**Development of Support Ticket Management System**

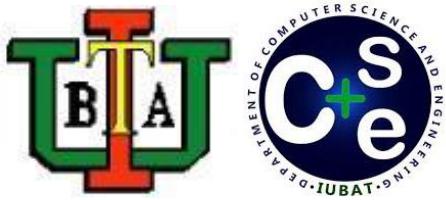
A Practicum Report Submitted By

**Md. Mehedi Hasan**

ID No. 14103070

In Partial Fulfillment of the Requirements for the Award of

Bachelor of Computer Science and Engineering



**Department of Computer Science and Engineering**

College of Engineering and Technology

IUBAT– International University of Business Agriculture and Technology

**Fall 2018**

Development of Support Ticket Management System

Md. MehediHasan

A practicum report submitted in partial fulfillment of the requirements for the degree of Bachelor of Computer Science and Engineering (BCSE)

The practicum has been examined and approved,

Chairman Sir ?????

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College of Engineering and Technology

IUBAT – International University of Business Agriculture and Technology

Fall 2018



II

**Abstract**

Support Ticket Management System is software which is helpful for clients,the assessment of the respondents in terms of support tools to help desk which is available to the clients reveals that help desks provide a variety of online tools and resources for the clients to use to resolve their IT-related problems. During the help desk’s normal operating hours, the availability of self-service resources can reduce demand for direct interaction with the help desk staff while keeping service availability and quality.

Support Ticket Management System is an online application developed for IT support which focused in the problems area of clients and give their solution.



III

**Letter of Transmittal**

10th December 2018

**Professor Dr. AbdurRab**

Vice-Chancellor

IUBAT– International University of Business Agriculture and Technology 4 Embankment Drive Road, Sector 10, Uttara Model Town Dhaka 1230, Bangladesh

Dear Sir,

**Practicum Report**

I am pleased to present to you my practicum report titled ‘Development of Inventory Control And Management System’ for BLCF Limited as required by IUBAT for the partial fulfillment of the requirements for the award of Bachelor of Computer Science and Engineering.

It was indeed a great opportunity for me to work on this project to actualize my theoretical knowledge into practice. Now I am looking forward for your kind appraisal of my report.

Finally, I would like to thank you for giving me the opportunity to pursue my studies in your renowned university.

Yours sincerely,

---------------------------------

**Md. MehediHasan**

ID No. 14103070



IV

**Student’s Declaration**

I hereby declare that this practicum report titled ‘Development of Support Ticket Management System’ is my original work. It has never been presented previously or concurrently for any other purpose, reward or degree at IUBAT University or any other institutions either by me or by any other student. I also declare that there is no plagiarism or data falsification and materials used in this report from various sources have been duly cited.

---------------------------------

**Md. MehediHasan**

ID No. 14103070



V

**Acknowledgments**

In the name of ALLAH who is the most merciful and the most graceful.

It’s my pleasure to take this occasion to thank a few people, who have assisted, encouraged, directed and supported us throughout our practicum program.

First of all, I want to thank my parents, who have endowed their immeasurable-innumerable support and encouragement to attain this exquisite event of my life.

I sincerely would like to thank BappiDatta (Director, Ntitas IT LTD.) for giving me the opportunity to complete my internship at Ntitas and project at IUBAT UNIVERSITY.

Our sincere and outmost thank goes to Prof. Dr. UtpalKanti Das, Head of Department of Computer Science and Engineering, IUBAT- International University of Business Agriculture and Technology. For his continuous encouragement and contribution gave me the courage, the determination needed to able to finish the internship well.

I will always remain thankful for the advice and suggestion provided my Supervisor Krishna Das, IUBAT

This report would not have been possible without the essential and gracious support of many individuals who encouraged me to complete this project on time.

**Dedication**

This work is dedicated to my honorable advisor Krishna Das sir; this work wouldn’t have been possible without his discussion, help and support. It is also dedicated to my parents, who always support me & encouraged me.



II

**Supervisor’s Certification**

I certify that the student Md. MehediHasan (ID No.14103070) carried out his practicum work ‘Development of Support Ticket Management System’ at International University of Business Agriculture and Technology (IUBAT) between August 24, 2018 and December 10, 2018. During this period, he consulted me on a regular basis as required by the department. I, therefore, recommend that his practicum report be accepted for oral examination.

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

**Krishna Das**

Assistant Professor

Supervisor



III

**Department Certification**

On behalf of the Department of Computer Science and Engineering of International University of Business Agriculture and Technology (IUBAT University) we, the undersigned, certify that this practicum report ‘Development of Support Ticket Management System’ for the award of Bachelor of Computer Science and Engineering (BCSE) degree was duly presented by Md. MehediHasan (ID No.14103070) and accepted by the department.

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

**Krishna Das**

Assistant Professor

Supervisor

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**Dr. UtpalKanti Das**

Coordinator



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IX

**Chapter 1**

**Organizational Overview**

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**Ntitas IT Limited**, and we’ve been on an epic ride ever since. From ourbeginnings as a IT company we’ve tried to stay true to our core belief “Integrity” and to deliver an exceptional experience for our clients which ranges from industrial background to corporate houses and even social networking platforms. By browsing our web site you’ll have a comprehensive idea about our accomplishment so far. We owe a huge thanks to our well-wishers and clients for joining us on this awesome journey, and we hope that you’ll continue to be a part of our story.

**1.1Goal:**

Good financial supports your workflow; great investment improves it. We understand that only your support is not an end in itself. Our approach to build your business is to recognize it for the opportunity that it really is: your chance to analyze your business rules, identify inefficiencies and streamline the flow of information wherever possible. Rather than just systematizing all of your existing workflows and paper systems, our goal is to analyze and improve them, and in so doing, to transform your business in the process.

**1.2Philosophy:**

Every workplace is different. Each has its own unique products, services, history, business rules, and workflows. How could one generic software system fit every business? When you hire Ntitas, you’re not just choosing software. You’re choosing a team that listens first and then custom-tailors a system to best meet your needs.

**1.3 Products and Services:**

* IT Support
* Software development & management

**Strategy:**

Our battle plan consists of just one core strategy an Investing in the best people, giving them the right ammunition, training them with latest tactics and letting them lead from the front.



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| **Development of support Ticket Management System** | 1 |
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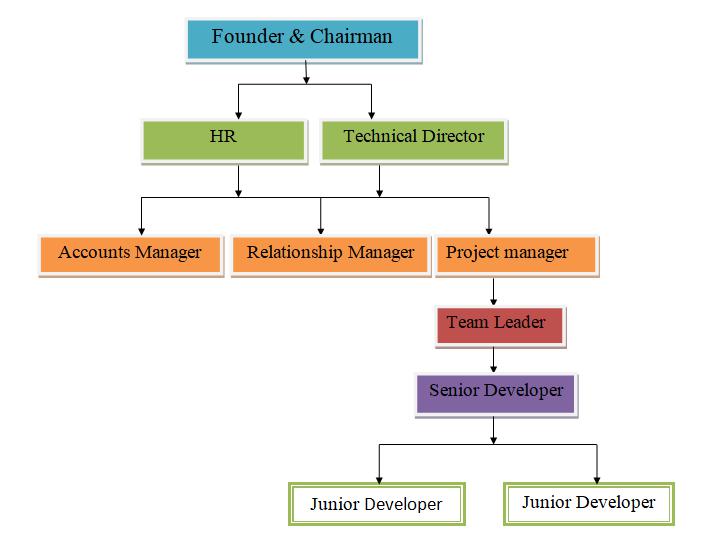
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| **Development of Support Ticket Management System** | 2 |
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**1.4 Organizational Structure:**

The following figure shows the organizational structure of Ntitas IT Ltd. Ntitas IT Ltd. Works under Arunima group. Under founder HR and director is worked. Under them, others worker is worked.



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| **Development of Support Ticket Management System** | 3 |
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**Figure 1.1:** Organizational Structure

**1.5 Location:**

House: 385, 3rd Floor, Road – 6, Avenue – 4

–

Mirpur old DOHS

Dhaka-1215.

Bangladesh.



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**Chapter 2**

**Project Overview**

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The greatest weapon of today's world is information. The life of a human is improving much faster with the help of technology. It will be better if we share our knowledge ourselves. We can develop ourselves much faster through sharing information. From that perspective, I develop a fully automated Content Management System where anyone can share their content. My project will solve a lot of problems and will open new opportunities. By this project, we are going to build a content hub by which we can get benefited. In this report, we have described how we developed this system and how it will work.

**2.1 Objectives:**

The main objective of Support Ticket Management System is to give IT support to our clients and serve according to their interest. By this project, a user submits his problem with the ticket submission area and employee can also generate the problem area and giving solution feedback according to the rules.

**2.1. 1 Broad objectives**

This project is proposed to build a fully digital, faster, error-free and easy to manage Content Management System.

**2.1.2 Specific Objectives**

The specific objectives of this project are given below:

* The system can store multiple records at a time.
* The user can categorize his/her problem by using tag and category.
* This system generates Report for the total ticket submission, total solution etc.
* Users can comment on a post multiple time.
* Only the admin can staff, assign term and user can only use it.
* The admin can see all staff and users.



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| **Development of Support Ticket Management System** | 6 |
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**2.2 System Benefits:**

This system provides instant information. It is easy to manage data as located on the server. By this system, admin can do full control on it. The user can easily registrar on this system. This software will save money and time both. It is customizable accessibility. It will maintain the privacy of users, Staff and admin. Easily it can be manageable. This system builds up with advanced technology. This project improves content management system in many ways. It is a web-based project. So, anyone can access the system securely.

**2.3 Scope of Project:**

It is a web-based application. So, anyone can be accessed from anywhere, no need to install any software/package, just using an Internet browser one can use the system. Reports will be automatically generated. Here is no need to license fees or renewal fees.

**2.4 Software Process Model**

There are many situations in which initial software requirements are reasonably well-defined, but the overall scope of the development effort precludes a purely linear process, In addition, there may be a compelling need to provide a limited set of software functionality to users quickly and then refine and expand on that functionality in later software releases, In such cases, the organization chose a process model that is designed to produce the software in incremental process model.

Incremental model is an evolution of waterfall model. The product is designed, implemented, integrated and tested as a series of incremental builds. It is a popular model software evolution used many commercial software companies and system vendor. Incremental software development model may be applicable to projects where:

* Software Requirements are well defined, but realization may be delayed
* The basic software functionality is required early

Following is a diagrammatic representation of different phases of the incremental process model.



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| **Development of Support Ticket Management System** | 7 |
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**Analysis**

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**Design**

****

**Code**

****

**Test**

****

**Analysis**

****

**Design**

****

**Code**

****

**Test**

****

**Analysis**

****

**Design**

****

**Code**

****

**Test**

****

**Analysis**

**Design**

**Code**

**Test**

**Figure 2.1:** Incremental process model

**2.5. Incremental Model Steps**

* Construct a partial implementation of a total system
* Then slowly add increased functionality
* The incremental model prioritizes requirements of the system and then implements them in groups.
* Each subsequent release of the system adds function to the previous release until all designed functionality has been implemented.

**2.5.2 Strengths**

* Generates working software quickly and early during the software life cycle.
* More flexible - less costly to change scope and requirements.
* Easier to test and debug during a smaller iteration.
* Easier to manage risk because risky pieces are identified and handled during its iteration.
* Each iteration is an easily managed milestone.
* Develop high-risk or major functions first
* Each release delivers an operational product
* The customer can respond to each build
* Uses “divide and conquer” breakdown of tasks
* Lowers initial delivery cost
* Initial product delivery is faster



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* Customers get important functionality early
* Risk of changing requirements is reduced

**2.5.3 When to use the Incremental model**

* Requirements of the complete system are clearly defined and understood.
* Risk, funding, schedule, program complexity, or need for early realization of benefits.
* Most of the requirements are known up-front but are expected to evolve over time
* A need to get basic functionality to the market early
* On projects which have lengthy development schedules
* A new technology is being used
* Resources with needed skill set are not available
* There are some high-risk features and goals.

**2.5.3 Advantages**

The main benefit of using this model is to develop the system in a short time. The client said that recently they need software in a short time. By using the incremental model we first develop the major functionality and get rid of them to the user for testing. And develop another function. That’s why the client can understand that their project is running and we also get benefit by using the incremental models rule.

**2.5.3 Disadvantages**

* Needs good planning and design.
* Needs a clear and complete definition of the whole system before it can be broken down and built incrementally.

**2.6 Feasibility study**

Before the initiation of the project, it may be necessary to carry out a Feasibility Study to see if the project is still practical and meaningful. It is essential to put an honest and objective effort to establish the project’s feasibility in order to avoid wasting time and money. There are three type of Feasibility study, they are given below:

**2.6.1 Technical feasibility**

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To develop this project need a high-level programming language like C# .For database such as MySQL Server. To store data and an code editor (Visual Studio) we need a cloud server and a computing device like a computer or smartphone with a simple configuration and data connection. All the technology which is mention above is ready to use. So, our project is technically feasible.

**2.6.2. Economic feasibility**

The entire development period the organization required manpower, Computer and internet connection, those are the initial cost and the organization may need to spend a bit more to maintain the system. However, comparing with the previous system current requires less manpower to operate that is a tangible benefit. On the other hand, it works faster, easily accessible and process data faster and efficient way that will help the organization to reach its goal in future that is an intangible benefit. This is expected the outcome of this system and it is possible, so it is economically feasible.

**2.6.3. Operational Feasibility**

The proposed system is designed from a user’s point of view. So, all of the features are included only for the benefit of the user. The system will remove most of the disadvantages of the existing system and will be accepted by both parties. The proposed system is exactly similar to the manual system and thus it covers all the requirements of the user. The system is developed in a user-friendly way so that the user can easily use it. During the implementation of the system, it was found that users are very much interested and eager to this software. So, the system is operationally feasible.



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**Chapter 3**

**Requirement Engineering**

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Requirements engineering refers to the process of defining, documenting and maintaining requirements and to the subfields of systems engineering and software engineering concerned with this process. For support ticket management system the director of Ntitas IT Limited is given the requirements. In this system he is given four type requirements.

**3.1 Requirement Engineering:**

Four types of requirements of auction management system is given below:

1. User Requirements
2. System Requirements
3. Functional Requirements
4. Non-Functional Requirements

**3.1.1 User Requirement:**

User requirement of Content Management System is given below:

1. Use flexibility to access.
2. All users are managed by admin.
3. All staffs are managed by admin.
4. User can register and submit ticket.
5. User can create update delete the tickets.
6. Admin can generate report.
7. Admin can manage the ticket.
8. Admin can assign Staff.
9. Staff can view assigned ticket and submit feedback to user.
10. Admin can view total report.

**3.1.2 System Requirement:**

The system requirement of Support Ticket Control and Management System is given below:

**1. Use Flexibility to access.**

1.1 If user wants to contact about their submitted ticket, no need to submit ticket again they can contact via mail.



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**2. All users are managed by admin.**

2.1 If admin wants to remove any staff or user he can.

2.2 If user wants to register, then click on sign up and give all information to store data for managing by admin and staff is added by admin.

2.3 Admin can view all the staffs and users information.

**3. Ticket Submission by user.**

3.1 If user wants to submit ticket, He must have to be registered.

3.2 If user is not registered, system will redirect him to a registration page.

3.3 After being registered and login, user click submit ticket and system will redirect him/her to ticket submit page.

3.4. He/She can assign tags, categories.

3.5. He/She can upload attached file.

**4. User can comment.**

4.1 To comment about anything, registration is mandatory.

4.2 System will accept anonymous comments/comment with email besides registered user.

**5. User can reject comment of his/her post.**

5.1 User can view all the comment post.

5.2. The system will show the comment on that particular post.5.2. If he/she rejects a comment, the system will not show the comment on that particular post.

**6. User can update his Ticket.**

6.1 First the system will check the user is logged in or not.

6.2 If the user is logged in, only then system will allow a user to update his Ticket.

**7. Admin can create term (Tag/Category).**

7.1 System will check if the logged in user is admin or not.

7.2 If the logged in user is admin, only then the system will allow view/update the existing terms and creating new term, assign staff.



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**8. User can view and update his profile information.**

7.1 The system will firstly check if the user is logged in or not.

7.2 System will allow the logged in user to view/update his profile.

**9. Admin can block any user.**

9.1System will check if the logged in user is admin or not.

9.2 If the logged in user is admin, only then the system will allow viewing him all the users information.

9.3 From the user list, Admin can block any user.

**10. Staff can view assigned ticket.**

10.1 1System will check if the logged in user is a staff or not.

10.2 Staff can view submitted ticket and can contact admin or users via mail.

10.3 Staff can send a solution via another ticket to user with attached file.

**3.1.3 Functional Requirements:**

**1. Use Flexibility to access.**

1.1 Show solution ticket to user without any registration

**2. All staff and user mange by admin.**

2.1 Block user.

2.3 Update staff or user.

**3. Ticket will be submitted by user.**

3.1 Add new ticket.

3.2 Update ticket.

3.3 Delete ticket.

**4. User can comment.**

4.1 Add comment.



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**5. User can reject comment of his/her post.**

5.1 reject comment.

**6. User can update his ticket.**

6.1 Update ticket.

6.2 Delete ticket.

**7. Admin can create term (Tag/Category).**

7.1 Add term

7.2 Update term

7.3 Add category

7.4 Delete category

**8. User can view and update his profile information.**

8.1 View profile

8.2 Update profile

**9. Admin can block any user.**

9.1 Block user

**10. Staff can view assigned ticket.**

10.1 View submitted ticket

10.2 Contact with admin or user via mail

10.3 Send solution ticket to user

10.4 Attached file in the solution



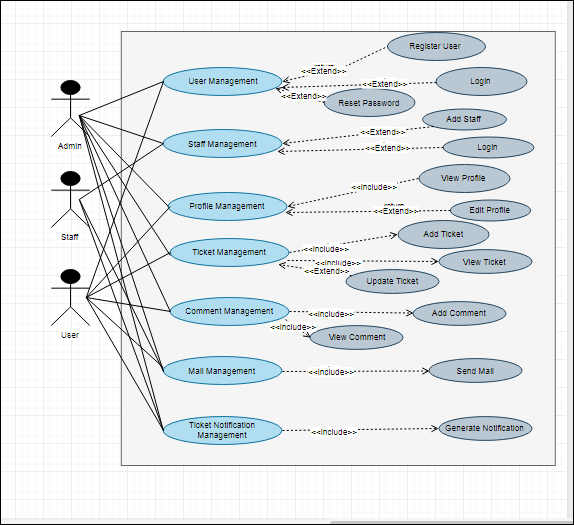
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**3.1.4 Non-Functional Requirements:**

* **Performance Requirement:**
  + 1. Use less data while operating
* **Security and Software Quality:**
  + 1. Portability is required that user can access from anywhere.
  1. Secure data to prevent get lose or damage.
  2. Easily adaptable and user friendly interface is required.

**3.2 Use case diagram:**

This system functionality is shown in use case diagram. The following use case diagram is shown the functionality of this system.



**Figure 3.1:** Use case Diagram

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**Chapter 4**

**Analysis Modeling**

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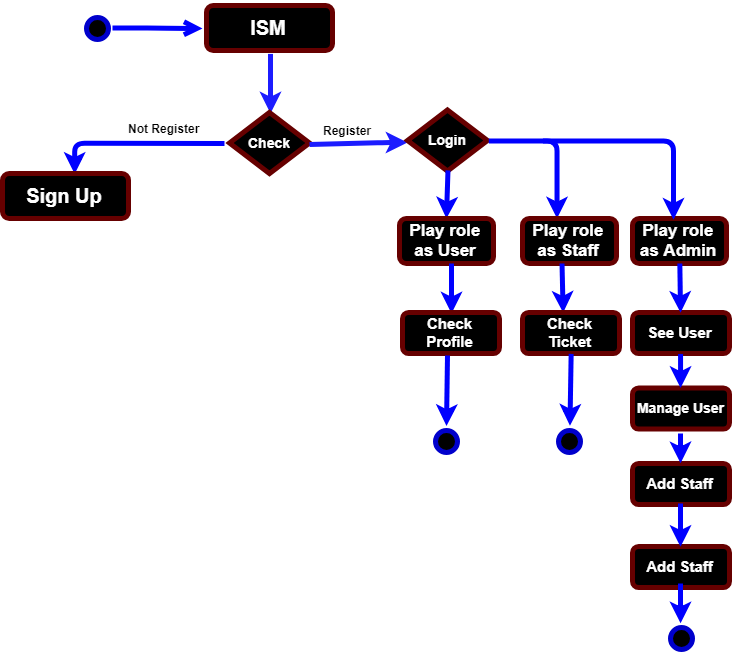
Every organization is followed analysis modeling. For analysis modeling, the organization is drawing a different type of diagram. Such as activity diagram, swim lane diagram, sequence diagram etc. In Ntitas IT Limited I followed activity diagram for analysis modeling.

**4.1 Activity Diagram:**

In this project, Activity diagrams have been used to represent the flow from one activity to another activity and describe the dynamic aspects of the system.

**4.1.1 Activity Diagram for User Management:**

The following diagram is shown the activity of User management of the system.



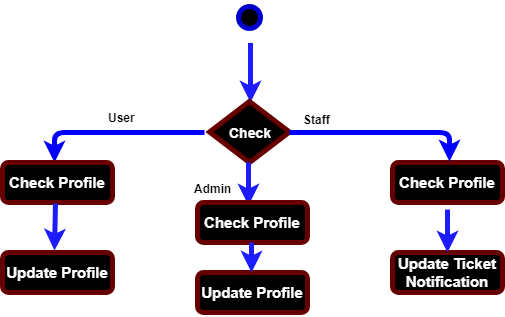
**Figure 4.1:** Activity Diagram for User Management



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**4.1.2 Activity Diagram for Profile Management:**

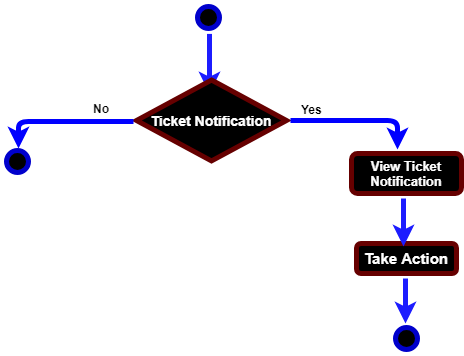
The following diagram shows the activity of profile management.



**Figure 4.2:** Activity Diagram for Profile Management

**4.1.3 Activity Diagram for Solve Ticket Notification Management:**

In this system user will get notification of his post. The following diagram show the activity diagram of notification management.



**Figure 4.3:** Activity Diagram for Notification Management



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| **Development of Support Ticket Management System** | 19 |
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**4.1.4 Activity Diagram for Ticket Management:**

The post management activity is show the following diagram.

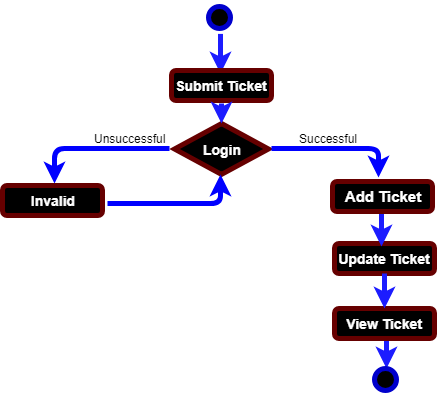


Figure 4.4: Activity Diagram Ticket

**4.1.5 Activity Diagram for Comment Management:**

User can comment on a specific post. The comment management activity is show the following diagram.

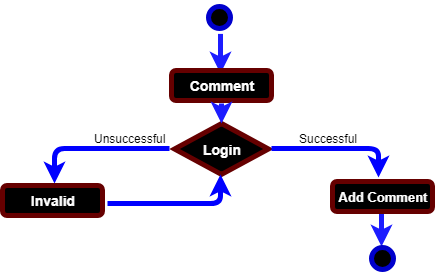


Figure 4.5: Activity Diagram for Post Management



|  |  |
| --- | --- |
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**4.1.6 Activity Diagram for Staff Management:**

Admin can add staff. The management activity is show the following diagram.

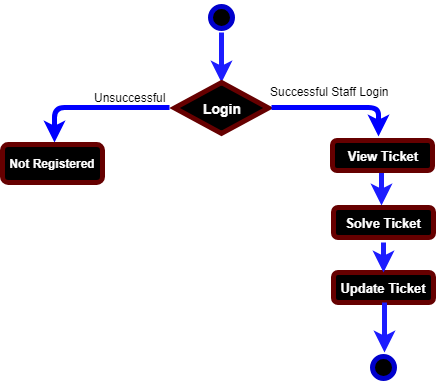


Figure 4.6: Activity Diagram for Staff Management

**4.2 Swim lane Diagram:**

To develop this application, the company has chosen activity diagram. However, swim lane diagram has been also shown in this practicum report.

In this organization follow the activity diagram for their analysis modeling. Here, also show the swim lane diagram.



|  |  |
| --- | --- |
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**4.2.1 Swimlane Diagram for User Management:**

Users are the vital part of this system. The swim lane diagram of the user management is following below.

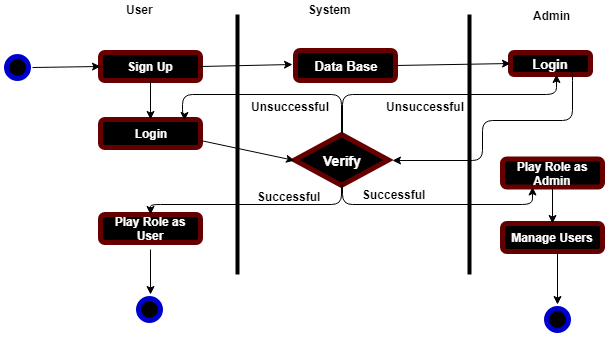


Figure 4.7: Swimlane Diagram for User Management

**4.2.2 Swim lane Diagram for Profile Management:**

The swim lane diagram of the profile management is giving below.

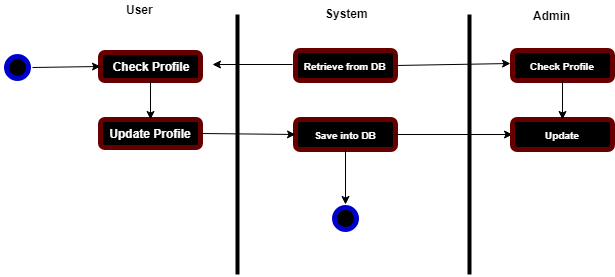


Figure 4.8: Swim lane Diagram for profile Management



|  |  |
| --- | --- |
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**4.2.3 Swimlane Diagram for Solve Ticket Notification Management:**

In this system, user will get notification of his post. The swim lane diagram of the Notification management is giving below.

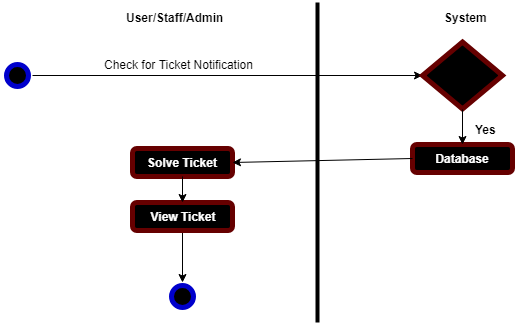


Figure 4.8: Swimlane Diagram for Notification Management

**4.2.4 Swimlane Diagram for Ticket Submit Management:**

The swim lane diagram of the post management is giving below.

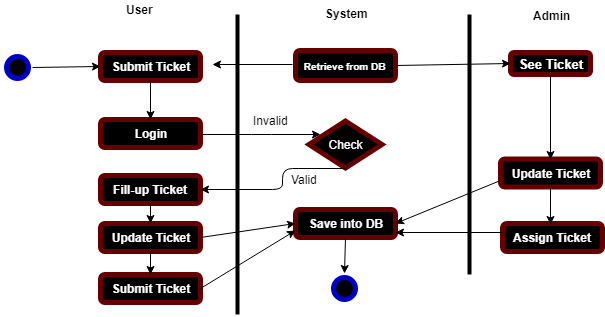


Figure 4.8: Swimlane Diagram for Post Management



|  |  |
| --- | --- |
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**4.2.5 Swimlane Diagram for Comment Management:**

The user can comment on a specific post. The swim lane diagram of the comment management is giving below.

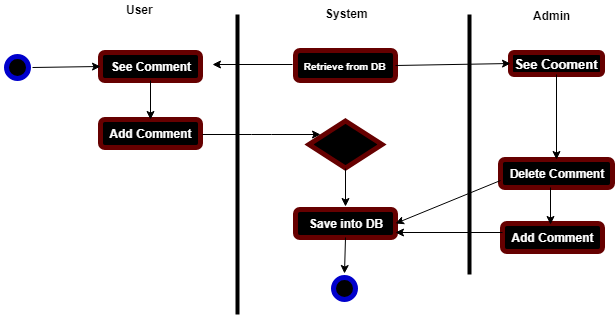


Figure 4.8: Swimlane Diagram for Comment Management

**4.2.6 Swimlane Diagram for Staff Management:**

Admin can add staff. The swim lane diagram of the staff management is giving below.

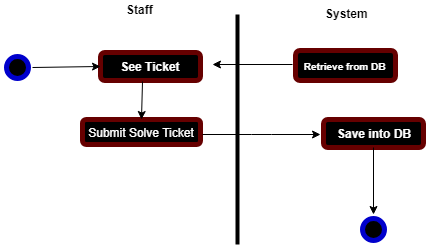


Figure 4.8: Swimlane Diagram for Term Management



|  |  |
| --- | --- |
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**Chapter 5**

**Designing**

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|  |  |
| --- | --- |
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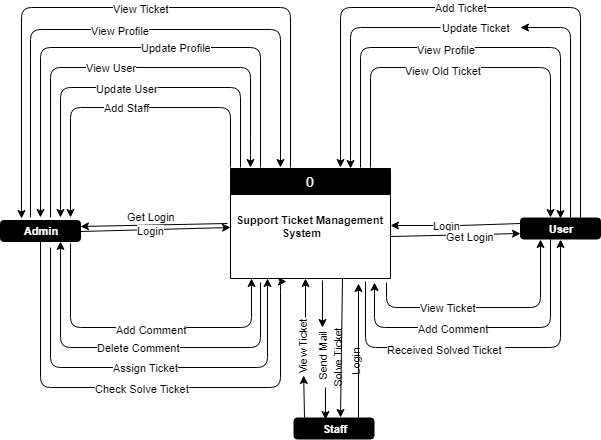
Designing part of the content management system shows the graphical representation of this project. Content management system’s graphical representation, database relation representation and database design is included in designing section. Ntitas IT Limited is provided the designing approach. This system is designed by their requirements.

**5.1 Data Flow Diagram:**

Data flow diagram is the graphical representation of the process of the content management system. It will show all processes of this project. In this software, to design the system, Data Flow Diagram (DFD) has been used which is a graphical representation of the depict information move from input to output. The DFD may be sued to represent a system or software at any level of abstraction.

**5.1.1 Context Level Diagram:**

The following diagram is shown the context level process of the content management system



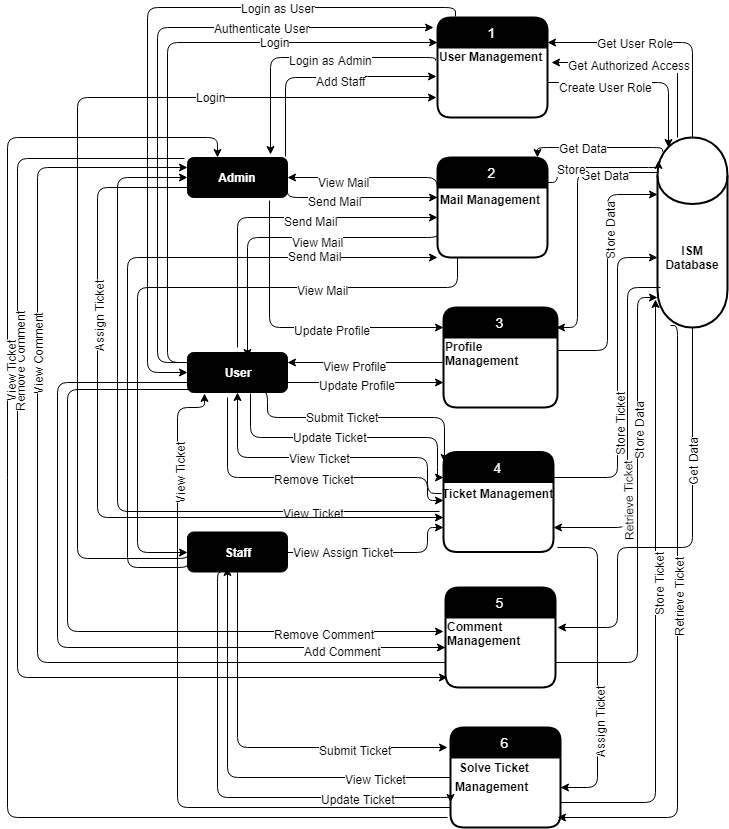
**Figure 5.1:** Context level Diagram



|  |  |
| --- | --- |
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**5.1.2 Level 1 DFD:**

The following diagram is shown the all entire process of auction management system. The representation is below:



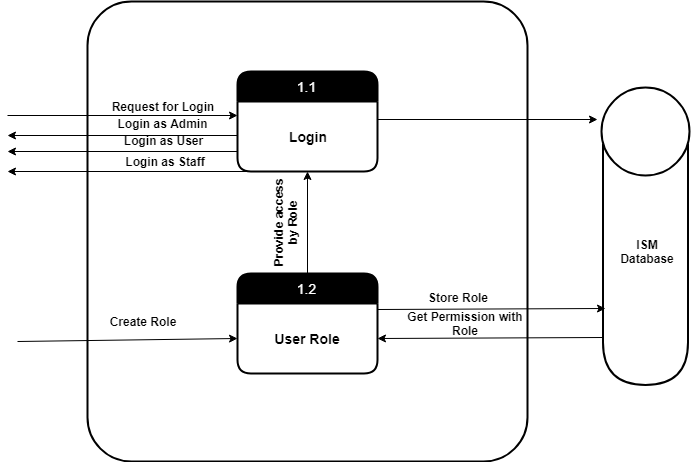
**Figure 5.2:** Level 1 DFD



|  |  |
| --- | --- |
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**5.1.3 Level 2 Process 1:**

The following diagram is shown the process of security system. It is expanded the user management.



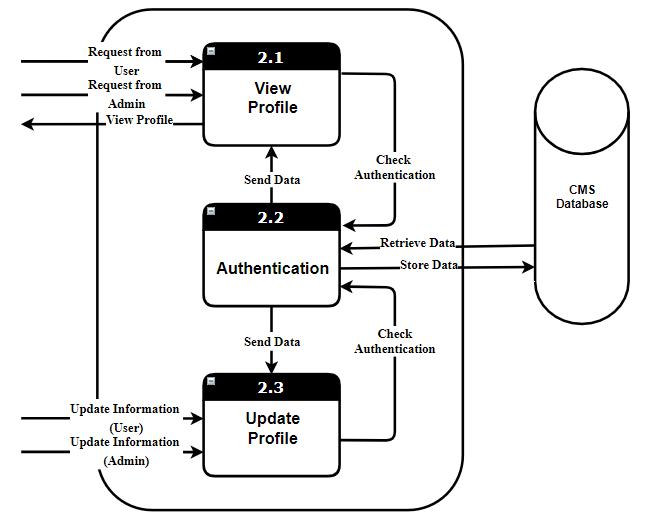
**Figure 5.3:** Level 2 Process 1



|  |  |
| --- | --- |
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**5.1.4 Level 2 Process 2:**

The following diagram is shown the process of register system. It is expanded the profile management.



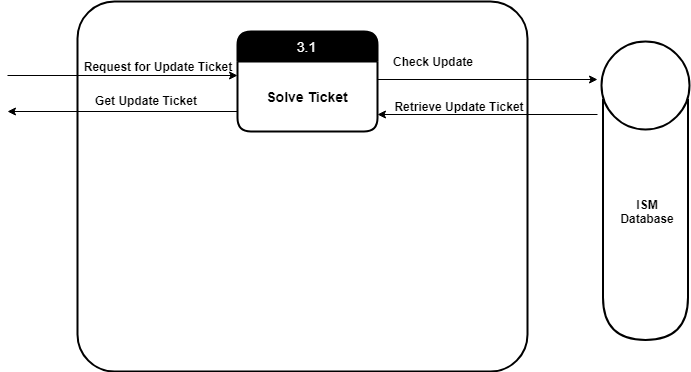
**Figure 5.4:** Level 2 Process 2



|  |  |
| --- | --- |
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**5.1.5 Level 2 Process 3:**

The following diagram is shown the process of solve ticket notification system.



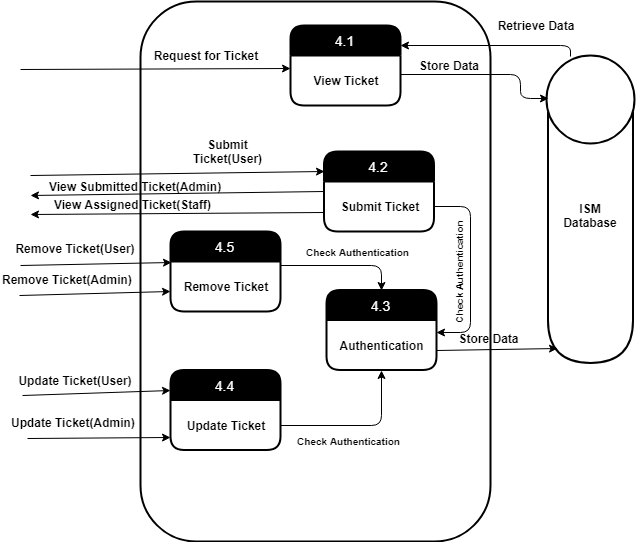
**Figure 5.5:** Level 2 Process 3



|  |  |
| --- | --- |
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**5.1.6 Level 2 Process 4:**

The following diagram is shown the process of Ticket submit system.



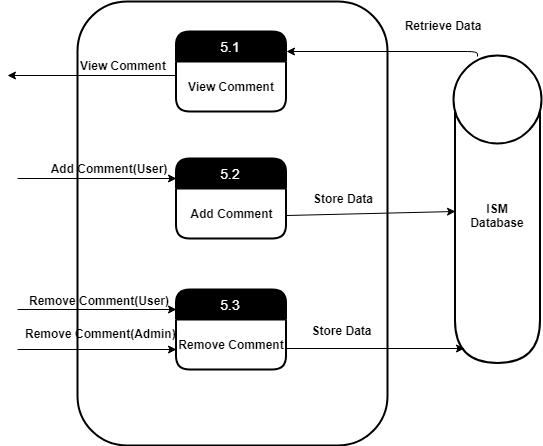
**Figure 5.6:** Level 2 Process 4



|  |  |
| --- | --- |
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**5.1.7 Level 2 Process 5:**

The following diagram is shown the process of Comment system. It is expanded the Comment Management.



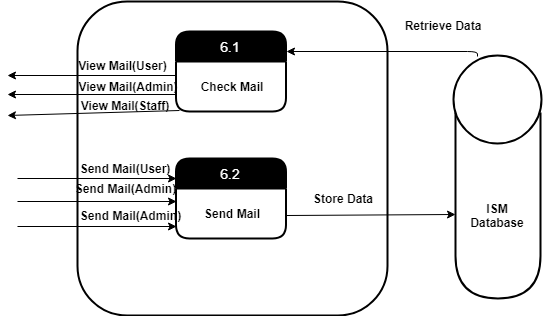
**Figure 5.7:** Level 2 Process 5



|  |  |
| --- | --- |
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**5.1.8 Level 2 Process 6:**

The following diagram is shown the Mail system. It is expanded the Mail Management.



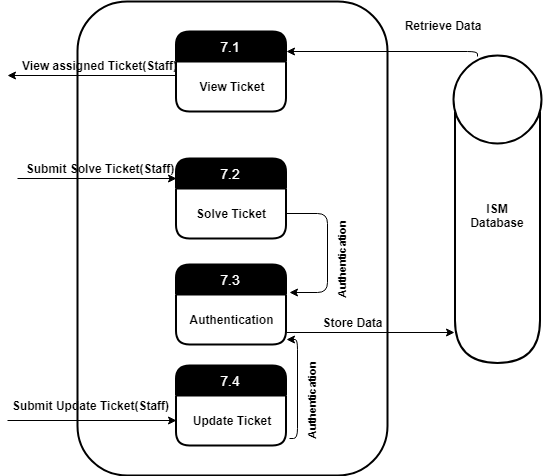
**Figure 5.8:** Level 2 Process 6



|  |  |
| --- | --- |
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**5.1.9 Level 3 Process 1:**

The following diagram is shown **staff management system.**



**Figure 5.9:** Level 3 Process 1



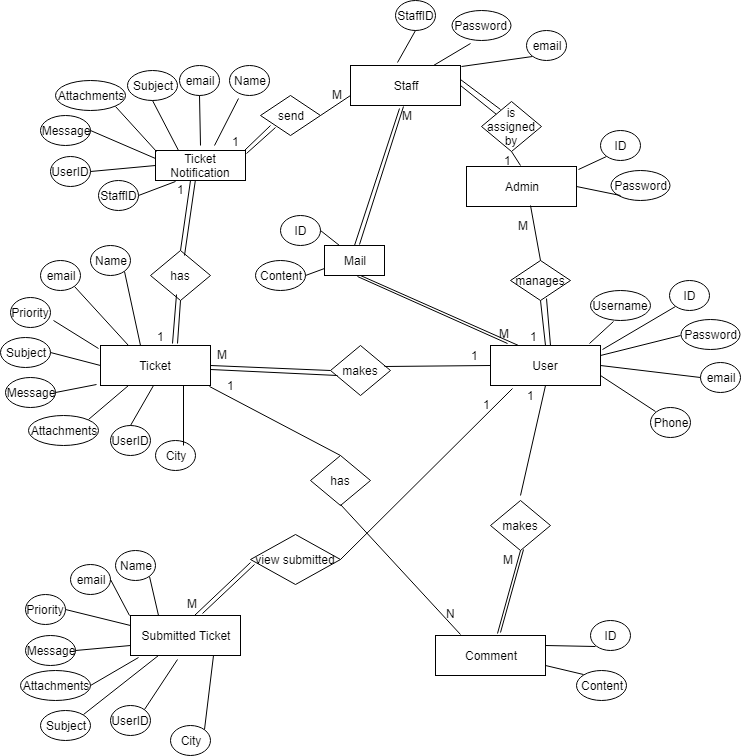
|  |  |
| --- | --- |
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| --- | --- |
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**5.2 ERD (Entity Relationship Diagram):**

In this project, Entity Relationship Diagram (ERD) has been used to visualize the conceptual data model of auction management system.



**Figure 5.9:** Entity Relationship Diagram



|  |  |
| --- | --- |
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**5.3 Interface Design:**

This project has user friendly interface design. The interface design of this project is shown below.



|  |  |
| --- | --- |
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|  |  |
| --- | --- |
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| --- | --- |
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**Chapter 6**

**Risk Management**

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|  |  |
| --- | --- |
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A risk is a serious problem that might or might not happen. It is necessary to analyze the potential risks in a project. In this project may be occur many risks. That’s why in this system we did risk analysis. The risk analysis approach is given below.

**6.1 Risk Identification:**

The following table shows the risk identification. The list of risk which are identifying in this system is shown the following table.

|  |  |
| --- | --- |
|  | **Table I:** Risk Identification |
|  |  |
| **Risk type** | **Possible Risks** |
|  |  |
|  | Unintentional defects in software may arise(1) |
| Technology |  |
| Lack of implementation for organization(2) |
|  |
|  |  |
| People | It is relatively difficult to find skilled staff (3) |
|  |
|  | Absence of members during project period (4) |
|  |  |
| Organizational | There is some restriction in project budget (5) |
|  |  |
| Tools | OS Crash or Browser Crash may happen (6) |
|  |
|  | Hard Disk Crash may happen (7) |
|  |  |
| Requirements | Changing of user requirements may increase the system budget (8) |
|  |
|  | Changing of user requirements can reduce the speed of project development (9) |
|  |  |
|  | The time required to develop the software is not sufficient. (10) |
| Estimation |  |
|  | Estimated resources may not be enough for the project (11) |
|  |  |



|  |  |
| --- | --- |
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**6.2 Risk Analysis:**

The following diagram is shown the risk analysis in my project.

|  |  |  |
| --- | --- | --- |
| **Table II:** Risk Analysis |  |  |
|  |  |  |
| **Risk** | **Probability** | **Effects** |
|  |  |  |
| Unintentional defects in software may arise(1) | Low | Serious |
|  |  |  |
| Lack of implementation for organization(2) | Moderate | Tolerable |
|  |  |  |
| It is relatively difficult to find skilled staff (3) | High | Catastrophic |
|  |  |  |
| Absence of members during project period (4) | Low | Tolerable |
|  |  |  |
| There is some restriction in project budget (5) | Low | Serious |
|  |  |  |
| OS Crash or Browser Crash may happen (6) | Moderate | Serious |
|  |  |  |
| Hard Disk Crash may happen (7) | Moderate | Serious |
|  |  |  |
| Changing of user requirements may increase the system | High | Tolerable |
| budget (8) |
|  |  |
|  |  |  |
| Changing of user requirements can reduce the speed of | Moderate | Catastrophic |
| project development (9) |
|  |  |
|  |  |  |
| The time required to develop the software is not sufficient. | Moderate | Tolerable |
| (10) |
|  |  |
|  |  |  |
| Estimated resources may not be enough for the project (11) | Low | Tolerable |
|  |  |  |

**6.3 Risk Planning:**

The following table contains the planning of risk. When risk will arise that time this plan will be applied.

**Table III:** Risk Planning

|  |  |
| --- | --- |
| **Risks** | **Strategy** |
|  |  |
|  | Modifying the system with more |
| Lack of implementation for organization | implement. |
|  |  |
|  | Train the members well for developing the |
| It is relatively difficult to find skilled staff | project |
|  |  |
|  | Take the responsibility if one is sicker |
| Absence of members during project period | absent |
|  |  |



|  |  |
| --- | --- |
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|  |  |
| --- | --- |
| **Risks** | **Strategy** |
|  |  |
|  | Use a stable operating system and update |
| OS Crash or Browser Crash may happen | antivirus regularly |
|  |  |
|  | Back up the project in a secure cloud |
| Hard Disk Crash may happen | server |
|  |  |
| The time required to develop the software is not | Proper maintain of project time for |
| sufficient | develop the project |
|  |  |
| Estimated resources may not be enough for | Back up will be ready with extra |
| the project | resources |
|  |  |

**6.4 Risk Monitoring:**

* Assess each identified risks regularly to decide whether or not it is becoming less or more probable.
* Also assess whether the effects of the risk have changed.
* Each key risk should be discussed at management.



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**Chapter 7**

**Project Planning & Scheduling**

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Project planning and scheduling is used to show the project scheduling time. This project is specific, measurable, achievable, realistic and timed. So, we need planning and scheduling for this project.

**7.1 Function Specification:**

|  |  |
| --- | --- |
| **Name** | **Short Name** |
|  |  |
| User Management System | [F1] |
|  |  |
| Profile Management System | [F2] |
|  |  |
| Notification System | [F3] |
|  |  |
| Ticket management System | [F4] |
|  |  |
| Comment management System | [F5] |
|  |  |
| Term Management system | [F6] |
|  |  |
| View Ticket | [F7] |
|  |  |

**7.2 Function Point Estimation:**

In this project, Function point estimation is measured the amount of functionality. It will be also measured the project size. Function point estimation has five standard functions which are:

**Data Functions:**

* Internal Logical Files [ILF]
* External interface files [EIF]

**Transactional Functions:**

* External Inputs [EI]
* External Outputs [EO]
* External Queries [EQ]

Also DET, RET and FTR have been applied for the analysis of data functions and transactional functions.



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| --- | --- |
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The following table shows the complexity matrix for function components.

**Table IV:** Complexity Matrix for FP Function Components

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ILF/EIF** |  | DET |  | **EI** |  | DET |  | **EO/EQ** |  | DET | |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| RET | 1-19 | 20-50 | 51+ | FTR | 1-4 | 5-15 | 16+ | FTR | 1-5 | 6-19 |  | 20+ |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Low | Low | Avg | 0-1 | Low | Low | Avg | 0-1 | Low | Low |  | Avg |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2-5 | Low | Avg | High | 2 | Low | Avg | High | 2-3 | Low | Avg |  | High |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6+ | Avg | High | High | 3+ | Avg | High | High | 4+ | Avg | High |  | High |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

The following table shows the function component complexity weight assignment.

**Table V: Function Component Complexity Weight Assignment**

|  |  |  |  |
| --- | --- | --- | --- |
| **Component** | **Low** | **Average** | **High** |
|  |  |  |  |
| External Inputs | 3 | 4 | 6 |
|  |  |  |  |
| External Outputs | 4 | 5 | 7 |
|  |  |  |  |
| External Inquiries | 3 | 4 | 6 |
|  |  |  |  |
| Internal Logical Files | 7 | 10 | 15 |
|  |  |  |  |
| External Interface Files | 5 | 7 | 10 |
|  |  |  |  |

**7.2.1 Function Point Estimation: FTR, DET and RET**

The following table shows the functionality of the system with input and output.

**Table VI:** Function Point Estimation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Functionality** | **Input** |  | **Output** |  |
|  |  |  |  |  |
| Security system | Click on SignIn by giving | Show | confirmation | message |
|  | input of UserId, Password | for successful login or an | | |
|  |  | error | message for | wrong |
|  |  | input |  |  |
|  |  |  |  |  |
| Role Management | Assign role to user after |  |  |  |
|  | login |  |  |  |
|  |  |  |  |  |



|  |  |
| --- | --- |
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|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Functionality** | | | **Functionality** | | | | **Functionality** | |  | |
|  | | |  |  |  | |  | | | |
| Sign up system | | | Click | on | Signup by | | Fields will be added to | | | |
|  | | | filling | up | registration | | database |  |  | |
|  | | | form |  |  | |  |  |  | |
|  | | |  | | | |  | | | |
| Manage staff and user by admin | | | Click staff or user info | | | | Showing all staff or user information | | | |
|  | | |  |  |  | | and edit or delete or update | | | |
|  | | |  |  |  | |  |  |  | |
|  | | |  | | | |  | |  | |
| Ticket Management | | | Click on Submit Ticket and fill up form | | | | Showing Ticket | |  | |
| System | | |  | |  | |  |  |  | |
|  | | |  | | | |  |  |  | |
| Comment Management | | | Click on comment by | | | | Showing | comments of | the | |
| System | | | filling up comment form | | | | Home page | |  | |
|  | | |  | | | |  | | | |
|  |  |  | | | |  | | | |
| Notification System | | | Check the update on ticket | | | | Showing generated | |  | |
|  | | |  | | | | notifications | |  | |
|  | | |  | | | |  |  |  | |
| View Ticket | | | Click submitted ticket | | | | Showing | requirement | wise | |
|  | | |  |  |  | | ticket |  |  | |
|  | | |  |  |  | |  |  |  | |

**7.2.2 Identify complexity:**

The following table shows the identifying complexity of transaction functions.

**Table VII:** Identify complexity of transection function

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Transactions Functions** |  | **Fields/Files involvement** |  | **FTRs** | **DETs** | |  |
|  |  |  |  |  |  | |  |
| Sign In (EI) |  | Fields- |  | 1 | 2 | |  |
|  |  | UserName, Password, |  |  |  |  |  |
|  |  | File- User |  |  |  |  |  |
|  |  |  |  |  |  | |  |
| Sign Up(EI) |  | Fields- UserId, Email, Password |  | 1 | 3 | |  |
|  |  | File-Userl |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | **Development of Support Ticket Management System** | | |  |  |  |  |
|  |  |  | 47 |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |



|  |  |  |  |
| --- | --- | --- | --- |
| **Transactions Functions** | **Fields/Files involvement** | **FTRs** | **DETs** |
|  |  |  |  |
| Manage User by admin | Fields- UserId, Status, UserName, | 1 | 7 |
| (EI) | Phone, Email, |  |  |
|  | Password |  |  |
|  | File-User |  |  |
|  |  |  |  |
| Create Ticket (EI) | Fields- PostID, Name, Email, Priority, Subject, Message, | 4 | 13 |
|  | Attachments, City |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | File- Submit Ticket, |  |  |
|  |  |  |  |
|  |  |  |  |
| View Ticket (EO) | Fields- PostID, Name, Email, Priority, Subject, Message, | 4 | 12 |
|  | Attachments, City |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | File- Submit Ticket, viewTicket |  |  |
|  |  |  |  |
|  |  |  |  |
| Update Ticket (EI) | Fields- PostID, Name, Email, Priority, Subject, Message, | 2 | 10 |
|  | Attachments, City |  |  |
|  |  |  |  |
|  |  |  |  |
|  | File- Submit Ticket, UpdateTicket |  |  |
|  |  |  |  |
| Delete Ticket (EI) | Fields- PostID, Name, Email, Priority, Subject, Message, | 2 | 4 |
|  | Attachments, City |  |  |
|  | File- Submit Ticket,, TicketDeleted |  |  |
|  |  |  |  |
| Create Comment (EI) | Fields- Content, | 3 | 12 |
|  | CommentTime, PostID, |  |  |
|  | PostId, NotificationTime, Status, |  |  |
|  | UserId |  |  |
|  |  |  |  |
|  |  |  |  |
|  | File- Comments, |  |  |
|  |  |  |  |



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|  |  |  |  |
| --- | --- | --- | --- |
| **Transactions Functions** | **Fields/Files involvement** | **FTRs** | **DETs** |
|  |  |  |  |
|  |  |  |  |
| View Submitted Ticket (EQ) | Fields- PostID, Name, Email, Priority, Subject, Message, | 4 | 15 |
|  | Attachments, City |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | File- View Ticket, TicketStatus, |  |  |
|  |  |  |  |
|  |  |  |  |
| View Related Ticket (EQ) | Fields- PostID, Name, Email, Priority, Subject, Message, | 4 | 15 |
|  | Attachments, City |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | File- View ticket, TicketStatus, |  |  |
|  |  |  |  |
|  |  |  |  |
| Create Staff (EI) | Fields- StaffID, position, email, phone | 1 | 3 |
|  | File-Staff |  |  |
|  |  |  |  |
| View Staff (EO) | Fields- StaffID, position, email, phone | 1 | 3 |
|  | File-Staff |  |  |
|  |  |  |  |
| Update Staff (EI) | Fields- StaffID, position, email, phone | 1 | 3 |
|  | File-Staff |  |  |
|  |  |  |  |



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 49 |
|  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Transactions Functions** | **Fields/Files involvement** | **FTRs** | **DETs** |
|  |  |  |  |
| Notification (EQ) | Fields- userID, Name, email, Subject, Attachments, Message, city, staffID | 5 | 24 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | Files: Notification, ticket , Staff, |  |  |
|  | SumitTicket |  |  |
|  |  |  |  |

The following table show the identifying complexity of data functions.

**Table VIII:** Identify complexity of data functions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Data Function** | **Fields/Files involvement** | | | | **RETs** | **DETs** |
|  |  | |  |  |  |  |
| User (ILF) | Fields-UserId, Status, UserName, | |  |  | 1 | 7 |
|  | Email, | |  | |  |  |
|  | Password, Phone | | |  |  |  |
|  |  | | | |  |  |
| Ticket (ILF**)** | Fields- PostID, Name, Email, Priority, Subject, Message, | | | | 4 | 13 |
|  | Attachments, City | | |  |  |  |
|  |  | | | |  |  |
|  |  | | | |  |  |
|  |  | | | |  |  |
|  |  | | | |  |  |
| Comment (ILF) | Fields- Content, | | | | 3 | 12 |
|  | CommentTime, PostID, | | |  |  |  |
|  | PostId, NotificationTime, Status, | | | |  |  |
|  | UserId | | | |  |  |
|  |  | | | |  |  |
|  |  |  | |  |  |  |
|  |  |  | |  |  |  |



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 50 |
|  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Function** | **Fields/Files involvement** | **RETs** | **DETs** |
|  |  |  |  |
| Staff (ILF) | Fields- StaffID, position, email, phone | 1 | 3 |
|  |  |  |  |
| ViewTicket (EIF) | Fields- PostID, Name, Email, Priority, Subject, Message, | 1 | 4 |
|  | Attachments, City |  |  |
|  |  |  |  |
| ViewStaff (ILF) | Fields- StaffID, position, email, phone | 1 | 2 |
|  |  |  |  |
| Notification/Action | Fields- userID, Name, email, Subject, Attachments, Message, city, staffID | 5 | 24 |
| (EIF) |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**7.2.3 Unadjusted function Point Contribution for Transaction Function:**

The following table show the unadjusted function point contribution for transection function.

**Table IX:** Unadjusted function Point Contribution for Transaction Function

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Transactions Functions** | **FTRs** | **DETs** | **Complexity** | **UFP** | |  |
|  |  |  |  |  |  |  |
| Sign in (EI) | 1 | 2 | Low | 3 |  |  |
|  |  |  |  |  |  |  |
| Sign Up(EI) | 1 | 3 | Low | 3 |  |  |
|  |  |  |  |  |  |  |
| Manage User by admin | 1 | 5 | 2\*Average | 8 |  |  |
| (2\*EI) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Create Ticket (EI) | 4 | 10 | Average | 4 |  |  |
|  |  |  |  |  |  |  |
| View Ticket (EO) | 4 | 8 | High | 7 |  |  |
|  |  |  |  |  |  |  |
| Update Ticket (EI) | 2 | 10 | Average | 4 |  |  |
|  |  |  |  |  |  |  |
| Delete Ticket (EI) | 2 | 3 | Low | 3 |  |  |
|  |  |  |  |  |  |  |
| **Development of Support Ticket Management System** | | | |  |  |  |
|  | 51 |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Transactions Functions** | | | **FTRs** | **DETs** | **Complexity** | **UFP** |
|  | | |  |  |  |  |
| Create Comment (EI) | | | 3 | 10 | High | 6 |
|  | |  |  |  |  |  |
| Create | Ticket |  | 4 | 10 | 2\*Average | 8 |
| (2\*EQ) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| View |  | Ticket | 4 | 8 | 2\*High | 12 |
| (2\*EQ) |  |  |  |  |  |  |
|  | |  |  |  |  |  |
| Create Staff (EI) | |  | 1 | 3 | Low | 3 |
|  | |  |  |  |  |  |
| View Staff (EO) | |  | 1 | 3 | Low | 4 |
|  | |  |  |  |  |  |
| Update Term (EI) | |  | 1 | 3 | Low | 3 |
|  | |  |  |  |  |  |
| Notification (2\*EQ) | |  | 5 | 20 | 2\*High | 12 |
|  |  |  |  |  |  |  |
| **Total** |  |  | 34 | 98 | = | 80 |
|  |  |  |  |  |  |  |

The following table shows the unadjusted function point contribution for data functions.

**Table X:** Unadjusted function Point Contribution for Data Function

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Function** | **RETs** | **DETs** | **Complexity** | **UFP** |
|  |  |  |  |  |
| User (ILF) | 1 | 7 | Low | 7 |
|  |  |  |  |  |
| Ticket (ILF**)** | 4 | 13 | Low | 7 |
|  |  |  |  |  |
| Comment (ILF) | 3 | 12 | Low | 7 |
|  |  |  |  |  |
| Staff (ILF) | 1 | 3 | Low | 7 |
|  |  |  |  |  |
| TicketStatus (EIF) | 1 | 4 | Low | 5 |
|  |  |  |  |  |
| Notification/Action | 5 | 24 | High | 20 |
| (EIF) |  |  |  |  |
|  |  |  |  |  |
| **Total** | 15 | 63 | = | 53 |
|  |  |  |  |  |



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 52 |
|  |

**7.2.4 Performance and environmental impact:**

|  |  |
| --- | --- |
| **GSC** | **DI** |
|  |  |
| **Data Communications** | **5** |
|  |  |
| **Distributed Data Processing** | **0** |
|  |  |
| **Performance** | **5** |
|  |  |
| **Heavily Used Configuration** | **0** |
|  |  |
| **Transaction Rate** | **0** |
|  |  |
| **Online Data Entry** | **4** |
|  |  |
| **End-user Efficiency** | **5** |
|  |  |
| **Online Update** | **4** |
|  |  |
| **Complex Processing** | **1** |
|  |  |
| **Reusability** | **4** |
|  |  |
| **Installation Ease** | **4** |
|  |  |
| **Operational Ease** | **5** |
|  |  |
| **Multiple Site** | **0** |
|  |  |
| **Facilitate Change** | **4** |
|  |  |
| **Total Degree of Influence (TDI)** | **41** |
|  |  |



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 53 |
|  |

**7.2.5 Counting Adjusted Function Points:**

UFP for TF = 80

UFP for DF = 53

Total UFP = 133

Value Adjustment Factor (VAF) = (0.65+ (0.01×41))

* + 1.06

Adjusted Function Point (AFP) = UFP × VAF

* 133× 1.06
* 140.98

Efforts for ASP.NET= AFP × Productivity

* + 140.76× 06.1
* 859.978 hours / person

=859.978/6(a day) =143.33 days/person

=143.33/2 person=71.66+32 holidays = 103.66 days= 3.4 Months

**7.3 Process Based Estimation:**

In process-based estimation, process is decomposed into a relatively small set of tasks and the effort required to accomplish each task is estimated. Process based estimation begins with a delineation of software functions obtained from the project scope. A series of software process activities must be performed for each function.



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 54 |
|  |

The following table show process based estimation.

**Table XI:** Process based estimation

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Function** | **CC** | **PLN** | **Risk** | **Engineering** | | **Construction** | | **CE** | **Total** |
| **Name** |  |  | **Analysis** |  |  | **and release** | |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | **Analysi** | **Design** | **Code** | **Test** |  |  |
|  |  |  |  | **s** |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| Login System |  |  |  | **2.4** | **4.2** | **4.2** | **1.3** | **N/A** | **12.1** |
|  |  |  |  |  |  |  |  |  |  |
| User |  |  |  | **3.2** | **4.2** | **4.2** | **3.1** | **N/A** | **14.7** |
| Management |  |  |  |  |  |  |  |  |  |
| System |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| Ticket |  |  |  | **6.7** | **7.6** | **8.3** | **4.3** | **N/A** | **26.9** |
| Management |  |  |  |  |  |  |  |  |  |
| System |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| Comment |  |  |  | **5.4** | **8.6** | **7.6** | **6.4** | **N/A** | **28** |
| Management |  |  |  |  |  |  |  |  |  |
| System |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| Staff System |  |  |  | **3.8** | **4.1** | **4.8** | **2.4** | **N/A** | **15.1** |
|  |  |  |  |  |  |  |  |  |  |
| Notification |  |  |  | **3.5** | **3.7** | **5.7** | **4.5** | **N/A** | **16.4** |
| System |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| View Ticket |  |  |  | **2.5** | **4.9** | **4.9** | **3.5** | **N/A** | **15.8** |
|  |  |  |  |  |  |  |  |  |  |
| **Total** | **9** | **12** | **6** | **23.5** | **34.3** | **36.7** | **25.5** |  | **156** |
|  |  |  |  |  |  |  |  |  |  |
| **%Effort** | **6.1** | **8.2** | **4.1%** | **16%** | **23.3%** | **25%** | **17.3** |  | **100** |
|  | **%** | **%** |  |  |  |  | **%** |  | **%** |
|  |  |  |  |  |  |  |  |  |  |

**Effort = 156/2**

**=78 days**

Total Days = 78 Workdays + 32 Holyday = 110 Days = 3.4 Months.



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 55 |
|  |

**7.4 Effort Distribution:**

The following chart show the effort distribution of this project.



**Effort Distribution**

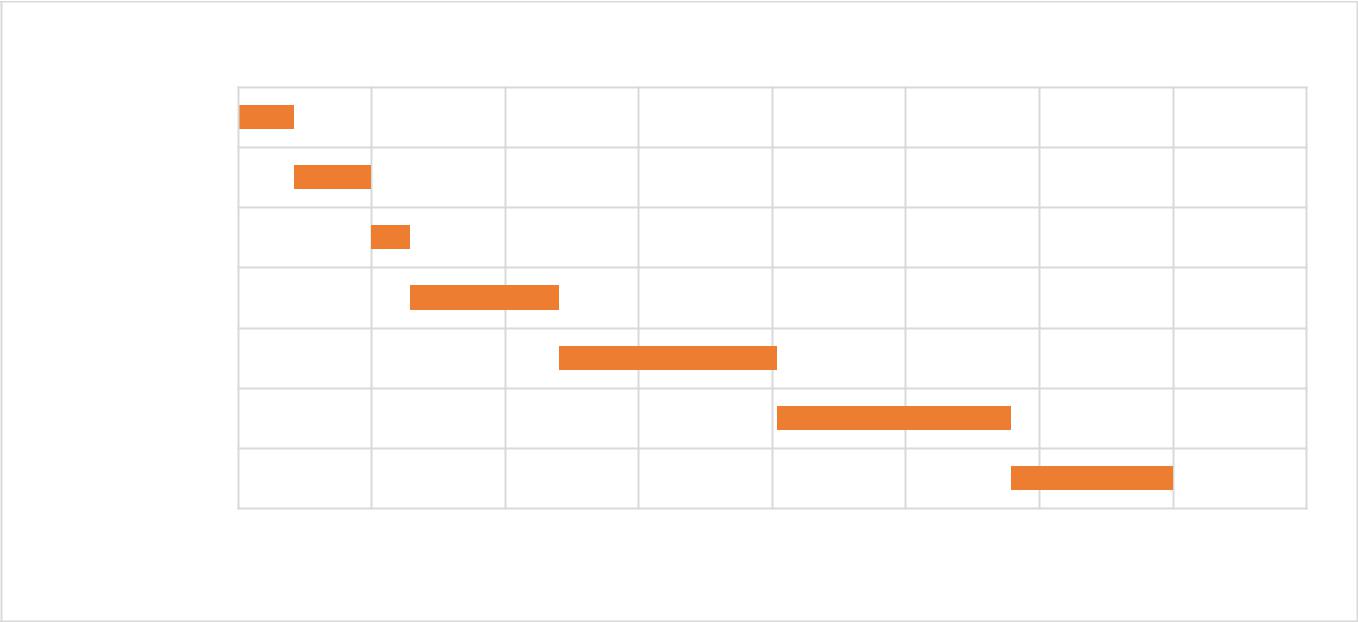
6%

|  |  |  |  |
| --- | --- | --- | --- |
|  | 17% | 8% |  |
|  |  | Customer Communication |
|  |  |  |
|  |  | 4% | Planning |
|  |  |  |
|  |  |  | Risk Analysis |
|  |  | 16% | Analysis |
|  |  |  |
| 25% |  |  | Design |
|  |  |  |
|  |  |  | Coding |
|  |  |  | Testing |
|  |  | 24% |  |

**Figure 7.1:** Effort Distribution Chart.

**7.5 Project Schedule Chart:**

Total system development is a combination of set of tasks. These set of tasks should one sequentially and timely. Project schedule works as the guideline of the system developer. The following is the schedule chart of this project:



0 2 4 6 8 10 12 14 16

CC

Planning

Risk Analysis

Analysis

Design

Coding

Testing

Time  Week

**Figure 7.2:** Project Schedule Chart



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 56 |
|  |

**Chapter 8**

**Project Estimation**

****

|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 57 |
|  |

**8.1 Personnel cost:**

Number of days in a year = 365

Number of government holidays in a year =22 (estimated)

Number of weekly holidays in a year =104

Total number of working days to develop projects =365-(104+22) =239 days

Total number of working days per months to develop the project =239/12 =19.92 days Organization working hours per day = 6 hours

Organization working hours per month=19.92\*6= 119.52 hours The following table show the personnel cost of this project.

**Table XII:** Personnel cost

|  |  |  |
| --- | --- | --- |
| **Position** | **Salary/Month** | **Salary/Hour** |
|  |  |  |
| System Analyst | 15,000 | 125.5 |
|  |  |  |
| Programmer | 10,000 | 83.67 |
|  |  |  |

**8.1.1 Salary for the Technical Staffs Engaged:**

The following table shows the salary of technical staffs of this organization.

**Table XIII:** Salary for the Technical Staffs Engaged

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Person** |  |  | **Total** |  |
| **Job Title** | **Duration** | **Weeks** | **Working** | **Total Salary** |
| **Required** |
|  |  |  |  | **Hour** |  |
|  |  |  |  |  |  |
| System | 1 |  |  | 14\*5\*6 = 420 | TK 420\*125.5 = 52,710.00 |
| Analyst | 3.5 | 14 | H |
|  |  |
|  |  |  |  |
|  |  | Months | Weeks |  |  |
| Programmer | 1 | 14\*5\*6 = 420 | TK 420\*83.67= 35,141.40 |
|  |  |
|  |  | H |
|  |  |  |  |  |
|  |  |  |  |  |  |



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 58 |
|  |

**8.1.2 Depreciation Calculation:**

The first step is to sum the digits or numbers starting with the life and going back to one. For example, an asset with a life of 5 would have a sum of digits as follows: 5+ 4+ 3 +2 + 1 = 15. To find the percentage for each year divide the year's digit by the sum. In the example above the percentage would be calculated as follows:

**Table XIV:** Depreciation Calculation

|  |  |
| --- | --- |
| **Year 1** | **5/ 15 = 33.34%** |
|  |  |
| **Year 2** | **4/ 15= 26.67%** |
|  |  |
| **Year 3** | **3/ 15 = 20 %** |
|  |  |
| **Year 4** | **2/ 15= 13.33 %** |
|  |  |
| **Year 5** | **1/ 15 = 6.67%** |
|  |  |

**8.2 Hardware cost:**

The following table show the hardware cost for this project. It is given bellow.

**Table XV:** Hardware Cost Estimation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Description | Quantity | Price | Lifetime | Using Year | Depreciation Cost (TK) |
|  |  |  |  |  |  |
| Computer | 2 | 30,000 | 5 Years | 3rd | 2\*(30,000 \*20%) = 12,000 |
|  |  |  |  |  |  |
| Printer | 1 | 5,000 | 5 Years | 2nd | (5000\* 26.67%) = 1,333.5 |
|  |  |  |  |  |  |
|  | **Total** | **Hardware** | **Cost:** |  | **13,333.5** |
|  |  |  |  |  |  |

**8.3 Software cost:**

The following table show the software cost for this project.

**Table XVI:** Software Cost Estimation

|  |  |  |  |
| --- | --- | --- | --- |
| Description | Price | Lifetime | Depreciation Cost (TK) |
|  |  |  |  |
| Windows 10 | 10,000 | 5 Years | (10,000 \*13.33%) = 1,333 |
|  |  |  |  |
| Microsoft Office 2007 | 8,000 | 5 Years | (8,000\* 13.33%) = 1,066.4 |
|  |  |  |  |
| **Total Software Cost:** | |  | **2399.4** |
|  |  |  |  |



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 59 |
|  |

**8.4 Accounts Table:**

The accounts table of this project is given below. This table is shown accounts status.

**Table XVII**: Accounts Table

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Particulars** | **Taka** |  |
|  |  |  |  |
|  | **Salary** |  |  |
|  |  |  |  |
|  | System Analyst | 52,710.00 |  |
|  |  |  |  |
|  | Programmer | 35,141.40 |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **87,851.4** |  |
|  |  |  |  |
|  | **Hardware Cost** |  |  |
|  |  |  |  |
|  | Computer | 12,000.00 |  |
|  |  |  |  |
|  | Printer | 1,333.50 |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **13,333.50** |  |
|  |  |  |  |
|  | **Software Cost** |  |  |
|  |  |  |  |
|  | Windows 10 | 1,333.00 |  |
|  |  |  |  |
|  | Microsoft Office 2007 | 1,066.40 |  |
|  |  |  |  |
|  | Visual studio 2017 | 0.00 |  |
|  |  |  |  |
|  | MS SQL SERVER | 0.00 |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **2399.40** |  |
|  |  |  |  |
|  | **Other Costs** |  |  |
|  |  |  |  |
|  | Furniture | 2,000.00 |  |
|  |  |  |  |
|  | House Rent | 7,000.00 |  |
|  |  |  |  |
|  | Electricity bill | 1,000.00 |  |
|  |  |  |  |
|  | Utilities | 1,000.00 |  |
|  |  |  |  |
|  |  | **11,000.00** |  |
|  |  |  |  |
|  | Total: | **1,14,584.3** |  |
|  |  |  |  |



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 60 |
|  |

**Chapter 9**

**Quality Management**

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|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 61 |
|  |

Quality management provides an independent check on the software development process. The quality management process checks the project deliverables to ensure that they are consistent with organizational standards and goals.

**9.1 System Quality Management:**

Quality Management concerned with ensuring that the required level of quality is achieved in a software product. It involves the application of specific quality processes and checking that these planned processes have been followed. Also establish a better quality plan for a project. The quality plan should set out the quality goals for the project and define what processes and standards are to be used. Agreement on quality requirements as well as clear communication to the software engineer on what constitutes quality, require that the many aspects of quality formally defined and discussed. A software engineer should understand the underlying meanings of quality concepts and characteristics and their value to the software under development or to maintenance. The important concept is that the software requirements define the required quality characteristics of the software and influence the measurement methods and acceptance criteria for assessing these characteristics. Some quality criteria are objective, and can be measured accordingly. Some quality criteria are subjective, and are therefore captured with more arbitrary measurement.

**9.1.1 Quality Assurance Matrix:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Quality Assurance Scenario No: 1 |  |  |
|  |  |  |  |
| Requirement | User can log in the system |  |  |
|  |  |  |  |
| Provided outputs | User enters the system using UserId, Password. |  |  |
|  |  |  |  |
| Decision | This system working correctly. It should be working in future. |  |  |
|  |  |  |  |
|  |  |  |  |
|  | Quality Assurance Scenario No: 2 |  |  |
|  |  |  |  |
| Requirement | Admin can view and block user |  |  |
|  |  |  |  |
| Provided outputs | Admin can manage staff and user. |  |  |
|  |  |  |  |
| Decision | This system working correctly. It should be working in future. |  |  |
|  |  |  |  |
|  | **Development of Support Ticket Management System** |  |  |
|  | 62 |  |
|  |  |  |
|  |  |  |  |



|  |  |
| --- | --- |
|  | Quality Assurance Scenario No: 3 |
|  |  |
| Requirement | User can add, update, view and delete his ticket |
|  |  |
| Provided outputs | User manage the his/her ticket |
|  |  |
| Decision | This system working correctly. It should be working in future. |
|  |  |

|  |  |
| --- | --- |
|  | Quality Assurance Scenario No: 4 |
|  |  |
| Requirement | User can comment |
|  |  |
| Provided outputs | Author will get notification the comment |
|  |  |
| Decision | This system working correctly. It should be working in future.. |
|  |  |

|  |  |
| --- | --- |
|  | Quality Assurance Scenario No: 5 |
|  |  |
| Requirement | Admin can create/update staff |
|  |  |
| Provided outputs | Admin easily create staff |
|  |  |
| Decision | This system working correctly. It should be working in future. |
|  |  |
|  |  |
|  | Quality Assurance Scenario No: 6 |
|  |  |
| Requirement | Automatically generate ticket report |
|  |  |
|  | User can see his total submitted ticket, comment. |
| Provided outputs |  |
|  |  |
| Decision | This system working correctly. It should be working in future. |
|  |  |



|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 63 |
|  |

**Chapter 10**

**Coding**

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|  |  |
| --- | --- |
| **Development of Support Ticket Management System** | 64 |
|  |

Coding is analytical part of a project. It is one of the process of the system development method. In this project is used two type coding.

**10.1 Coding:**

Coding is needed for developing a software. In this system coding part is come after designing. To develop this software is used waterfall process model. In this process model coding is one of the important approach. Here is used two type of coding.

* Backend coding
* Frontend coding

**10.1.1 Backend coding:**

ASP.NET Core 2.0 is used to develop this software as a backend code. Backend code is used to handle back side of a software. It will also handle functionality of the project. The coding part will show the project demonstration part.

**10.1.2 Frontend coding:**

In this system to develop for frontend code is used HTML, CSS, Bootstrap, JavaScript, Ajax etc. These codes are used to make user friendly interface. This coding part also shows on the project demonstration part.



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**Chapter 11**

**Testing**

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According to the common process framework, the software testing is the final activity that has to initiate after developing. Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and code generation.

**11.1 System Testing Strategy:**

A strategy for software testing integrates software test case design methods into a well-planned series of steps that result in the successful construction of a software. The strategy provides a road map that describes the steps to be conducted as part of testing.

Testing strategy that will be followed in this software project:

* Unit testing
* Integration testing
* Validation testing

The first step in software testing is unit testing. Unit testing concentrates on each unit of the software as implemented in the source code. Unit testing focuses on each component individually. The unit test is white-box oriented. Thus, unit testing of this software will be done after completion of every module or component.

The next step is integration testing. Integration testing is a systematic technique for constructing the program structure while at the same time conducting tests to uncover errors associated with interfacing. The objective of integration testing is to take unit tested components and build a program structure that has been dictated by design.

The integration testing strategy that has been chosen for this project is top down testing. Black-box testing method is the most prevalent for integration testing. Top down integration strategy will be used to perform integration testing. Top down integration will be done by breadth-first manner. Breadth-first integration incorporates all components directly subordinate at each level, moving across the structure horizontally.

After the software has been integrated, a set of high order tests are conducted. Hence, the validation criteria that have been mentioned in requirements engineering should be tested. Validation testing provides final assurance that software meets all functional, behavioral and performance requirements. The black-box testing method is exclusively used in validation.



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**11.2 System Testing Methodology:**

**Black-box Testing:**

In this project, Black-box testing method has been used to examine the functionality of this application without peering into its internal structures or workings. This method has been applied virtually to every level of software testing: unit, integration, system and acceptance.

**White-box Testing:**

White-box testing has been used to in this project to design test cases. Inputs were chosen to exercise paths through the code and determine the appropriate outputs.

**11.3 Testing Scenario**

|  |  |
| --- | --- |
|  | Testing scenario No:1 |
|  |  |
| Scenario | Login testing scenario of the system |
|  |  |
| Input(s) | Correct UserId, Password |
|  |  |
|  | When enter a valid UserId, password then get access to level |
| Desired Output(s) | defined. |
|  |  |
| Actual Output(s) | For login system worked correctly |
|  |  |
|  | Getting result from Desired Output’s and Actual Output’s decided |
| Verdict | this system is successful for login. |
|  |  |

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| --- | --- |
|  | Testing scenario No:2 |
|  |  |
| Scenario | Admin can block user |
|  |  |
| Input(s) | User’s basic info for registration with access level status byUserId |
|  |  |
| Desired Output(s) | When enter all basic info correctly, system shows a success message |
|  |  |
| Actual Output(s) | For blocking user, system worked correctly |
|  |  |
|  | Getting result from Desired Output and Actual Output decided this |
| Verdict | system is successful for Adding User. |
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|  |  | Testing scenario No:3 |  |  |
|  |  |  |  |  |
| Scenario |  | Registered user can add new Post. |  |  |
|  |  |  |  |  |
| Input(s) |  | Post info is provide correctly |  |  |
|  |  |  |  |  |
| Desired Output(s) |  | When adding new ticket system shows success message |  |  |
|  |  |  |  |  |
| Actual Output(s) |  | Submit Ticket |  |  |
|  |  |  |  |  |
| Verdict |  | The process worked correctly and successfully. |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  | Testing scenario No:4 |  |  |
|  |  |  |  |  |
| Scenario |  | ticket report generation |  |  |
|  |  |  |  |  |
| Input(s) |  | User will give user info |  |  |
|  |  |  |  |  |
| Desired Output(s) |  | It will generate report |  |  |
|  |  |  |  |  |
| Actual Output(s) |  | Store report |  |  |
|  |  |  |  |  |
| Verdict |  | The process worked correctly and successfully. |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  | Testing scenario No:5 |  |  |
|  |  |  |  |  |
| Scenario |  | User can comment |  |  |
|  |  |  |  |  |
| Input(s) |  | Provide comment as a text form |  |  |
|  |  |  |  |  |
| Desired Output(s) |  | If successfully comment it show success message |  |  |
|  |  |  |  |  |
| Actual Output(s) |  | Store comment info |  |  |
|  |  |  |  |  |
| Verdict |  | The process worked correctly and successfully. |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  | Testing scenario No:6 |  |  |
|  |  |  |  |  |
| Scenario |  | User get new notification |  |  |
|  |  |  |  |  |
| Input(s) |  | Provide user info |  |  |
|  |  |  |  |  |
| Desired Output(s) |  | Successfully get new notification |  |  |
|  |  |  |  |  |
| Actual Output(s) |  | Get new notification |  |  |
|  |  |  |  |  |
| Verdict |  | The process worked correctly and successfully. |  |  |
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**Chapter 12**

**Conclusion**

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**12.1 The Experience:**

The biggest experience of working at Ntitas IT Limited is indeed being a part of designing and implementing software. The widest area of experience was gathered round the designing issue. Definitely, there are a lot of new issue to learn from this system.

Working in a project is a big opportunity for anyone. One can learn a lot about the technical and political Environment of IT &Software Development Organization. The followings will indicate anyone’s learning achievements from this project.

* The designing and development strategy of a web application.
* Database Management.
* The analyzing strategy of software.
* Hands-on experience about system security management.
* Version controlling using git

**12.2 Limitation:**

As it has been mentioned early in this report that practicum is the bridge between theoretical and practical life, practicum program at IUBAT has given the students this great opportunity to see how theories are put into action. From this point of view, a 12-16 weeks practicum program is not good enough for a fresh graduate to work in an organizational and at the same time develop software. Following by, there were lots of terms, conditions and systems that were not understandable by the students at the beginning of their organizational attachment. So far, it may be learned seeing senior classmates and friends, they experienced the same during their time as well. After applying the software engineering procedures, it is very difficult to develop complete software within short time and it might be required to include more modules for the project. But at the later stage, one should be familiar with the overall scenario.



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**12.3 Future Work:**

This software is web application; by this software, the organization will be able to manage content management system for multiple purposes. This system can be introduced as a very initial version of the big software. By this limited time of internship, one can develop the core features of this system but in future, it can be possible to add more features e.g.:

* Automatic theme generator
* Create an API

**12.4 Conclusion:**

This report helps a person to understand this whole application. How the software works and what is the use of this application. Where reader can get help from this application. We tried to make this application easy and faster for the user. Now we can say that the system will fulfill the user requirements and it will cover all their basic requirements. After the testing and user feedback, We are happy to work with this system.



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