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<BUS AND RAIL TICKET BOOKING SYSTEM>

Section : A

Group : 08

Submitted by

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Introduction:

This is a Software Development Project Management plan for bus and rail subway system automated ticket issuing system. This system sells subway tickets. User can buy tickets using their valid credit cards. Users select destination and use credit card for payment. After valid transaction the ticket is issued. This software project will explain details about the software development lifecycle which our group take in order to complete. This document will cover detail information about the project. It specifies the technical and managerial approaches to develop the software product.

Project Title:

Automated Ticket Issuing System For bus and rail Subway System.

Objectives:

The automated ticket system is currently maintaining the project Transport Company's process manually which is a very time consuming process. It deals with transport industry's ticket booking and transport maintenance, so it becomes a very tedious job for the ticket booking transporter to look after these particulars to complete the task at right time. The bus ticket booking system not only deals with transporters owned vehicles but also takes into consideration about the other types project of system transport vehicles available with other transporters. To develop a software application that supports Specific to the project Travel Agency Automation that can solve all tedious tasks related to ticket booking in a travel agency.

- This system will lead to increase in the ticket booking efficiency of the project Staff and members of the Ticket Booking Agency with little throughput.
- This system project is made as user friendly as possible so that any one can use it with little knowledge of system computers.
- The ticket booking project will reduce the ticket booking tedious job of system paperwork by keeping all the project details of bus ticket booking, cancelling tickets are stored in the form database in computer's hard disk.
- Up-to-date information of the system Performance status and other enquires.
- We provide up to date information that is not possible manually.
- The objective of my project is to make easy the ticket booking project system of Ticket Booking Agency simple, reliable, user friendly, and corrective. Moreover less time consuming as compared to manual work.

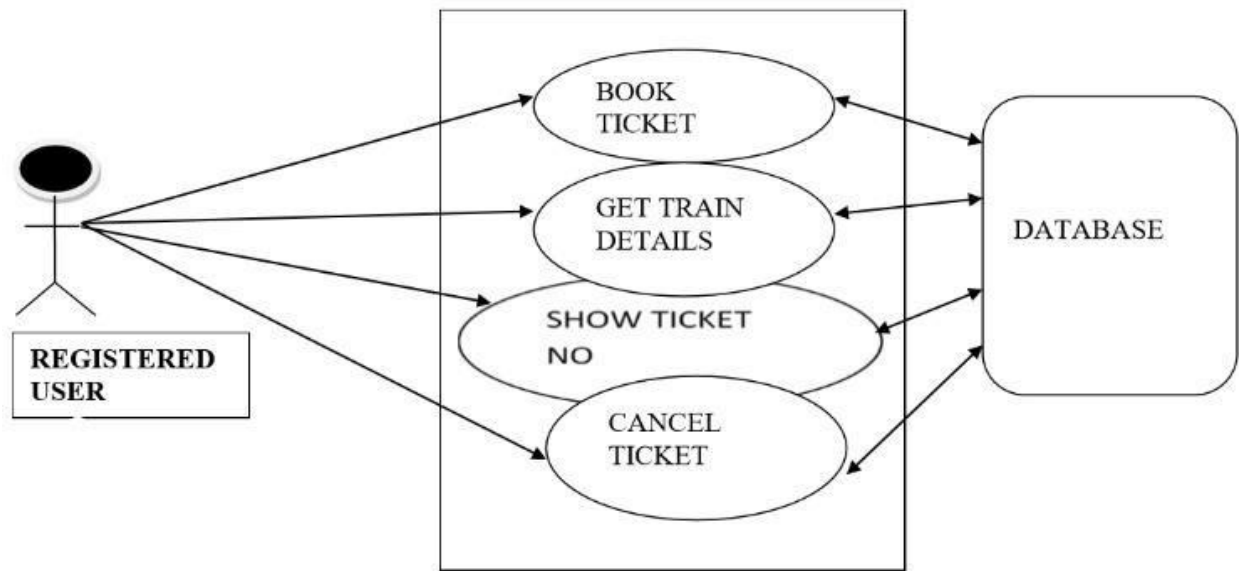
Justification:

Ticketing systems play a vital role in helping businesses. Such as how to effectively deal with high volumes of customer support requests from a variety of communication channels. However, a huge number of organizations are still ignoring this customer service tool. This is mainly due to the lack of understanding of what a ticketing system is and how it can help a business. There are benefits to using ticketing systems software. Here is the advantage of using ticketing software.

1. The platform you choose should help your team handle a higher volume of tickets per day than they could on their own. Many of the most popular systems include ticket management tools and other capabilities to improve the efficiency of your service.
2. Mobile support is a must for every enterprise help desk. The top software options allow for seamless service whether the user is on a desktop or mobile device. Some also come with mobile apps.
3. Tracking your ticketing statistics and data is essential to improving your performance. Your ticketing system should make it easy to order reports, and make improvements as needed.
4. Finally, your ticketing software should improve the quality of your service by making it more personal.

Systems Overview:

The automated ticket issuing system acts as the single point of contact between end users and the IT service provider. It helps service desk teams consolidate support requests from different channels into tickets, store them, and manage them centrally. The ticketing system also helps categorize, prioritize, and assign these tickets according to pre-set policies, ensuring that service desk teams stay efficient and organized. All conversations with the end user can also be documented within the ticketing system, helping technicians be context-aware when tickets are assigned or escalated to them. A ticketing system is also referred to as a help desk ticketing system, support ticket system, or ticket management system.



Stake-holders analysis:

There are many Software Development Life Cycle models, like: waterfall model, prototyping model, spiral model, Incremental model, V- model, agile model. We pick waterfall model for this project because we have clear requirements, functionalities of the system, visibility of stakeholders and we also have enough time schedule for our project.

Groups:

1. User of this system.
2. Company or organizations (providing the subway system automated ticket issuing system).
3. Financing the subway system automated ticket issuing system.
4. Governmental agencies.

Feasibility study:

The automated ticketing system has the ability to create a ticket by sending an email. It converts each and every mail received into a ticket. So that the user can create a ticket whenever they facing an issue and no need to login to the system for the issues need to be fixed.

Automatic ticket generation, closing duplicate tickets and much more automated process eliminate several human processes makes a faster resolution. Above all, Service Level Agreement can achieve without difficulties. The repetitive tasks are completed by the system. This leads to

efficient operation in an organization. Hence it can save a lot of time, which automatically saves money.

Systems component:

The scope of Dhaka Subway System Automated Ticket Issuing system is to provide a system that allows an organization to track and manage customer support requests. A ticketing system allows IT support to track, manage, speed up, and deal effectively with incidents. The ticketing software can automatically distribute and assign incidents to the right IT staff member. It can also automatically carry out simple tasks to save time and resources.

Also, there are some components for this system:

1. Ease of use.
2. Ticketing system capability.
3. Knowledge management.
4. Self-service enablement.
5. Cost.

Process Model:

We are using waterfall model for this project. There are many Software Development Life Cycle models, like: waterfall model, prototyping model, spiral model, Incremental model, V- model, agile model. We pick waterfall model for this project because we have clear requirements, functionalities of the system, visibility of stakeholders and we also have enough time schedule for our project.

There are 6 phases in Software Development Life Cycle.

Phase 1: Requirement Analysis and Feasibility study.

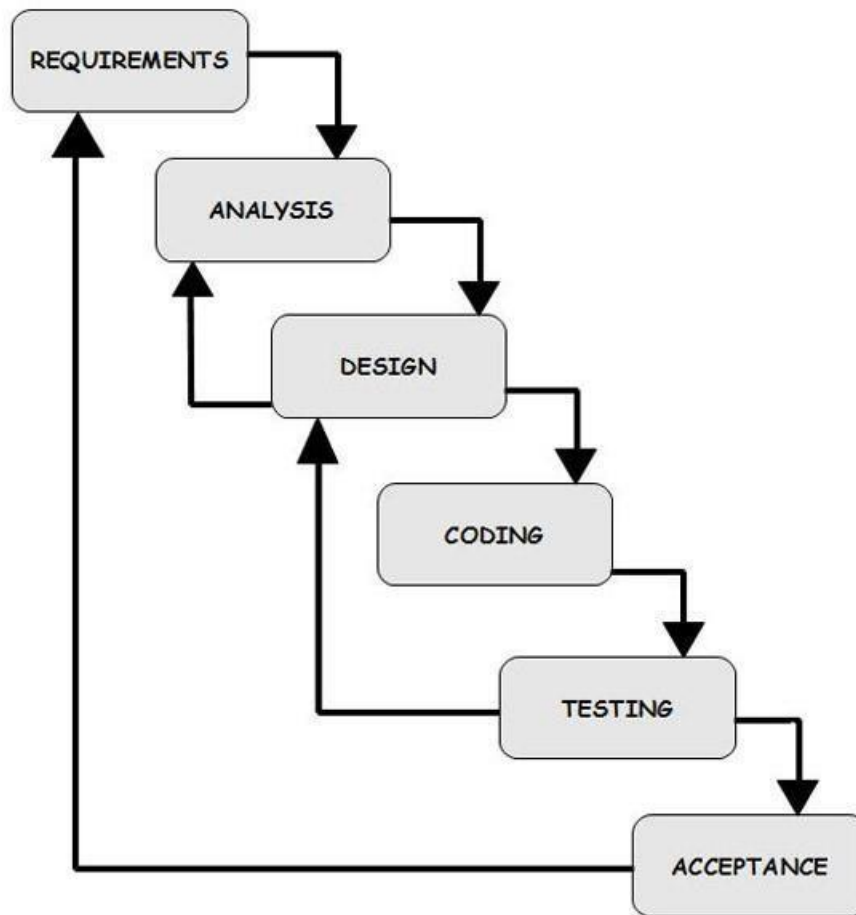
Phase 2: Design.

Phase 3: Coding.

Phase 4: Testing.

Phase 5: Deployment.

Phase 6: Maintenance.



Efforts estimation:

For calculate effort estimation for this project we are using COCOMO81 (COCOMO81Constructive Cost Model). COCOMO is one of the most widely used software estimation models developed by Barry W. Boehm. COCOMO predicts the effort and schedule for a software product development based on inputs relating to the size of the software and a number of cost drivers that affect productivity.

Equation of COCOMO model is: $\text{effort} = c * (\text{size})^k$. (Effort is measured in pm(person-months') 1 pm = 150 units of working hour)

Development time = $2.5 * (\text{effort})^t$

Required Number of people = $\text{effort} / \text{Development time}$ There is some constants value base on System type.

COCOMO81 constants

System Type	c	k	t
Organic (2-50 KLOC)	2.4	1.05	0.38
Semi-detached (50-300 KLOC)	3.0	1.12	0.35
Embedded (more than 300 KLOC)	3.6	1.20	0.35

Project	Design		Coding		Testing		Total	
	wm	(%)	wm	(%)	wm	(%)	wm	SLOC(source lines of code)
DSS Automated Ticket Issuing System	19.0	(28)	29.7	(44)	19.0	(28)	67.7	3898 (39 kdsi)

As our project's system type is Semi-detached. So,

Effort = $3.0 \times (39)^{1.12} = 181.60$ pm

Development time = $2.5 \times (181.60)^{0.35} = 15.4$ months

Required Number of people = $181.60 / 15.4 = 11.7$ (12)

Activity Network Diagram:

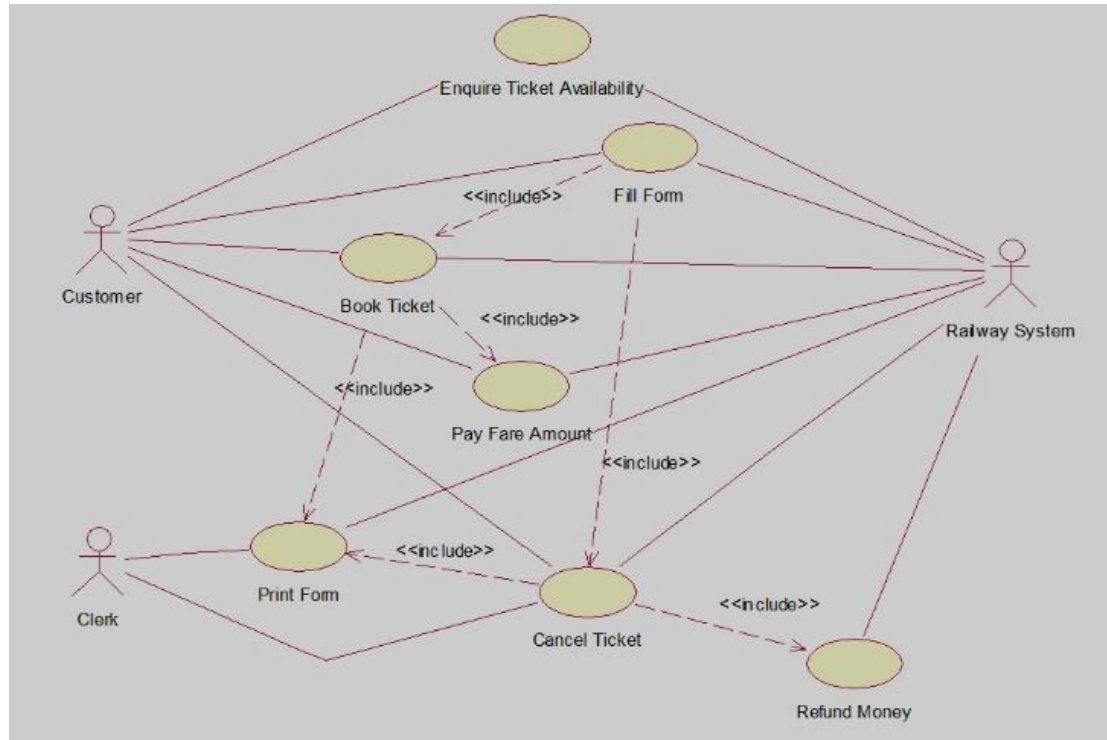


Fig: activity network diagram.

Risk Analysis:

This mentions a number of possible risks for the project. Also, actions or measures

Risks	Category	Probability	Impact	RMMM
Size estimate maybe low	Product Size	60%	2	Discuss with professionals and analysis past similar project carefully
Delivery deadline will be tightened	Business impact	50%	2	Manage extra working time
Staff turnover	Staff size and experience	60%	2	Give more facilities to staffs
Staff inexperience	Staff size and experience	30%	2	Train new staff

are described to prevent or to reduce the risks.

13.0 Budget for the project

Cost Analysis:

Developer Team:

Team Member	Total Number	Hour/Day	Monthly Salary (Per Person)	Total Salary
Business Analyst	1	6	70,000/-	70,000
Senior Developer	2	6	100,000/-	200,000
UX Designer	2	4	60,000/-	120,000
Front-end Developer	3	3	70,000/-	210,000
Back-end Developer	3	3	100,000/-	300,000
Quality Tester	1	5	42,000/-	84,000

Table 1: - Developer Cost Table

Office Employees:

Team Member	Total Number	Monthly Salary (Per Person)	Total Salary
CEO	1	300,000	300,000
Managing Director	1	200,000	200,000
General Manager	1	120,000/-	120,000/-
Marketing Manager	1	80,000/-	80,000/-
Accounts Executive	1	80,000/-	80,000/-
Receptionist	1	20,000/-	20,000/-

Estimated Monthly Salary for Developers:

$$90,000 + 200,000 + 120,000 + 210,000 + 300,000 + 168,000 = 1,088,000/-$$

So, the total salary cost for one month of development is 1,088,000 BDT

The time it will take to finish development is estimated to be around 15 weeks or 3.5 months

Estimated Total Salary During Project Development: $1,088,000 \times 3.5 = 3,808,000$ BDT

Salary cost for office employees per month: 800,000 BDT

Total Salary for office employees (During project development + 1 year of software release):

$$(300,000 + 200,000, 120,000 + 80,000 + 80,000 + 20,000) \times 15.5 = 12,400,000$$

So, the total cost of salary during project development is: $3,808,000 + 12,400,000$

$$= 16,208,000$$

Annual Office Rent and other Cost:

- Office Space Rent:

Approximately 105,000 BDT Per Month [In Banani Area]

Total Office Rent (During project development + 1 year of software release):

$$= 105,000 \times 15.5 = 1,627,500$$

- Electricity Bills:

Average electricity bill for a typical office space is around 50,000 BDT

So, Total electricity bill (During project development + 1 year of software release) =

$$50,000 \times 15.5 = 775,000 \text{ BDT}$$

- Food:

Monthly Chef cost = 15,000/- Per

day food cost allowance = 250/-

Total food cost during project development: $250 \times 19 \times 20 \times 3.5 = 332,500/-$ Total food

cost for 1 year after software releasing: $250 \times 6 \times 20 \times 12 = 360,000/-$ So, the grand

total for food (During project development + 1 year of software release): = 332,500 + 360,000 = 692,500/-

- Others:

Internet Cost (During project development + 1 year of software release): $1000 \times 15.5 = 15500/-$

Approx. office accessories cost 50,000/-

Annual Marketing Cost:

- Advertisement:

Package that includes a total of 30 minutes advertisement 4,10,000/- [5]

- Social Media Sponsored Post:

Facebook/Instagram sponsored post cost per month 25,000/- [6]

Sponsored post cost in 1 year = $25,000 \times 12 = 300,000/-$

- Search Engine Optimization (SEO):

For mid-range companies the cost of SEO per month is 80,000/- [7]

For 1 year the cost will be: $80000 \times 12 = 960,000/-$

Grand Total:

$16,208,000 + 1,627,500 + 775,000 + 692,500 + 15,500 + 50,000 + 410,000 + 300,000 + 960,000 =$
21,038,500 BDT

So, in total the cost is 21,038,500 BDT in one year including software development.

Conclusion:

In order to reduce the time delay further the usual username password authentication was replaced with a code based authentication system. The code system is much faster than typing the username and password. Although a smart card system is also applicable in this scenario, considering the cost of a smart card system the code system is highly cost effective. It can also automatically carry out simple tasks to save time and resources.

