# 

Development of Online Hotel Management System

Md. Mehedi Hasan

ID# 21103032

A Practicum in the Partial Fulfillment of the Requirements

for the Award of Bachelor of Computer Science and Engineering (BCSE)



Department of Computer Science and Engineering

College of Engineering and Technology

IUBAT–International University of Business Agriculture and Technology

Summer 2024

Online Hotel Management System

Md. Mehedi Hasan

A Practicum in the Partial Fulfillment of the Requirements for the Award of Bachelor of Computer Science and Engineering (BCSE)

The practicum has been examined and approved,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Prof. Dr. Utpal Kanti Das

Chairman

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Shahinur Alam

Co-supervisor, Coordinator and Assistant Professor

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Afsana Akter Lija

Supervisor and Designation of the Supervisor

Department of Computer Science and Engineering

College of Engineering and Technology

IUBAT–International University of Business Agriculture and Technology

Summer 2024

## **Letter of Transmittal**

1 August 2024

The Chair

Practicum Defense Committee

Department of Computer Science and Engineering

IUBAT–International University of Business Agriculture and Technology

4 Embankment Drive Road, Sector 10, Uttara Model Town

Dhaka 1230, Bangladesh.

**Subject:** Letter of Transmittal.

I respectfully wish to present to you my practicum report, and it is with great enthusiasm and delight that I share this opportunity with you. The report is titled: **“Development of Online Hotel Management System.”** for the fulfillment of my Practicum course.

Working as an intern at ImpleVista was an immensely enjoyable and fulfilling experience throughout the course of two months. I have had ample opportunities to apply my academic knowledge in a real-world business setting throughout this practicum. I tried my hardest to complete this practicum report. I am now anticipating your thoughtful evaluation of this practicum report.

I would be eternally appreciative if you could review this report and assess my work.

Regards,

Yours sincerely,

\_\_\_\_\_\_\_\_\_\_\_\_\_

Md. Mehedi Hasan

ID# 21103032

## **Organization Certificate**

Place your organization-certificate image here.

## **Student’s Declaration**

The development of an online employee administration system is the subject of this report. I, Md. Mehedi Hasan, ID:21103032, a student enrolled in the College of Engineering and Technology (CEAT) of the International University of Business, Agriculture, and Technology's Bachelor of Computer Science and Engineering (BCSE) program, hereby declare the following. It possesses the necessary qualifications to fulfill both the BCSE (Bachelor of Computer Science and Engineering) half requirement and the CSC 490 Practicum internship prerequisites. The report and project regarding the development of an online hotel management system for ImpleVista were both authored by me. The modules and methods for this project are all developed subsequent to comprehensive examination and internet investigation. It is not yet suitable for additional accolades, exhibitions, or applications. I am certain that this online employee management system provides a reliable and efficient solution.

\_\_\_\_\_\_\_\_\_\_\_\_\_

Md. Mehedi Hasan

ID# 21103032

## **Supervisor’s Certification**

This is to certify that Md. Mehedi Hasan, ID: 21103032 of IUBAT—International University of Business, Agriculture, and Technology—partially fulfilled the Bachelor of Computer Science and Engineering (BCSE) program requirement for the practicum report **"Development of Online Hotel Management System"** at the Department of Computer Science and Engineering (CSE), IUBAT. I have supervised the methodology employed in the compilation of the report. Based on the available information and in alignment with his declaration, he compiled this report, the contents of which have not been previously submitted for credit toward a degree, diploma, or certification. At this moment, he is ready to submit the report. Regardless of the outcome of his future endeavors, I wish the best.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Afsana Akter Lija

Lecturer

Department of Computer Science and Engineering

IUBAT–International University of Business Agriculture and Technology

## **Abstract**

This practicum work presents an **Online Hotel Management System** designed to streamline hotel operations and enhance guest experiences. The system serves two primary user groups: hotel guests and administrative staff. For guests, the platform offers a user-friendly interface with features including registration, room browsing with advanced filtering, detailed room information, and a seamless booking process. Additional functionalities include service overviews and a contact form. The user journey guides guests from room selection to payment, with a profile section for managing bookings and personal information. On the administrative side, the system provides a comprehensive dashboard with real-time insights into key metrics such as occupancy rates and user statistics. Administrators can manage rooms, handle booking requests, and access user information efficiently. The system aims to improve operational efficiency, enhance guest satisfaction, and provide valuable business insights. Key benefits include streamlined booking processes, personalized guest experiences, and improved administrative workflows. This Online Hotel Management System represents a significant advancement in hotel operations, offering potential for increased direct bookings and improved online presence. Future enhancements could include integration with third-party booking platforms and mobile app functionality. Overall, this practicum demonstrates the successful development of a comprehensive solution addressing the needs of both hotel guests and administrators, potentially leading to improved efficiency and guest satisfaction in the hospitality industry.

## **Acknowledgments**

In the name of the Almighty, whose benevolence and magnanimity transcend all boundaries. I would like to extend my sincere appreciation to the late Professor Dr. Md. Alimullah Miyan, who served as the inaugural Vice-Chancellor and founder of the International University of Business, Agriculture, and Technology (IUBAT), for bestowing upon me the opportunity to enroll in this renowned and visually captivating non-governmental institution. IUBAT, the International University of Business, Agriculture, and Technology, is privileged to have as honorary vice chancellor Professor Dr. Abdur Rab. Permit me to extend my gratitude and sincere appreciation to him.

I am writing to extend my sincere appreciation to the Chairman of the Department of Computer Science and Engineering at IUBAT, the International University of Business, Agriculture, and Technology, Prof. Dr. Utpal Kanti Das, for his unwavering support in funding my studies and for inspiring me to envision a promising future in the realm of cutting-edge technology.

I am exceedingly grateful to Rashedul Islam and Shahinur Alam, assistant professor of computer science and engineering and the esteemed coordinator of IUBAT, for his outstanding guidance and support throughout this semester.

I am indebted to the Managing Director of ImpleVista for his invaluable collaboration.

I am delighted to extend my sincere appreciation and admiration to our distinguished faculty members, with a special mention to Afsana Akter Lija, a lecturer in the Department of Computer Science and Engineering at IUBAT, for his indispensable scholarly counsel and steadfast dedication to the compilation of this report.

I wish to express my gratitude to my parents and instructors for serving as tremendous inspiration throughout my academic journey. Their unwavering support has been instrumental in facilitating my progress to this stage.

Contents

[**Letter of Transmittal** iii](#_Toc173089062)

[**Organization Certificate** iv](#_Toc173089063)

[**Student’s Declaration** v](#_Toc173089064)

[**Supervisor’s Certification** vi](#_Toc173089065)

[**Abstract** vii](#_Toc173089066)

[**Acknowledgments** viii](#_Toc173089067)

[**List of Figures** x](#_Toc173089068)

[**List of Tables** xi](#_Toc173089069)

[**Chapter 1** 1](#_Toc173089070)

[**Introduction** 1](#_Toc173089071)

[**Chapter 2** 11](#_Toc173089072)

[**Organizational Overview** 11](#_Toc173089073)

[**Chapter 3** 15](#_Toc173089074)

[**Requirement Engineering** 15](#_Toc173089075)

[**Chapter 4** 26](#_Toc173089076)

[**Conclusion** 26](#_Toc173089077)

[**References** 28](#_Toc173089078)

## **List of Figures**

Figure 2.1 Put the figure caption 5

Figure 3.1 Figure Title. 9

Figure 3.2 Figure Title2. 10

## **List of Tables**

Table 3.1 Table Title. 11

Table 3.2 In-text citation: one-to-many authors and organization 12

## **Chapter 1**

## **Introduction**

In the rapidly evolving digital landscape, the hospitality industry has increasingly turned to online platforms to streamline operations and enhance guest experiences. This report focuses on the development and implementation of a comprehensive **Online Hotel Management System**, designed to meet the dynamic needs of both hotel administrators and guests.

Our system is a web-based platform that facilitates efficient hotel operations management while providing a user-friendly interface for potential guests to explore, book, and manage their stays. The project aims to create a seamless connection between the hotel's operational requirements and guest services, leveraging technology to improve overall efficiency and customer satisfaction.

The system is divided into two main components: the user-facing website and the admin panel. The user side allows potential guests to browse hotel information, search for and book rooms, and manage their reservations. It includes features such as detailed room listings, service descriptions, and a secure booking process. The admin panel, on the other hand, provides hotel staff with tools to manage rooms, bookings, and guest information, as well as access to important business metrics and reports.

Throughout this report, we will explore the system's architecture, key features, and the rationale behind various design decisions. We will also discuss the challenges encountered during development and the solutions implemented to address them. By the end of this document, we aim to demonstrate how this online hotel management system can significantly enhance operational efficiency and guest satisfaction in the modern hospitality landscape.

This project represents a significant step forward in integrating digital solutions into hotel management, offering benefits such as increased booking efficiency, improved customer service, and streamlined administrative processes. As we delve into the details of this system, we will highlight how it addresses current industry needs and positions hotels for success in an increasingly digital-first market.

#### 1.1 Objectives of OHMS

Objectives

1. To develop a user-friendly and efficient online platform for hotel management and guest services.
2. To streamline the room booking process, making it easier for potential guests to find, select, and reserve accommodations.
3. To provide a comprehensive admin panel that enables hotel staff to effectively manage rooms, bookings, and guest information.
4. To implement a secure user authentication system for both guests and administrators.
5. To create a detailed room management system that allows for easy updates of room information, availability, and pricing.
6. To design an intuitive interface for guests to view hotel services and amenities.
7. To develop a contact system that allows guests to easily communicate with hotel staff.
8. To implement a user profile system that stores booking history and personal preferences.
9. To create a dashboard for administrators that provides key business metrics and occupancy data.
10. To ensure the system is scalable and can accommodate future growth and additional features.
11. To implement a secure payment gateway for processing room bookings.
12. To develop a responsive design that functions well on both desktop and mobile devices.
13. To create a flexible system that can be easily customized for different types of accommodations.
14. To improve operational efficiency by automating routine tasks such as booking confirmations and availability updates.
15. To enhance the guest experience through personalized services and easy access to information.

These objectives aim to create a comprehensive, efficient, and user-friendly online hotel management system that benefits both the hotel administration and its guests.

#### 1.2 Source of the Report

This practicum report has been developed as an essential segment of the internship program of IUBAT. This internship has been completed under the IP Link Network which is an ISP company. The company has observed their duty with the internship accessory. The respectable faculty members Prof. Dr. Utpal Kanti Das, Chairman; Shahinur Alam, Coordinator and Assistant professor; and Afsana Akter Lija, Supervisor, Department of Computer Science and Engineering, IUBAT are the persons who are responsible for the gracious deliberation and supervise the practicum program academically from the institution. The your-organization-name has given a chance to perform the internship program with them and contributed the essential information for making this practicum report.

#### 1.3 Methodologies

1. Development Stack: MERN (MongoDB, Express.js, React.js, Node.js)
   * MongoDB: Used as the database to store and manage hotel data, user information, and bookings.
   * Express.js: Employed as the backend framework to create a robust and scalable server-side application.
   * React.js: Utilized for building the dynamic and responsive user interface.
   * Node.js: Used as the runtime environment for the server-side application.
2. Agile Development Methodology
   * Implemented Scrum framework for iterative and incremental development.
   * Conducted regular sprint planning, daily stand-ups, and sprint retrospectives.
   * Utilized user stories and product backlog for feature prioritization.
3. Version Control
   * Used Git for version control and GitHub for repository hosting.
   * Implemented feature branching and pull request reviews for code quality assurance.
4. RESTful API Design
   * Designed and implemented RESTful APIs for communication between frontend and backend.
   * Used JSON for data exchange between client and server.
5. Responsive Web Design
   * Employed CSS frameworks (e.g., Bootstrap or Material-UI) for responsive design.
   * Implemented mobile-first approach to ensure compatibility across devices.
6. Security Measures
   * Implemented JWT (JSON Web Tokens) for user authentication and authorization.
   * Used bcrypt for password hashing.
   * Implemented input validation and sanitization to prevent common web vulnerabilities.
7. Testing
   * Conducted unit testing using Jest for backend and React Testing Library for frontend.
   * Performed integration testing to ensure proper communication between components.
   * Implemented end-to-end testing using tools like Cypress.
8. Code Quality
   * Used ESLint for code linting to maintain consistent code style.
   * Implemented Prettier for code formatting.
9. Continuous Integration and Deployment (CI/CD)
   * Utilized tools like Jenkins or GitHub Actions for automated testing and deployment.
   * Implemented staging and production environments for thorough testing before release.
10. Database Design
    * Designed efficient MongoDB schemas to optimize data storage and retrieval.
    * Implemented indexing for improved query performance.
11. State Management
    * Used Redux for global state management in the React application.
12. API Documentation
    * Created comprehensive API documentation using tools like Swagger.
13. Performance Optimization
    * Implemented lazy loading and code splitting in React for improved load times.
    * Used caching strategies to reduce database queries and improve response times.
14. Accessibility
    * Followed WCAG guidelines to ensure the application is accessible to users with disabilities.
15. Scalability Considerations
    * Designed the architecture to be scalable, considering potential future growth.
    * Implemented load balancing strategies for handling increased traffic.

These methodologies were chosen and implemented to ensure the development of a robust, scalable, and user-friendly online hotel management system using the MERN stack.

##### 1.3.1 Primary Sources.

Primary Sources

1. User Requirements Gathering
   * Conducted interviews with hotel managers and staff to understand operational needs
   * Surveyed potential hotel guests to identify key features for the user-facing website
   * Analyzed feedback from existing hotel booking platforms to identify areas for improvement
2. Industry Standards and Best Practices
   * Reviewed hospitality industry guidelines for online booking systems
   * Studied recommendations from organizations like the World Tourism Organization (UNWTO) on digital tourism services
3. Technical Documentation
   * Official documentation for MongoDB, Express.js, React.js, and Node.js
   * API documentation for payment gateways and other third-party services integrated into the system
4. Regulatory Compliance
   * Local and international data protection regulations (e.g., GDPR, CCPA)
   * Payment Card Industry Data Security Standard (PCI DSS) for handling financial transactions
5. Competitor Analysis
   * Examined features and user interfaces of leading hotel booking websites
   * Analyzed admin panels of existing hotel management systems
6. Academic and Industry Research
   * Reviewed academic papers on hotel management systems and e-commerce in hospitality
   * Studied industry reports on trends in online hotel bookings and management
7. User Testing Feedback
   * Conducted usability testing sessions with potential users and hotel staff
   * Gathered and analyzed feedback from beta testers of the system
8. Performance Metrics
   * Collected and analyzed data on website performance, user engagement, and conversion rates during the development and testing phases
9. Design Guidelines
   * Material Design guidelines for creating a consistent and intuitive user interface
   * Web Content Accessibility Guidelines (WCAG) for ensuring accessibility
10. Security Protocols
    * OWASP (Open Web Application Security Project) guidelines for web application security
    * Best practices for secure user authentication and data protection in web applications

These primary sources provided invaluable insights and data that guided the development of the online hotel management system, ensuring that it meets industry standards, user needs, and technical requirements.

##### 1.3.2 Secondary Sources.

The steps secondary sources are given below:

1. Industry Reports and Market Analysis
   * Hospitality industry reports from organizations like Deloitte and PwC
   * Market analysis documents on the hotel booking software industry
2. Technology Blogs and Articles
   * Web development blogs discussing best practices in MERN stack development
   * Articles on emerging trends in hotel management software
3. Case Studies
   * Published case studies on successful implementations of hotel management systems
   * Analysis of digital transformation in the hospitality industry
4. Books
   * "Hotel Management and Operations" by Michael J. O'Fallon and Denney G. Rutherford
   * "Web Development with Node and Express" by Ethan Brown
5. Online Courses and Tutorials
   * Udemy and Coursera courses on MERN stack development
   * YouTube tutorials on building e-commerce platforms and booking systems
6. Conference Proceedings
   * Papers from hospitality technology conferences
   * Presentations from web development and software engineering symposiums
7. Industry Magazines and Publications
   * "Hotel Management" magazine
   * "Hospitality Technology" publication
8. Online Forums and Discussion Boards
   * Stack Overflow discussions on MERN stack development challenges
   * Reddit threads on hotel management software features and user experiences
9. Whitepapers
   * Technical whitepapers on database optimization for booking systems
   * Industry whitepapers on improving customer experience in online hotel bookings
10. Podcasts
    * Web development podcasts discussing modern JavaScript frameworks
    * Hospitality industry podcasts exploring digital trends in hotel management
11. Webinars
    * Recorded webinars on building scalable web applications
    * Online seminars discussing the future of hotel technology
12. Software Reviews
    * User reviews of existing hotel management systems on platforms like Capterra and G2
    * Professional reviews of web development tools and frameworks
13. Academic Journals
    * Journal of Hospitality and Tourism Technology
    * International Journal of Contemporary Hospitality Management
14. Government and NGO Reports
    * Tourism department reports on digital adoption in the hospitality sector
    * World Tourism Organization (UNWTO) publications on digital transformation in tourism

These secondary sources provided additional context, theoretical frameworks, and industry insights that complemented the primary sources and informed various aspects of the project's development and implementation.

## **Chapter 2**

## **Organizational Overview**

ImpleVista is an innovative IT solutions provider that specializes in leveraging SAP S/4Hana to streamline business operations, offering a native cloud solution for efficient management of SAP and Non-SAP landscapes. Their platform, simplifies business accounting and management, while their Business Analytics services provide actionable insights for strategic growth. With a focus on cloud computing, mobile application design, IoT solutions, and e-commerce, ImpleVista empowers businesses to flourish by transforming their core competencies into market effectiveness. Their team of dedicated engineers utilizes the latest technologies to build fast, user-friendly apps and websites, ensuring businesses can harness the power of data for demand forecasting and predictive analytics. ImpleVista stands out for its commitment to enhancing online identity and keeping clients informed with industry-specific expert articles.

#### 2.1 Mission

#### Implevista’s mission is to provide top-notch digital marketing solutions to businesses. They prioritize understanding each client’s unique objectives and tailor their strategies accordingly. By leveraging innovative techniques, they aim to boost online presence and drive measurable results.

#### 2.2 Vision

#### Implevista envisions a world where businesses harness the power of digital marketing to reach global audiences effectively. Their expertise in the local market allows them to create campaigns that resonate with Bangladeshi audiences. Through clear communication and transparent processes, they guide businesses toward success.

#### 2.3 Organization Services

1. **Website Design & Development**: A well-designed and developed website can be a powerful tool for capturing attention, engaging visitors, and driving successful conversions. Implevista specializes in creating user-friendly websites that align with your business goals.
2. **Content Marketing**: Effective content marketing goes beyond promoting products or services—it’s about telling your brand’s story, providing value, and building a loyal audience. Implevista crafts compelling content that resonates with your target audience.
3. **Social Media Marketing**: Social media marketing is an ever-evolving landscape that demands innovation, expertise, and a deep understanding of audience dynamics. Implevista helps you navigate this space to maximize your brand’s impact.
4. **PPC Advertising (Pay-Per-Click)**: Implevista leverages PPC advertising to drive targeted traffic and achieve measurable results in today’s competitive digital landscape. Their strategies ensure efficient use of your advertising budget.
5. **Search Engine Optimization (SEO)**: Implevista specializes in SEO services that enhance your online visibility and drive qualified traffic to your website.



Figure 2.1 ImpleVista Software Company

#### 2.4 Address of Office

3/4 Humayon Road, Mohammadpur, Dhaka, Bangladesh.

## **Chapter 3**

## **Requirement Engineering**

Within the engineering design process, requirement engineering constitutes the procedure of

recognizing, capturing, and sustaining requirements. Requirements engineering can be defined in

various ways, but they all share a common concept: it involves the process of understanding user

expectations from a computer system and interpreting these requirements into design

considerations. Software engineering, which primarily focuses on the procedures for developing

systems aligned with consumer preferences, is closely intertwined with requirement engineering.

Requirements divided into four types. They are:

1. User Requirements

2. System Requirements

3. Functional Requirements

4. Non-Functional Requirements

#### 3.1 User requirements

1. Register and log in to access the website
2. Browse hotel overview, rooms, services, and contact information
3. Search and filter available rooms
4. View detailed room information
5. Book rooms online
6. Submit personal information for booking
7. Complete payment process
8. Access personal profile and booking history
9. Contact hotel through a message form

#### 3.2 System requirements

* 1. Web server to host the website
  2. Database to store user, room, booking, and other relevant data
  3. Payment gateway integration for secure transactions
  4. Email system for notifications and confirmations
  5. Content management system for easy updates of hotel information
  6. Responsive design for compatibility across devices (desktop, tablet, mobile)

#### 3.3 Functional requirements

User Side:

1. User registration and authentication system
2. Room search and filtering functionality
3. Room booking system with availability check
4. User information collection form
5. Secure payment processing
6. User profile management
7. Booking history display
8. Contact form for user inquiries

Admin Side:

1. Admin authentication system
2. Dashboard with business analytics and graphs
3. Room management (add, update, delete)
4. Booking request management (view, accept, reject)
5. User information management
6. Admin profile management

#### 3.4 Non-functional requirements

* 1. Performance: The website should load within 3 seconds and handle at least 1000 concurrent users
  2. Security: Implement HTTPS, secure data storage, and protection against common web vulnerabilities (e.g., SQL injection, XSS)
  3. Reliability: System uptime of at least 99.9%
  4. Scalability: Able to handle increasing numbers of users and bookings without performance degradation
  5. Usability: Intuitive interface design for easy navigation and booking process
  6. Accessibility: Comply with WCAG 2.1 guidelines for accessibility
  7. Data Integrity: Ensure accurate and consistent data across all system components
  8. Compatibility: Function correctly on major web browsers (Chrome, Firefox, Safari, Edge)
  9. Responsiveness: Adapt to different screen sizes and devices
  10. Compliance: Adhere to relevant data protection regulations (e.g., GDPR if applicable)
  11. Maintainability: Well-documented code and system architecture for easy updates and maintenance
  12. Localization: Support for multiple languages if catering to international customers

#### 3.5 Use Case Diagram

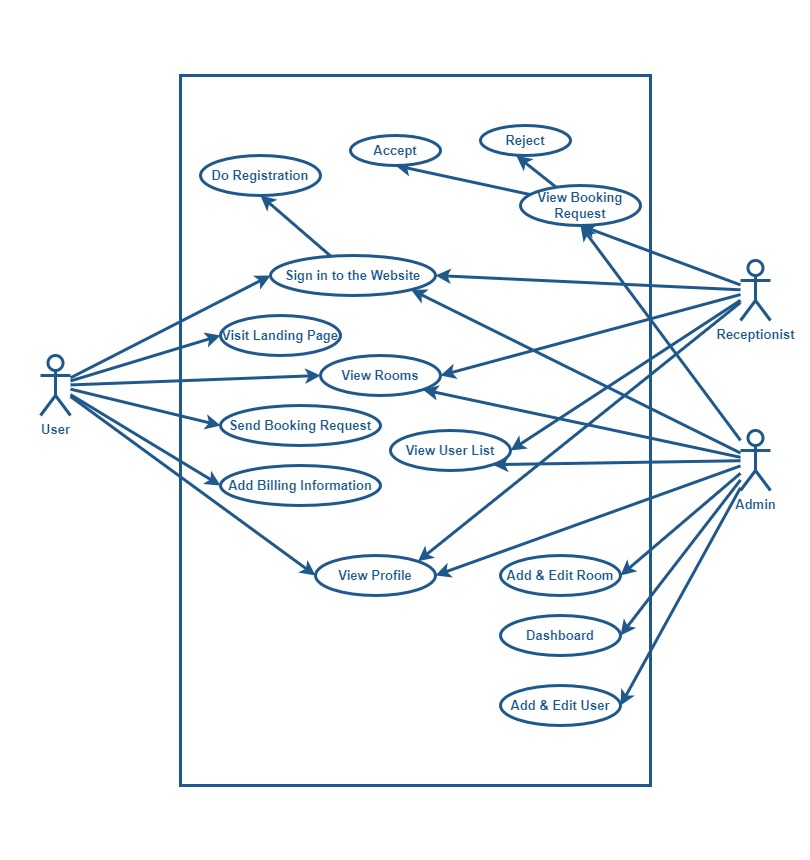


Figure 3.1 Use Case Diagram.

\

The diagram outlines the user journey and administrative tasks within a website. Users can begin by registering or logging in to their accounts. Once logged in, they can explore available rooms, view their details, and submit booking requests. Administrators, on the other hand, have access to a dashboard that serves as a central hub for managing the website. Within the dashboard, they can perform tasks such as adding or editing room information, creating or modifying user accounts, and reviewing and managing booking requests. The diagram visually represents the connections between these components, demonstrating how they interact and contribute to the overall functionality of the website.

Chapter 4

Analysis Modelling

##### 3.7.1 Figure Style.

The Figure Title style, which appears in the Quick Styles menu as “Figure Title,” is used to name a figure in a way that will appear in the TOC. The title will automatically be added to the List of Figures following an update of the entire table. The style of the paragraph following Figure Title defaults to Figure Description.

##### 3.7.2 Figure Description Style.

The Figure Description style, which appears in the Quick Styles menu as “Figure Description,” is used to briefly describe the accompanying figure; the space after it separates it from the body text below the figure.

You can place a report figure inside a text box.

Figure 3.2 Figure Title2.

Place the figure 3.2 description here. Figure title style and figure description style have followed the figure 3.2.

#### 3.8 Tables

Tables can be copied and pasted from another document or created in the Word document itself using the Insert Table command on the Insert tab of the ribbon. The following insertion using either method, table styles should be applied as follows.

##### 3.8.1 Table Title Style.

The Table Title should come immediately before the table itself; the style appears in the Quick Styles menu as “Table Title”.

##### 3.8.2 Table Cell Style.

To apply this style to the table cells, highlight the table and choose “Table Cell” from the Quick Styles menu. The default will be to left-align the text inside the cells; to center text, as in the second and third columns above, you can simply select those cells and choose Center. To control vertical alignment as necessary, select the applicable cells and choose the Layout tab that appears in the ribbon. On the right in the Alignment section, choose the graphic that matches the alignment you prefer, from top left to bottom right to centered horizontally and vertically.

##### 3.8.3 Table Description Style.

The Table Description style, shown in the Quick Styles menu as “Table Description,” is used to format the brief description of the table immediately following said table. This style also includes space after to differentiate it from later paragraphs.

A sample table with table description style has shown below:

Table 3.1 Table Title.

|  |  |  |
| --- | --- | --- |
| Process | Arrival Time | Service time |
| A | 0 | 4 |
| B | 3 | 5 |

Place the table description here by mentioning the Table no. (e.g., Table 3.1 shows the arrival time and service time for the process A and process B.).

#### 3.9 Referencing

Referencing is the method used to ensure that other research influences are recognized within your practicum report. Correct referencing helps ensure that you avoid being accused of plagiarism. Referencing also ensures that you can demonstrate which sources you have used and how your ideas build upon the research of others. Practicum report of BCSE program, Dept of CSE, IUBAT follows Harvard Referencing. Students’ report will be assessed by the supervisor and practicum defense committee for ensuring the quality of practicum report referencing. Harvard Referencing includes two main parts:

* a citation within the text of your assignment
* a list of references at the end of your assignment

##### 3.9.1 Referencing in text-citations.

When you summarize, refer to, or quote from an author's work in your document, you need to acknowledge your source in the text. This is called an ‘in-text citation’. When using Harvard, you do this by putting the author’s name and publication year. If the name of the author appears naturally in your sentence, only the year should be in brackets. Cite Them Right advises including page numbers for direct quotations and when paraphrasing, although page numbers would not be required when summarizing.

Table 3.2 In-text citation: one-to-many authors and organization

|  |  |  |
| --- | --- | --- |
| Author(s)/organization | In-text citation | Examples |
| One Author | (Smith, 2021) | …Smith (2021) argues that…. |
| Two Authors | (Smith and Jones, 2022) | …according to Smith and Jones (2022)…. |
| Three Authors | (Smith, Jones and Brown, 2023) | ….research by Smith, Jones and Brown (2023) showed that…. |
| Four or more Authors | (Smith *et al.*, 2020) | Smith *et al.* (2020) proved that…. |
| Organization | (IUBAT, 2020) | Information from IUBAT (2020) states… |

Please use the table 3.2 information for preparing in-text citation of your practicum report.

##### 3.9.2 The Reference List.

A reference list includes details of the sources cited in your practicum report. It starts on a separate page at the end of your practicum report and is titled references (See the last part of this template). Each item cited in the reference list must have been cited in your practicum report. All sources appearing in the reference list must be ordered alphabetically by surname. You can find example of a reference list in the end of this template.

The key examples of the reference list are given below:

1. Book with one author:

Include the following information:

Author (Published Year) *Title of book*. Edition (if later than 1st). Place of Publication: Publisher.

Example: Storey, N. (2013) *Electronics: a systems approach*. 5th edn. Harlow: Pearson.

1. Book with four or more authors:

Include the following information:

Surnames and initials of all authors (Published Year) *Title of book*. Edition (if later than 1st). Place of Publication: Publisher.

Example: Epstein, O., Perkin, G.D., Cookson, J., Watt, I.S., Rakhit, R., Robinson, A.W. and Hornett, G.A.W. (2008) *Clinical examination*. 4th edn. Oxford: Mosby Elsevier.

Note:the University’s preference is to name all authors in the full reference, but some subject disciplines may use *et al.* in the reference list as well as for in-text citations. If in doubt please check it with your supervisor.

1. Journal article:

Include the following information: Author(s) (Published Year) ‘Title of Article’, *Title of Journal*, Volume number (issue number), Page numbers of whole article.

Example: Kirwan, B. and Leather, C. (2011) ‘Students’ voices: a report of the student view of dyslexia study skills tuition’, *Support for Learning*, 29(1), pp. 33-41.

Note:if the article is only available online, give the doi (digital object identifier) at the end of the reference. If there is no doi, include Available at: web address (Accessed: date) instead.

Example: Ratnawati, V., Freddy, D. and Hardi, H. (2018) ‘Ownership structure, tax avoidance and firm performance’, *Archives of Business Research*, 6(1), pp. 1-7. doi: 10.14738/abr.61.4011

1. Conference Proceedings:

Include the following information:

Author(s) Published Year, Published Month. Title of paper. In *International Conference Name (ICN)* (pp. 1-6). IEEE.

Example: Bushnag, A., 2020, October. Air quality and climate control arduino monitoring system using fuzzy logic for indoor environments. In *2020 International conference on control, automation and diagnosis (ICCAD)* (pp. 1-6). IEEE.

1. Web page:

Include the following information:

Author(s) (Published Year) *Title of webpage*. Available at: web address (Accessed: date).

Example with named author(s): Greenfield, S. (2018) *Women in science*. Available at: http://www.susangreenfield.com/science/detail/women-in-science (Accessed: 15 August 2018).

Example with organization author: Smart Design (2017) *Getting a grip: a long-term project that changed kitchens everywhere.* Available at: https://smartdesignworldwide .com / projects/ oxo-partnership (Accessed: 15 August 2018).

## **Chapter 4**

## **Conclusion**

Write a detailed discussion and conclusion that summarizes the work you did in your practicum.

## **References**

A Sample Reference List is given below:

Banerjee, A. and Watson, T.F. (2011) Pickard’s manual of operative dentistry. 9thedn. Oxford: Oxford University Press.

Bushnag, A., 2020, October. Air quality and climate control arduino monitoring system using fuzzy logic for indoor environments. In *2020 International conference on control, automation and diagnosis (ICCAD)* (pp. 1-6). IEEE.

Davidson, A. (2013) ‘The Saudi Marathon Man’, *The New Yorker,* 16 April. Available at: http://www.newyorker.com/news/daily-comment/the-saudi-marathon-man (Accessed: 22 June 2015).

Guy, J. (2001) *The view across the river: Harriette Colenso and the Zulu struggle against imperialism.* Charlottesville, Virginia: University Press of Virginia.

Hislop, V. (2014) *The sunrise.* Available at http://www.amazon.co.uk/kindlestore (Downloaded: 17 June 2015).

Homer (1997) *The Iliad.* Translated by J. Davies. Introduction and notes by D. Wright. London: Dover Publications.

Knapik, J. J., Cosio-Lima, L. M., and Reynolds, K. L. (2015) ‘Efficacy of functional movement screening for predicting injuries in coast guard cadets’, *The Journal of Strength and Conditioning Research*, 29 (5), pp. 1157-1162. *EDUC 1028: E-learning.* Available at: http://intranet.bir.ac.uk (Accessed: 25 June 2015).

Lucas, G. (2004) *The wonders of the Universe.* 2ndedn. Edited by Frederick Jones, James Smith and Tony Bradley. London: Smiths.

*Medicine in old age* (1985) 2nd edn. London: British Medical Association.

‘Rush (band)’ (2015) *Wikipedia.* Available at https://en.wikipedia.org/?title=Rush\_ (band) (Accessed: 18 June 2015).