiently flawless writing)	200	1	Remove
447	2	The trial-Franz Kafka	399.99	1	Remove
448	9	What I talk About when I talk about running- Haruki Murakami	400	1	Remove
449	26	The myth of Sisyphus- Albert Camus	300	1	Remove
452	40	A curious case of Benjamin Buttons- F.Scott Fitzgerald(one of the best short classic)	100	1	Remove
453	42	Wuthering Heights- Emily Bronte(the only novel of Bronte)	100	1	Remove
454	27	Crime and Punishment- Fyodor Dostoevsky	200	1	Remove
455	4	Siddhartha -Herman Hesse	99.99	1	Remove
456	10	Kafka on the shore- Haruki Murakami	300	1	Remove
458	39	Beyond good and evil- Friedrich Nietztsche(the author of God is dead we killed him)	200	1	Remove

Printable Invoice generated after confirmation of the order:

Epsilon healthcare

Civil lines, Delhi

Email: epsilonhealthcare@gmail.com   Telephone: 1234-5678   Website: https://www.epsilonhealthcare.com/

Invoice id: INV_52456   Date: 10-08-2023
Costumer Name: Kamakshi Khanna   Contact: 988999755
Address: Nottingham, England   Email: kama21@gmail.com

Sr.no.	Product Name	Price	Units	Amt.	cgst %	utst%	sgst %	igst%	Net Amt.
				INVOICE					
1	Siddhartha -Herman Hesse	Rs. 99.99	1	Rs.99.99	2.5%	3%	3%	2%	Rs. 110.49
2	On earth we're briefly gorgeous -Ocean Voung(first novel of voung is as poetically written as his ot	Rs. 299.99	2	Rs.599.98	2%	1%	4%	3%	Rs. 659.98
3	Animal farm- George Orwell(witty analogy artful sattire one of the best war genre writer)	Rs. 95	1	Rs.95	2.5%	3%	0.3%	2%	Rs. 102.41
4	The witch of portobello- Paulo Coelho	Rs. 299	1	Rs.299	2.5%	3.5%	3%	2%	Rs. 331.89
5	What I talk About when I talk about running- Haruki Murakami	Rs. 400	1	Rs.400	2%	3.5%	2%	2%	Rs. 438.00
6	Kafka on the shore- Haruki Murakami	Rs. 300	1	Rs.300	2%	3.5%	2%	2%	Rs. 328.50
							Local total:		Rs. 1971.27

				Carry-forwarded from page 1:					Rs. 1971.27
7	The picture of Dorian Grey- Oscar Wilde(classic proficiently flawless writing)	Rs. 200	1	Rs.200	2%	3.5%	2%	2%	Rs. 219.00
8	The myth of Sisyphus- Albert Camus	Rs. 300	1	Rs.300	2%	3.5%	2%	2%	Rs. 328.50
9	Crime and Punishment- Fyodor Dostoevsky	Rs. 200	1	Rs.200	2%	3.5%	2%	2%	Rs. 219.00
10	Wild sheep chase- Haruki Murakami(third and final of the rat trilogy,prolly the best too.)	Rs. 300	2	Rs.600	2%	3.5%	2%	2%	Rs. 657.00
11	The adventures of Huckleberyy Finn- Mark Twain	Rs. 300	2	Rs.600	2%	3.5%	2%	2%	Rs. 657.00
12	The adventures of Tom Sawyer- Mark Twain	Rs. 200	1	Rs.200	2%	3.5%	2%	2%	Rs. 219.00
							Local total:		Rs. 4270.77

									Carry-forwarded from page 2:		Rs. 4270.77
13	Beyond good and evil- Friedrich Nietztsche(the author of God is dead we killed him)	Rs. 200	1	Rs.200	2%	3.5%	2%	2%			Rs. 219.00
14	A curious case of Benjamin Buttons- F.Scott Fitzgerald(one of the best short classic)	Rs. 100	1	Rs.100	2%	3.5%	2%	2%			Rs. 109.50
15	Wuthering Heights- Emily Bronte(the only novel of Bronte)	Rs. 100	1	Rs.100	2%	3.5%	2%	2%			Rs. 109.50
								Total:			Rs. 4708.77
								Amount discountable:			Rs. 4293.97
								10% discount:			-Rs. 429.397
								Net amount payable:			Rs. 4279.37

Amount payable:Rs. 4279.37/-

In words: four thousand two hundred and seventy nine rupees .three seven paise only

Payment Mode: Cash/Online

Thanks for joining us!

INV_52456

Future Enhancements

- **User Profile Management:** Users will be able to create and customize profiles with personal information and preferences. Profile management will include options for changing avatars, usernames, and contact details.Users can set default categories for income and expenses, tailor notifications, and choose their preferred currency.

- **Recurring Transactions:** This feature will allow users to set up recurring income and expense records with customizable frequencies (e.g., daily, weekly, monthly). Users can define the start and end dates for recurring transactions, making it easier to manage regular bills and incomes. Automated reminders will notify users of upcoming recurring transactions, helping them stay on top of their financial commitments.

- **Budget Planning and Tracking:** Advanced budget planning will include setting financial goals and targets.Users can allocate specific amounts to categories and track their spending against these budgeted amounts. The application will provide graphical representations and progress tracking for budget goals.

- **Data Export and Reporting Features:** Users will have the option to export their financial data in various formats (CSV, PDF) for   analysis or record-keeping purposes. Reporting features will include generating detailed financial reports, visualizing income and expense trends, and identifying spending patterns over time. Users can set custom date ranges for reports, allowing them to focus on specific time periods.

- **Mobile Applications:** Dedicated mobile applications for iOS and Android platforms will offer on-the-go access to the Expense Tracker. The mobile apps will synchronize data seamlessly with the web application, ensuring users have access to their financial information anytime, anywhere. Features will be optimized for mobile devices, providing an intuitive and responsive user experience.

Conclusion

The Invoicing project is well functioning and efficient. The entire project can be accomodated as a module in ecommerce website and online shopping portals.Development of this system taught me implementation of various theoretical models I've been taught. Working on this has cultivated great many new skills in me, like case studying, gathering raw data and converting it to info, referring to various online resources. The system is still prone to future improvements and has a long way to go.

Thank you.

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