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ABSTRACT

This is tender site for Nayara Energy Limited.

A refinery always needs raw materials for its productions. And it has a lot of departments to deal with, but when it comes to order some raw material or anything related to that refinery, the quantity is not a small one. So, it has to float some tenders.

Electronic Tendering is carrying out the traditional tendering process in an electronic form, using the internet and intranet. The tendering process is a key business process that helps businesses find a suitable contractor. In the refinery industries, clients invite tenderers to submit an estimate of prices, detailing the costs associated with different category. In this way, the Buyer can base their decision on the result of the tenders to select the most suitable contractor. Currently in India, many of such tendering processes are still mainly manual and paper based. The tenderers need to collect the tender's booklet, price it, and bring it back to the buyer's office before the deadline. In this paper, we present a design and implementation of an e-tendering system by using Web services for the automation of such tendering processes.

1. INTRODUCTION

Nayara Energy Limited (formerly known as Essar Oil Limited) is a downstream oil company of international scale with strong presence in the hydrocarbon value chain from refining production to marketing in several segments including retail. It is India's second largest petroleum refinery, with a capacity of 20 MMTPA. Nayara Energy is one of the world's most modern refineries with a high complexity index of 11.8 the Vadinar refinery is capable of processing some of the toughest crudes and yet produces high quality Euro IV Euro V grade products.

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2 PROBLEM IDENTIFICATION AND ANALYSIS

2.1 REQUIREMENT OF INDUSTRY

- Nayara Energy Limited tendering site is online tendering site.
- This Tender site will be owned by the Nayara Energy procurement Team and IT team and they will be responsible to provide and maintain all the master data.
- No reports will be generated manually. All the reports will be generated by the system and will be shared via emails.
- This tender site will only cater Nayara Energy business requirements which includes Nayara Energy, VCPL, VOTL and both locations i.e. VA dinar Refinery and Mumbai HO.
- This site will be deployed in Nayara Energy network with published on internet (with required security protection) so that external users can access with ease.
- This portal will also be accessed by internal team/ users via intranet
- Login to this site:
 - Internal users/ Employee will log in using windows authentication (LDAP)
 - External users will log in with system generated User ID and Password after successful registration to site.

2.2 REQUIREMENT OF ANALYSIS

As per the guidelines from the management committee and to bring transparency in the procurement process, it has been decided by the management to develop tendering site to float various tenders or enquiries online.

The online site of e-tendering enables the tenders to view or download the tender schedule and then submit the bids online through this portal only.

Tender site should have the following basic features:

- Tendering site should be accessible to all (internal and external users)
- All open tenders as of the day will be listed on tender site.
- All tenders will have validity period and during which it will be visible on tender site vendor can see basic tender details on site, however to view the content of tender, vendor needs to first register online (if not already registered)
- In case of new registration, User id and Password shall be sent through auto generated email and vendor shall be able to log through same.
- Administrator right to upload tender on behalf of vendor in a special case to be provided to Procurement Admin.

TENDERING SITE

Landing page (Home page):

-This page should contain the various links like

Home| Tenders | Contact us | Vendor registration | Home page

- Welcome note and brief information about tender site.
- Nayara Energy site will be open to all with secured environment.
- Display tender category list. By clicking on any category, site should take user to Tender page where all open tenders for that particular category are being listed.
- Below are some of the tender categories (as an example):
 - Automobile, Crane, Earth moving equipment
 - Boiler, Turbine & Generator
 - Chemical & Catalyst
 - Construction Items
 - Electrical, Instrumentation, IT and Telecommunication
 - Equipment Erection
 - Hardware
 - Etc...
- Procurement admin shall have right to add or delete Tender category at any point of time
- Minimum required fields to show tender list-
 - Serial No.
 - Tender Start Date
 - Tender No.
 - Tender Subject
- Last submission date

1 TENDERS:

- By clicking on Tender No., page will be redirected to Tender detail page where more details will be displayed for that selected tender.
 - Details like: Tender No., Tender Date, Quantity, Last submission Date (in flash Mode), Purchase Group, Eligibility Criteria, Contact details etc.
 - TECHNO-COMMERCIAL TENDER INVITATION document will be available and can be downloaded.
 - This document containing all the guidelines and required information for vendor to submit bid.
- Vendor can bid or submit offer, if vendor is already registered
- In case of new vendor, vendor can register using Vendor Registration Link.

2 CONTACT US

- This page contains the details of contact person
- In case if vendor encounter any issue either in accessing Tender site or have some query for any tender, this page will guide vendor to contact relevant person responsible to answer his query.
- Procurement team contact- for tender related query
- Site support contact-for any site related issue
- Common ID-for vendor registration related issues or queries

3 VENDOR REGISTRATION

- The link will redirect vendor to the vendor registration form where vendor has to fill or provide required information for registration.
- required information like-
 - vendor type: Indian/Outside of India
 - General Details like: Vendor name, Full details, Email, Contact numbers, Contact person name & contact details, Web site etc.
 - Business Details like: Type of business (i.e. manufacturer, Agent/dealer, Stockiest, Service provider etc.), Address of workshop, proprietor details, PAN number etc.
 - Common details like: List of major customers, key skills etc.
- System will ask for security code (OTP and CAPCHA) to prevent unauthorized registration.
- On successful registration, vendor will receive User ID and Password via SMS and an email on registered mobile number and email address.
- Using the User ID and Password, Vendor can login to Nayara Energy Tendering Site.
- However, IT team to ensure lock with respect to PAN no. is used for registration system should throw error to avoid duplicate vendor registration.

BUYER SIDE**Fig 2: steps to be followed by the buyer****1 TENDER PREPARATION**

- Only buyer can prepare tender. Buyer can login to tender site using their own credentials (Windows authentication (LDAP) /Outlook User ID & Password)
- As this site is published on internet, we will avoid using SSO (Single sign on) from security point of view.
- Buyer shall define team member of Procurement Dept. as well as End user Dept. for respective tender. – this should not be mandatory in many cases there will be no team members available so single point of contact also should be accepted by the system.
- Buyer will fill or provide key field information like Tender subject, Tender no. (system generated), validity dates (start date and end date), RFQ no, Tender Category, Relevant documents etc. (These fields are mandatory)
- Tender No. will be system generated based on the value selected or entered by buyer. Example of Tender no: NEL/VAD/400-CCC/206208 (Below is the naming convention)

Naming convention

- NEL- NEL common field. (Need to add VOTL and VPCL also)
- VAD- VAD or MUM
- 400- SAP client field
- CCC- Purchase group. (Details shall be shared with IT).
- 206208-SAP RFQ number (unique number)- This is SAP generated number.
- IT team need to check link between SAP RFQ and then start creating tender no. with respect to RFQ no. of SAP on tender site.
- Tender documents
 - Tender Invitation /Guideline document is the minimum required document for any tender. Template of this document should be available on site for ready reference. If required, buyer can download the template and use the template to create the document.
 - Buyer will upload this document and other relevant documents (if any).
 - While uploading document, buyer have to specify Title/ name for each document. Documents will be visible/ listed on site based on this Title/ name only in ascending order.
 - All these documents will be visible to Vendor once vendor logs into the system. Documents link will be visible to view/ download the document.

2 TENDER RELEASE

- Buyer can prepare tender in advance as well.
- Tenders will automatically be released (visible @ Tender site) based on the start date.
- System generated notification will be sent to buyer and other related contacts at the time of tender activation.

3 TENDER CLOSING

- Tender will be removed from the open tender list after the expiry of tender validity (end date).
- Such tenders will not be visible to any vendors but will be visible under History tab to buyers only (as well as respective team members of tender).
- Buyer can view the bids submitted by various vendors and take necessary actions (View and download of documents).
- Buyer can extend the tender validity (end date) before the last date. In case if buyer needs to extend on or after end date, Buyer need to contact site admin.
- On the closing of tender, buyer will get notification mails with summary of bid and mark a copy to technical contacts.
- Technical contacts can see only unpriced bid & other documents where Buyer can see all the documents like unpriced bid/ priced bid & other documents.
- TBA (Technical Bid Evaluation) will take place offline between buyer /procurement team and end users.
- Additionally, few reports need to be created for which details shall be shared with IT team post creation of tender site.

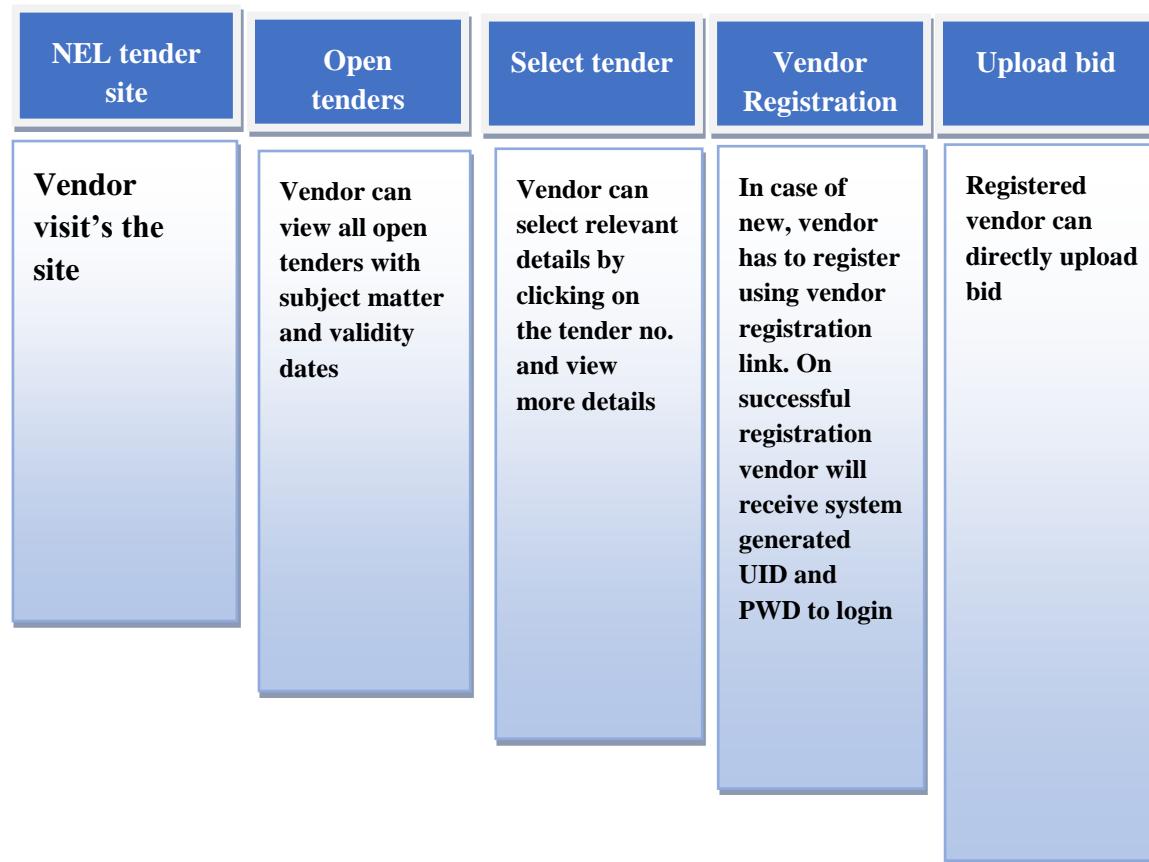
VENDOR SIDE

Fig 2: steps to be followed by the vendor

1 OPEN TENDERS

- On tender site, all open tenders will be listed with basic information.
- Category-wise view is also available for open tenders.

2 SELECT TENDER

- Vendor can select tender by clicking on Tender no. To upload or submit bid

3 UPLOAD BID

- If vendor is already registered, this step is not required.
- In case of new vendor, vendor has to register using this link.
- On successful registration, vendor can log-in to site and submit proposal.
- Vendor will upload bid/ proposal documents and other relevant documents for selected tender.
- Till the time tender is open (within validity time), vendor can upload documents OR submit revised proposal/bid.-here the original submitted bid cannot be removed by vendor but the revised bid or any other relevant document can be upload by vendor during tender validity period, system shall capture date and time to upload of document and the same should be visible.
- Vendor's latest submission/documents should be displayed on site. No history will be maintained for previous documents/comments. -All documents shall be visible to site.
- Vendor to upload documents in two main categories i.e. 1) Unpriced Bid and 2) Priced Bid. There should be provision for Vendor to upload other documents against these categories.
- Technical Contact and Commercial Contact will be maintained for each Tender. Vendor can contact them in case of any query or face any technical issues.

2.3 FEASIBILITY STUDY

Once scope has been identified (with the concurrence of the customer), it is reasonable to ask: "Can we build software to meet this scope? Is the project feasible?" All too often, software engineers rush past these questions only to become mired in a project that is doomed from the onset.

When we are developing the system (software), we must know the proposed system will be feasible or i.e. practically implemented or not it may possible the proposed (candidate) system may not implemented due to many reasons like it may take long time in development than the specified time limit, cost may increase than proposed one etc.

Therefore, we must analyze the feasibility of the system.

Feasibility is the analysis of risks, costs & benefits relating to economics, technology & user operation. There are several types of feasibility depending on the aspect they cover. Some important feasibility is as follows:

1. Technical Feasibility
2. Operational Feasibility
3. Economic Feasibility

1. TECHNICAL FEASIBILITY

- Necessary technology exists to do what is suggested and required by the organization.
- The proposed equipment's have the technical capacity to hold the data required to use the new system.
- The proposed system will provide adequate response to inquiries regardless of the location if users.
- The hardware needed to develop and implement the system is adequate.

2. OPERATIONAL FEASIBILITY

- Operational Feasibility is a measure of how people are able to work with system. This type of feasibility demands if the system will work when developed and installed.
- Since website is very user friendly so users will find it comfortable to work on this site.

3. ECONOMIC FEASIBILITY

A system that can be developed and that will be used if installed must still be a good investment for the organization. Financial benefits must equal or exceed the costs.

2.4 RISK IDENTIFICATION AND ANALYSIS

RISK IDENTIFICATION

Some roughly predicted risks which may arise in our project development are

PROJECT RISK:

Save electricity system is a scientific application. Developers & user must have basic knowledge of functional & technical areas of save electricity system.

TECHNICAL RISK:

Highly functioned module is used so if minimum hardware requirements are only fulfilled then software may be affected by low execution speed.

As the software is been made for scientific purpose I may not get popular in regular market. The user/operator must have some basic knowledge of advance technology.

RISK ANALYSIS:

It is employed in the broadest sense to include:

RISK COMMUNICATION:

It involves an interactive dialog between stack holders & risk assess and risk managers which actively inform the other process

Risk analysis = risk assessment + risk management + risk communication.

RISK ASSESSMENT:

It involves identifying source of potential harm, accessing the likelihood that harm will occur and the consequences if harm does occur.

RISK PLANNING:

Interviewing: a greater number of items the requirements were gathered & filtered so more refined data was collected so the chances of changes in software would be minimal & risk of the in-regular communication could be avoided.

3. OUTLINE OF THE SOLUTION

3.1 LIST OF MODULES

3.1.1 VENDOR:

- ❖ Home
- ❖ Search
- ❖ Tender
 - Category vise Tender
 - Active Tender
 - Tender Details
 - ◆ Bid for Tender
 - Priced bid, Unpriced Bid
- ❖ Contact Us
- ❖ My profile
 - Details
 - Edit details
 - Verification code
- ❖ Login
 - Registration

3.1.2 BUYER

- ❖ Tender Preparation
 - Document (demo)
- ❖ Tender Release (Auto)
 - Notification to buyer
- ❖ View Tender
 - Category vise Tender
 - Edit Date (open tenders)
 - View Bid (My tenders)
- ❖ History of tender
 - Contact admin (to extend date after close)
- ❖ Tender close (Auto)
 - Mail to Admin and buyer

3.1.3 ADMIN

- ❖ Manage Employee
 - Add Employee
 - Delete Employee
- ❖ Manage Vendor
- ❖ Manage Tenders
 - Category vise tender
 - Close Tender
 - Edit Tender

3.2 USER CHARACTERISTIC

The project is mainly divided into 4 modules:

1). ADMIN (EMPLOYEE - PROCUMBENT TEAM)

This administrator will maintain all the master information like Items Information, vendor's information, Employee information, Tender Information, category and contact details.

Can manage open, close and deactivate tender.

2). BUYER (EMPLOYEE – PROCUMBENT TEAM)

Buyer can prepare tender in advance and can check status of their tender. Moreover, they can view unpriced bid for their tender.

3). VENDOR

Vender Can view all open tenders with detail information, and can bid for the tender.

4). VISITOR

Visitor can see overview of open tenders and can search for tenders. For further information and submit bid they have to register.

3.3 PROCEDURES AND REQUIREMENTS

The pre-requisites required for tender site is the basic understanding between the user and the IT team. For developing the tender portal there is a step wise procedure to be followed.

The following are the steps to be followed:

1 PROCESS FLOW

First, we need to design a process flow of the tender portal, i.e. how to design and in which sequence it should follow, when it is actually implemented.

2 PROTOTYPE

It is a basic outlook of the website or the app, it is required to be user friendly.

3 DATA BASE

A basic information about the data to be entered in the requires blanks and the place where these data would get stored.

4 BUSINESS REQUIREMENT DOCUMENT

This provides a brief information about the designed prototype and helps us to get familiar with the application.

Objectively defining the attributes required for specific role in specific dept. for the approval of the tender as an HOD. Covering all the functional areas by manager i.e. attributes required in Technical (Knowledge/skill), Safety (Knowledge/Skill) and Behavioral skill areas for any functional position in dept. to be defined. Likewise, to be done for all functions and role therein. Based on above attributes, a perfect tender portal is designed.

3.4 PROCESS MODEL

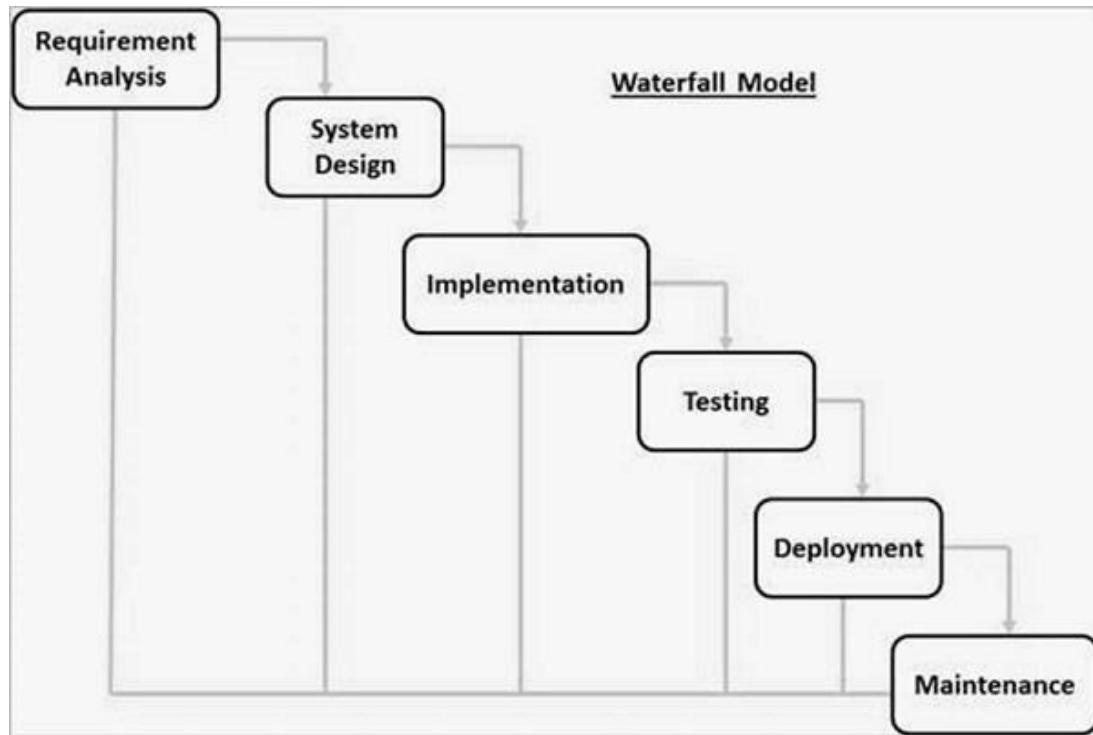
Waterfall Model

The sequential phases in Waterfall model are –

- **Requirement Gathering and analysis** – All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification document.
- **System Design** – The requirement specifications from first phase are studied in this phase and the system design is prepared. This system design helps in specifying hardware and system requirements and helps in defining the overall system architecture.
- **Implementation** – With inputs from the system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality, which is referred to as Unit Testing.
- **Integration and Testing** – All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.
- **Deployment of system** – Once the functional and non-functional testing is done; the product is deployed in the customer environment or released into the market.
- **Maintenance** – There are some issues which come up in the client environment. To fix those issues, patches are released. Also, to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

All these phases are cascaded to each other in which progress is seen as flowing steadily downwards (like a waterfall) through the phases. The next phase is started only after the defined set of goals are achieved for previous phase and it is signed off, so the name "Waterfall Model". In this model, phases do not overlap.

3.4.1 DIAGRAM OF WATERFALL MODEL:



3.4.2 ADVANTAGES OF WATERFALL MODEL:

- Simple and easy to understand and use.
- Easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process.
- Phases are processed and completed one at a time.
- Works well for smaller projects where requirements are very well understood.
- Clearly defined stages.
- Well understood milestones.
- Easy to arrange tasks.
- Process and results are well documented.

3.4.3 DISADVANTAGES OF WATERFALL MODEL:

- Needs good planning and design.
- Needs a clear and complete definition of the whole system before it can be broken down and built incrementally.
- Total cost is higher than waterfall.

3.4.4 WHEN TO USE THE WATERFALL MODEL:

Every software developed is different and requires a suitable SDLC approach to be followed based on the internal and external factors. Some situations where the use of Waterfall model is most appropriate are –

- Requirements are very well documented, clear and fixed.
- Product definition is stable.
- Technology is understood and is not dynamic.
- There are no ambiguous requirements.
- Ample resources with required expertise are available to support the product.
- The project is short.

3.5 HARDWARE REQUIREMENT AND SOFTWARE REQUIREMENT

Hardware Requirement

Minimum 2GB RAM
Dual core /p4 processor
Minimum 80GB Hard disk
Windows 95/98/XP/7/8/10 or later, Linux, Ubuntu, Mac

Software Requirement

IIS configured server.
Unlimited/limited bandwidth.
.net framework 4.0 supported.
Unlimited/limited storage.

3.6 DEVELOPMENT PLATFORM SPECIFICATION

Specification: -

Hard Disk 1TB,

Main memory 8GB RAM,

Operating system: - windows 10

Front End Tool: - Microsoft Visual studio 2017

Back End Tool: - Microsoft visual SQL client

Processor: - Intel i5-8250U CPU @ 1.60GHz

System Type: - 64 bit - OS, x-64 based processor

Programming Language: - C# and Asp.net

4. SYSTEM ANALYSIS AND DESIGN

4.1 DATA DICTIONARY

VenderDoc

	Name	Data Type	Allow Nulls
1	RegisterId	int	<input type="checkbox"/>
	docname	nvarchar(50)	<input checked="" type="checkbox"/>
	docpath	nvarchar(MAX)	<input checked="" type="checkbox"/>

VendorRegister

	Name	Data Type	Allow Null
1	RegisterId	int	<input type="checkbox"/>
	fname	varchar(50)	<input checked="" type="checkbox"/>
	Iname	varchar(50)	<input checked="" type="checkbox"/>
	address	varchar(MAX)	<input checked="" type="checkbox"/>
	city	varchar(50)	<input checked="" type="checkbox"/>
	state	varchar(50)	<input checked="" type="checkbox"/>
	pincode	nvarchar(50)	<input checked="" type="checkbox"/>
	country	varchar(50)	<input checked="" type="checkbox"/>
	phone	nvarchar(50)	<input checked="" type="checkbox"/>
	email	varchar(50)	<input checked="" type="checkbox"/>
	website	varchar(50)	<input checked="" type="checkbox"/>
	btype	varchar(50)	<input checked="" type="checkbox"/>
	waddress	varchar(MAX)	<input checked="" type="checkbox"/>
	pan	varchar(50)	<input checked="" type="checkbox"/>
	majorcust	varchar(50)	<input checked="" type="checkbox"/>
	keyskill	varchar(MAX)	<input checked="" type="checkbox"/>
	panfile	varchar(50)	<input checked="" type="checkbox"/>
	uid	varchar(150)	<input checked="" type="checkbox"/>
	pw	varchar(150)	<input checked="" type="checkbox"/>
	status	int	<input checked="" type="checkbox"/>

TenderDoc

dbo.TenderDoc [Design] X

Update | Script File: dbo.TenderDoc.sql

	Name	Data Type	Allow Nulls
	TenderId	int	<input checked="" type="checkbox"/>
	DocPath	varchar(50)	<input checked="" type="checkbox"/>
	DocName	varchar(50)	<input checked="" type="checkbox"/>
	DocCat	varchar(50)	<input checked="" type="checkbox"/>

PrepTender

dbo.PrepareTender [Design] X

Update | Script File: dbo.PrepareTender.sql

	Name	Data Type	Allow Nulls
	TenderId	int	<input type="checkbox"/>
	catid	int	<input checked="" type="checkbox"/>
	cat_name	nvarchar(50)	<input checked="" type="checkbox"/>
	StartDate	date	<input checked="" type="checkbox"/>
	LastDate	date	<input checked="" type="checkbox"/>
	CurrentDate	datetime	<input checked="" type="checkbox"/>
	item	varchar(50)	<input checked="" type="checkbox"/>
	CName	varchar(50)	<input checked="" type="checkbox"/>
	CMobile	varchar(50)	<input checked="" type="checkbox"/>
	CEmail	varchar(50)	<input checked="" type="checkbox"/>
	status	int	<input checked="" type="checkbox"/>
	buyerid	varchar(50)	<input checked="" type="checkbox"/>
	buyername	varchar(50)	<input checked="" type="checkbox"/>

IntrestedCatagory

dbo.IntrestedCatagory [Design] X

Update | Script File: dbo.IntrestedCatagory.sql

	Name	Data Type	Allow Nulls
	RegisterId	int	<input checked="" type="checkbox"/>
	catid	int	<input checked="" type="checkbox"/>
	cat_name	varchar(50)	<input checked="" type="checkbox"/>

Employee

dbo.Employee [Design]

Update | Script File: dbo.Employee.sql

	Name	Data Type	Allow Nulls
	EId	int	<input type="checkbox"/>
	Ename	varchar(50)	<input checked="" type="checkbox"/>
	Epassword	varchar(50)	<input checked="" type="checkbox"/>
	DESIGNAME	varchar(50)	<input checked="" type="checkbox"/>
	DESIGID	varchar(50)	<input checked="" type="checkbox"/>

Designation

dbo.DESIGNATION [Design]

Update | Script File: dbo.DESIGNATION.sql

	Name	Data Type	Allow Nulls
	DESIGID	int	<input type="checkbox"/>
	DESIGNAME	varchar(50)	<input checked="" type="checkbox"/>

Category

dbo.category [Design]*

Update | Script File: dbo.catagory.sql*

	Name	Data Type	Allow Nulls
	catid	int	<input type="checkbox"/>
	cat_name	varchar(MAX)	<input checked="" type="checkbox"/>
	status	bit	<input checked="" type="checkbox"/>

Contact US

dbo.ContactUs [Design]

Update | Script File: dbo.ContactUs.sql

	Name	Data Type	Allow Nulls
	Id	int	<input type="checkbox"/>
	ContactCatagory	varchar(50)	<input checked="" type="checkbox"/>
	EmailId	varchar(50)	<input checked="" type="checkbox"/>
	Mobile	nvarchar(50)	<input checked="" type="checkbox"/>
	name	varchar(50)	<input checked="" type="checkbox"/>

BidDoc

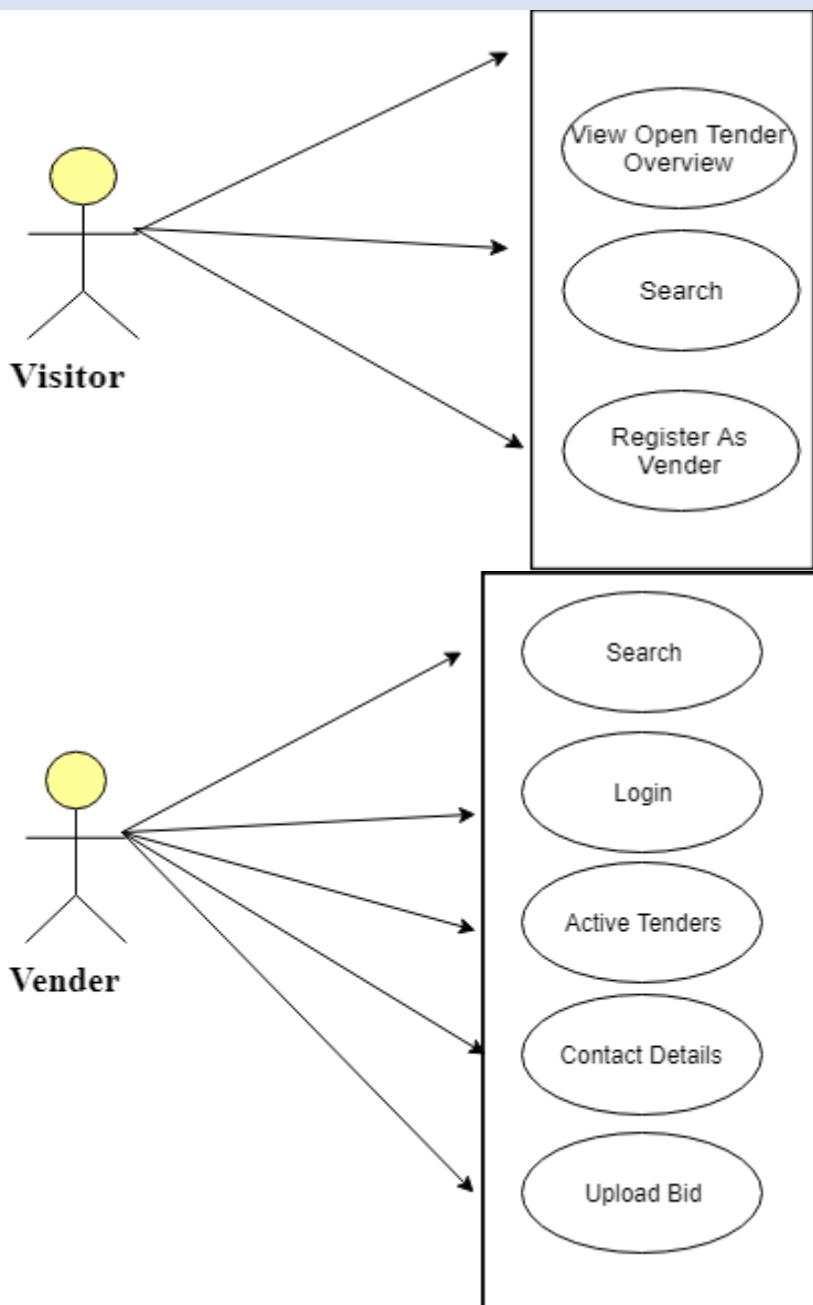
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	DocPath	varchar(50)	<input checked="" type="checkbox"/>
	DocName	varchar(50)	<input checked="" type="checkbox"/>
	RegisterId	varchar(50)	<input checked="" type="checkbox"/>
	TenderId	varchar(50)	<input checked="" type="checkbox"/>

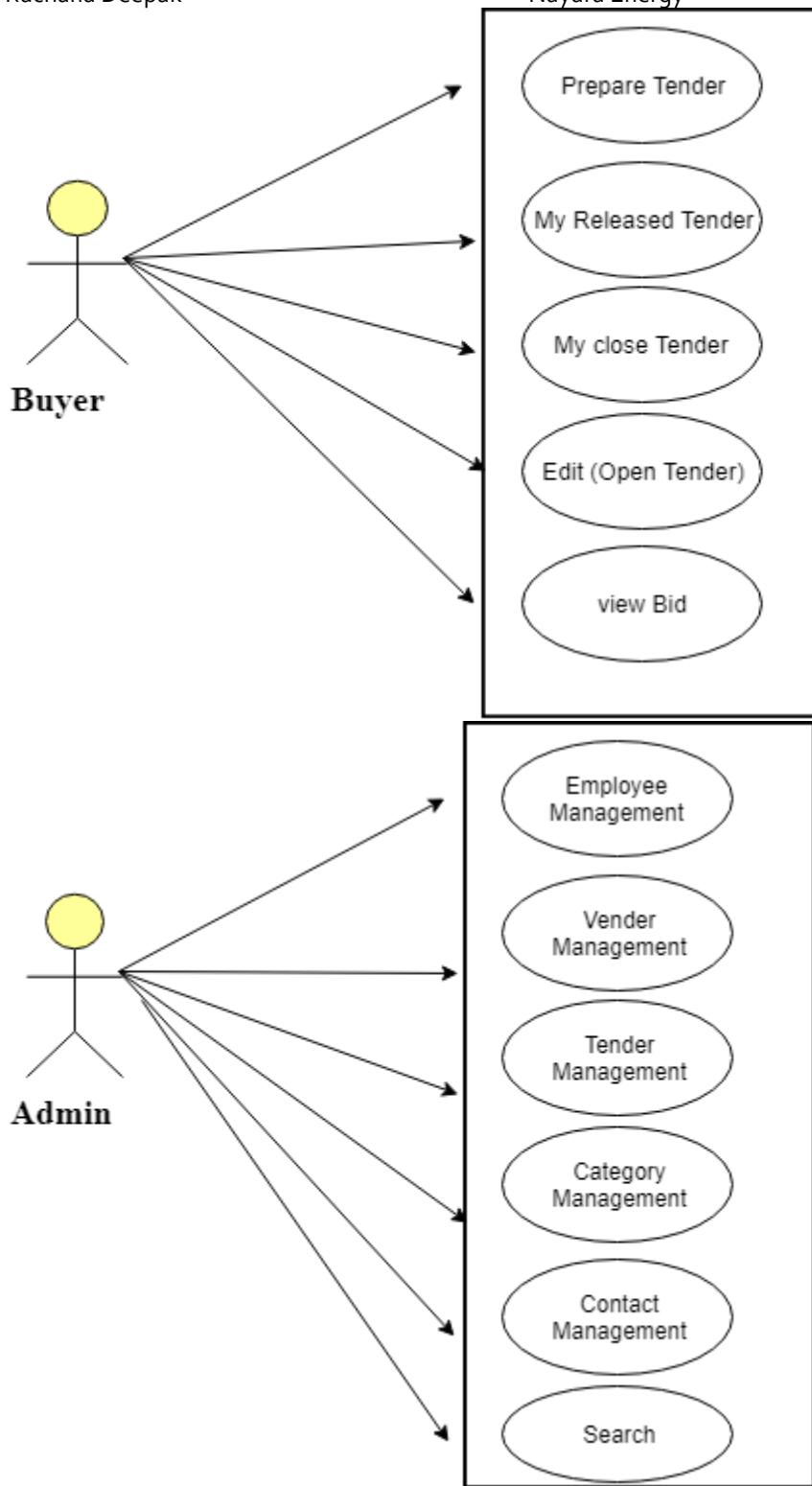
Bid

	Name	Data Type	Allow Nulls
	BidId	int	<input type="checkbox"/>
	TenderId	varchar(50)	<input checked="" type="checkbox"/>
	RegisterId	varchar(50)	<input checked="" type="checkbox"/>
	BidType	varchar(50)	<input checked="" type="checkbox"/>
	price	varchar(50)	<input checked="" type="checkbox"/>
	description	varchar(50)	<input checked="" type="checkbox"/>

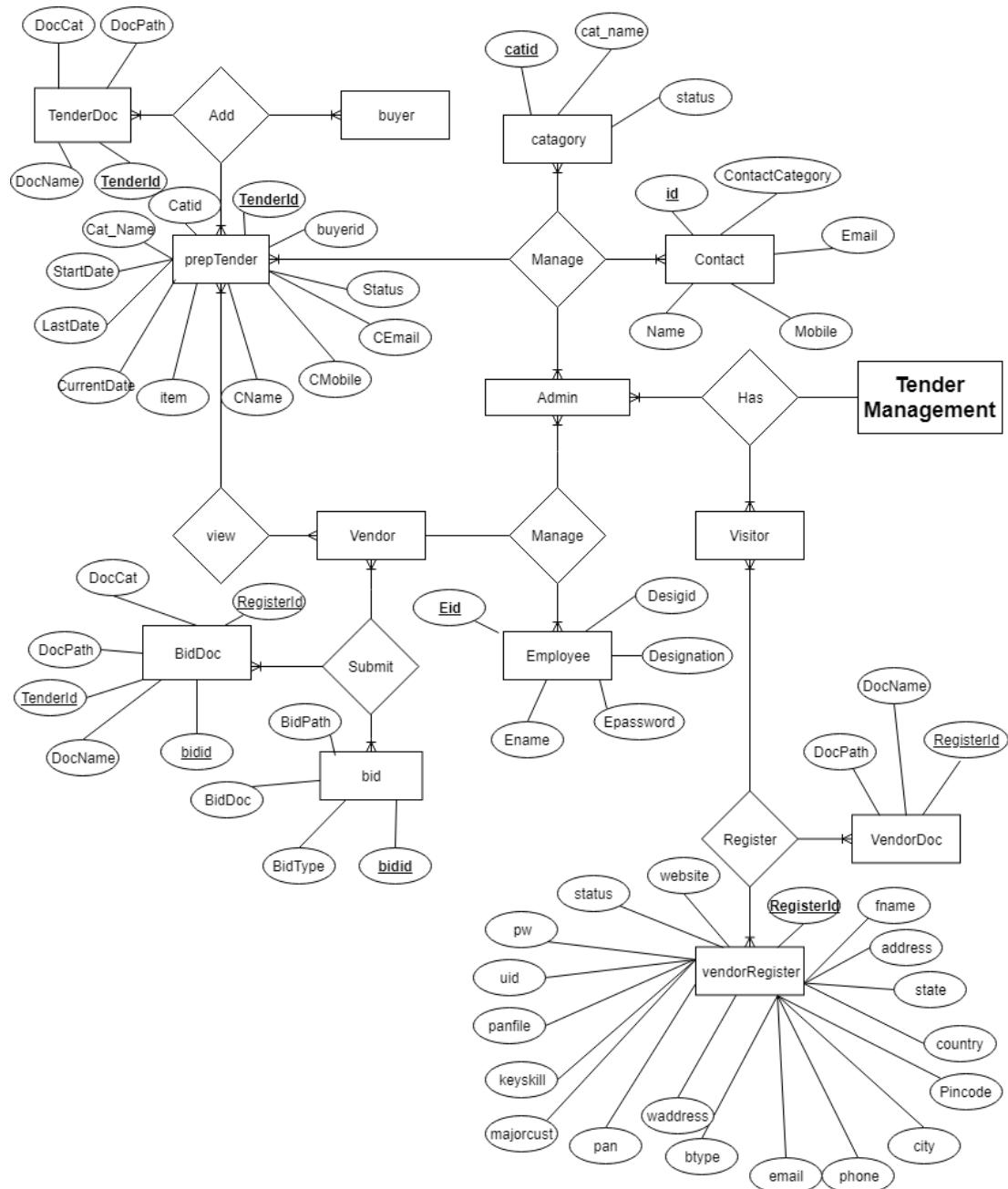
4.2 DATA MODELING

4.2.1 USE CASE DIAGRAM

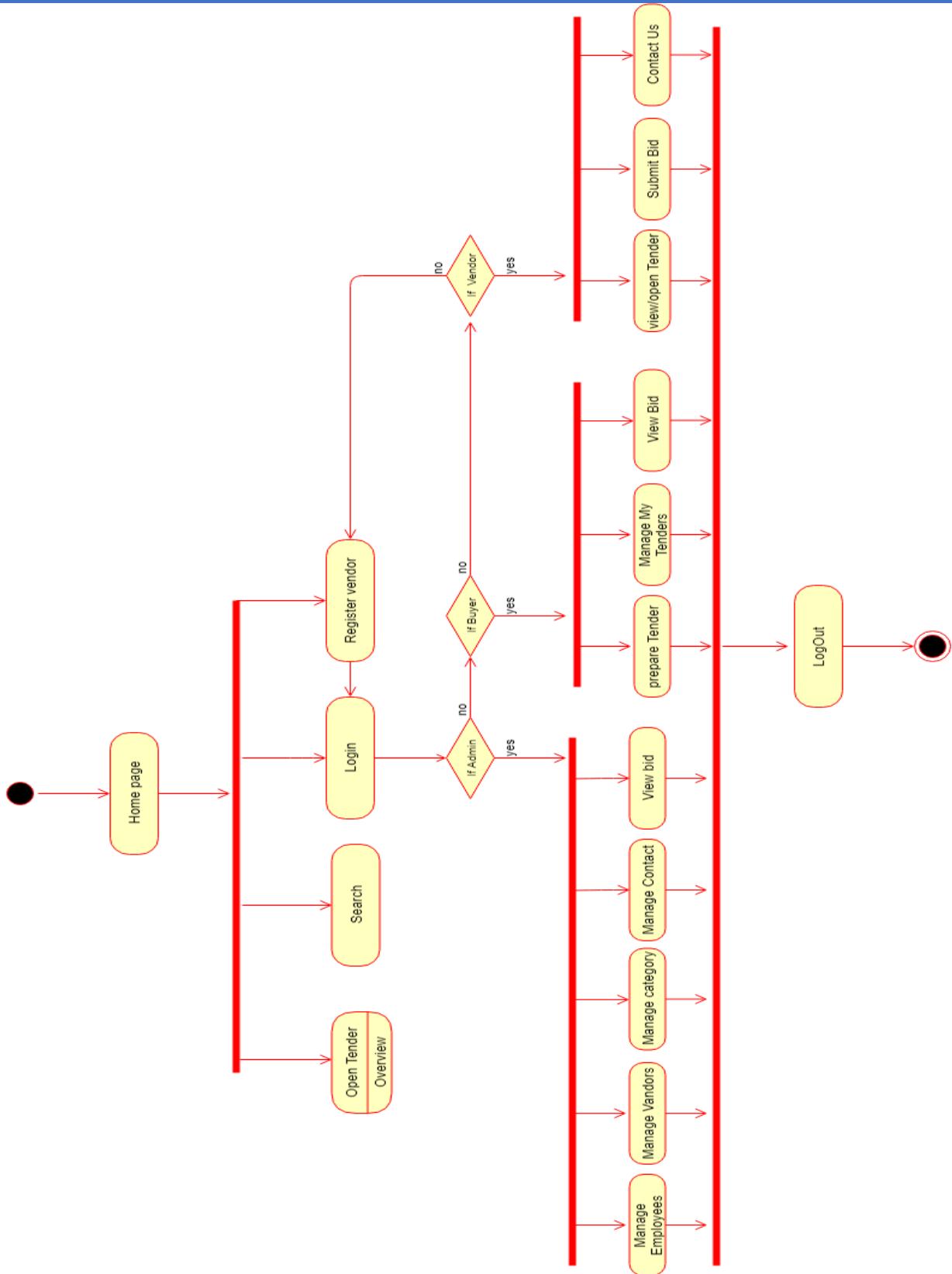




4.2.2 ER (Entity Relationship) DIAGRAM



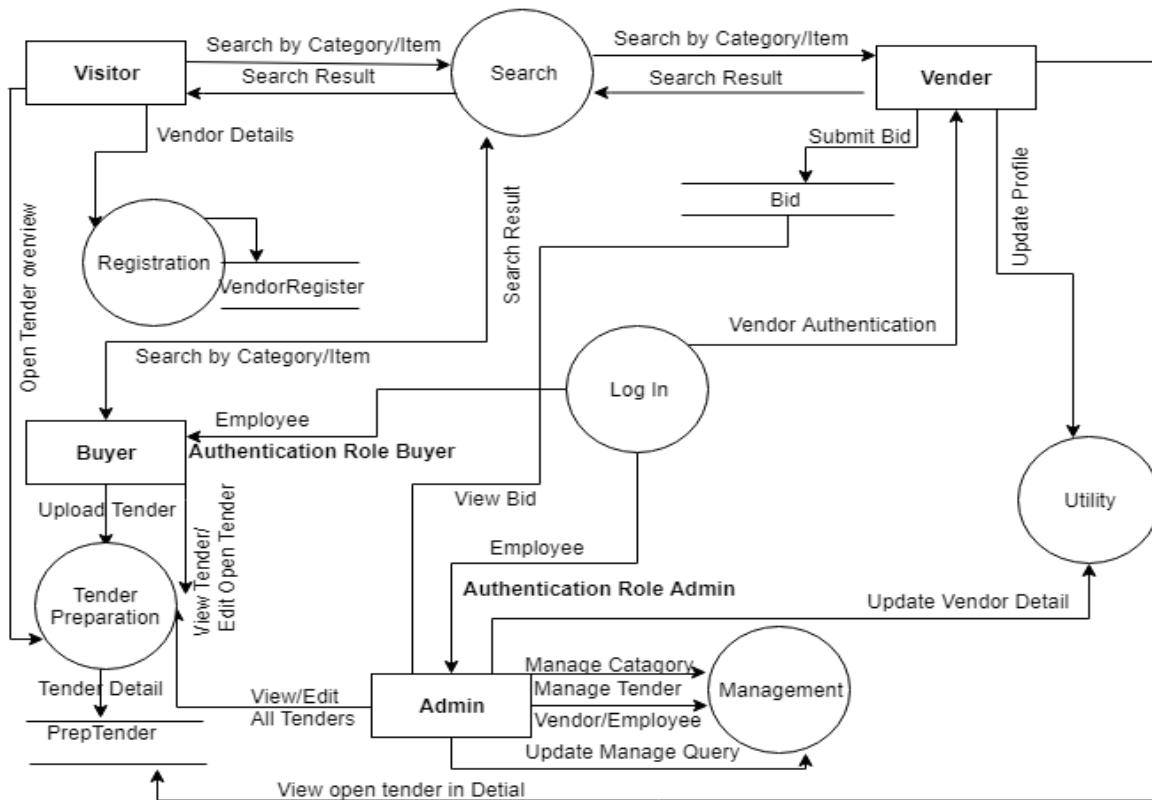
4.3 ACTIVITY DIAGRAM



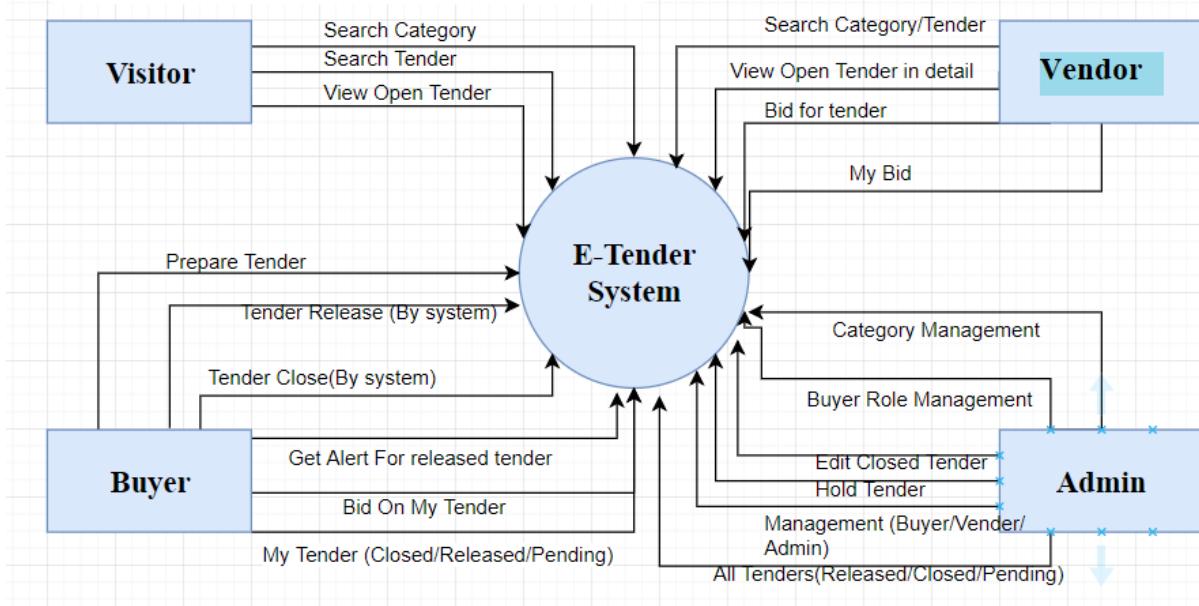
4.4 DATA FLOW DIAGRAM

4.4.1 CONTEXT LEVEL DIAGRAM (LEVEL 0)

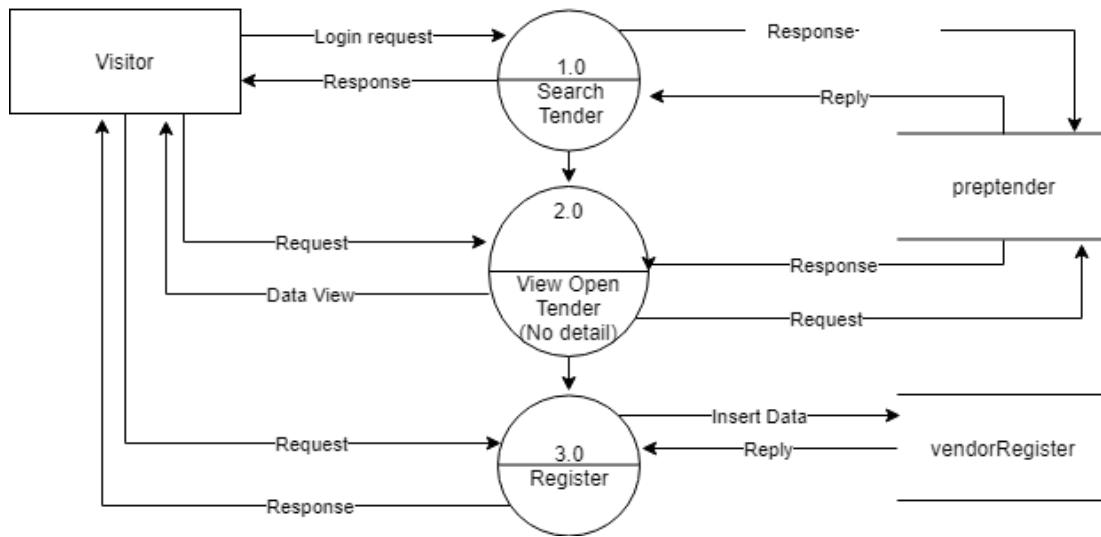
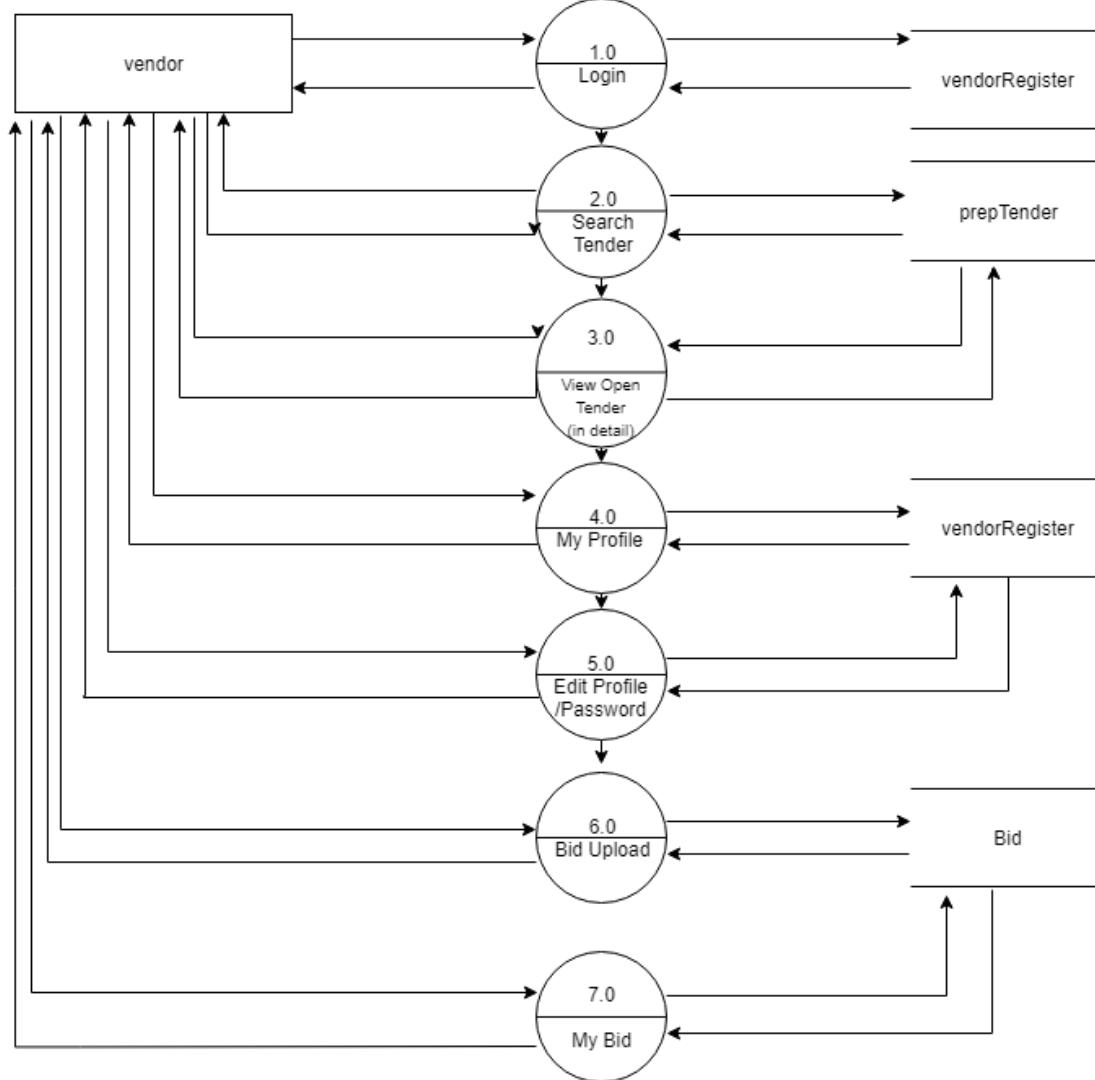
Context level DFD - Level 0

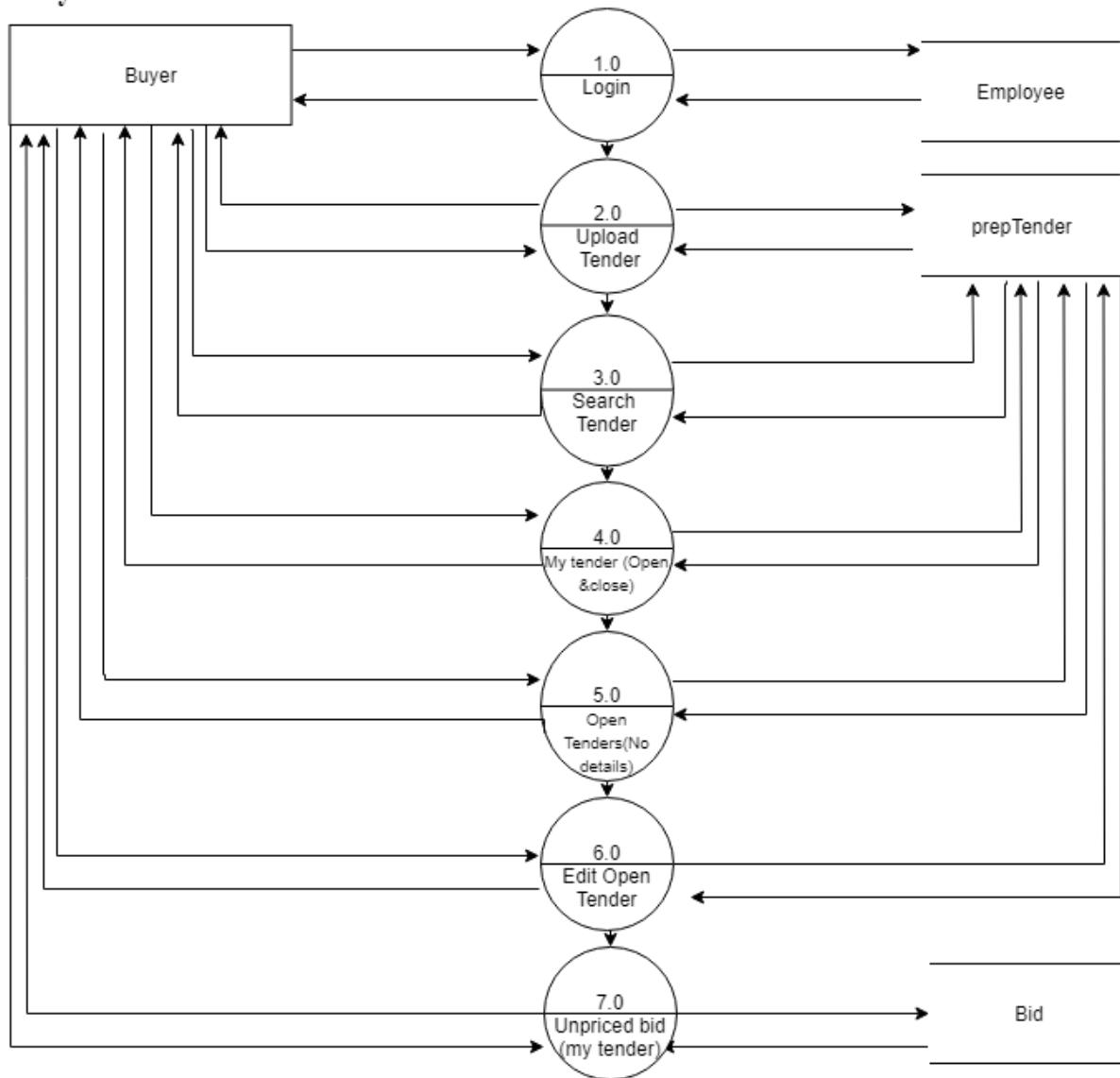


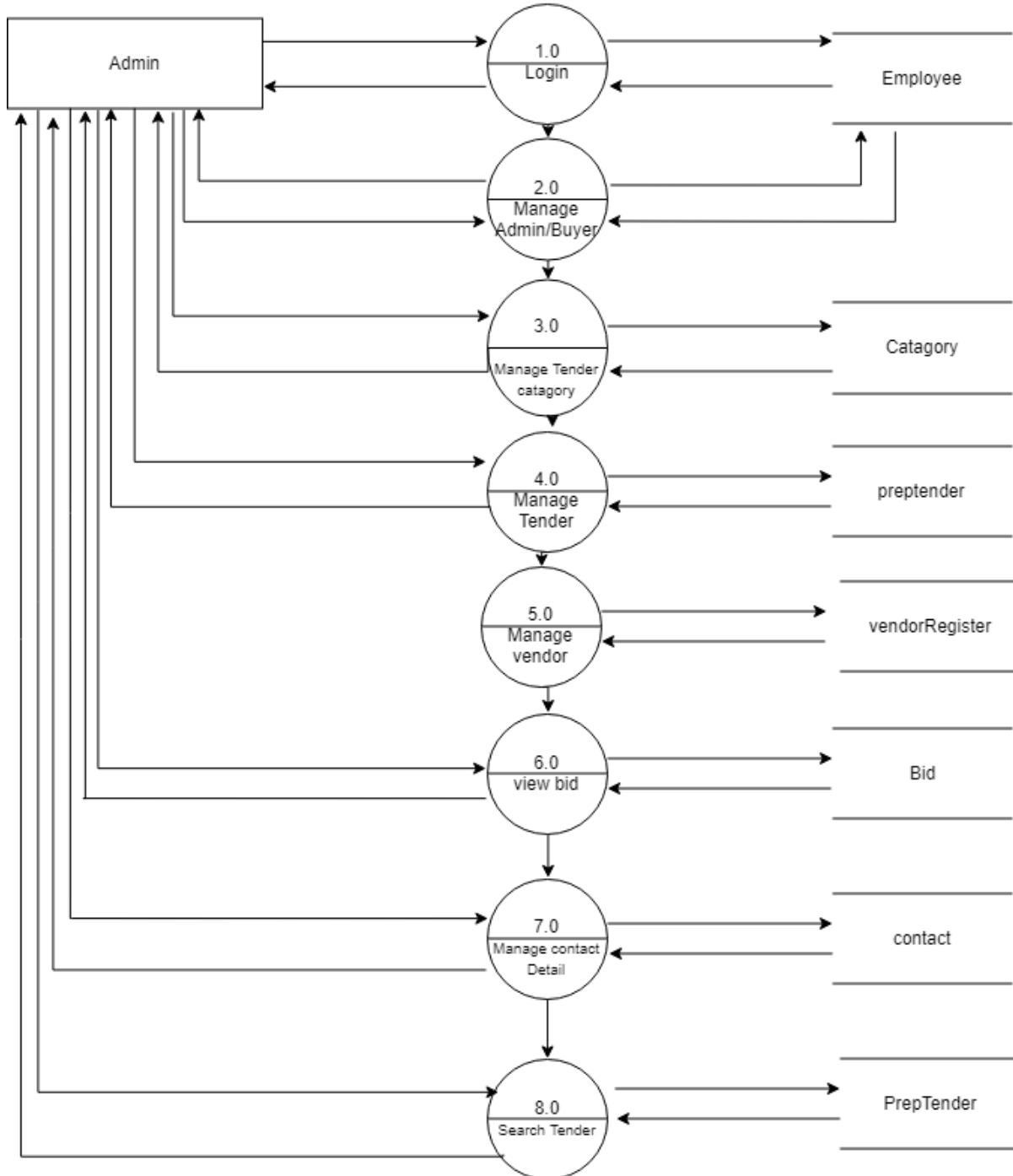
OverView Of Tender Management System

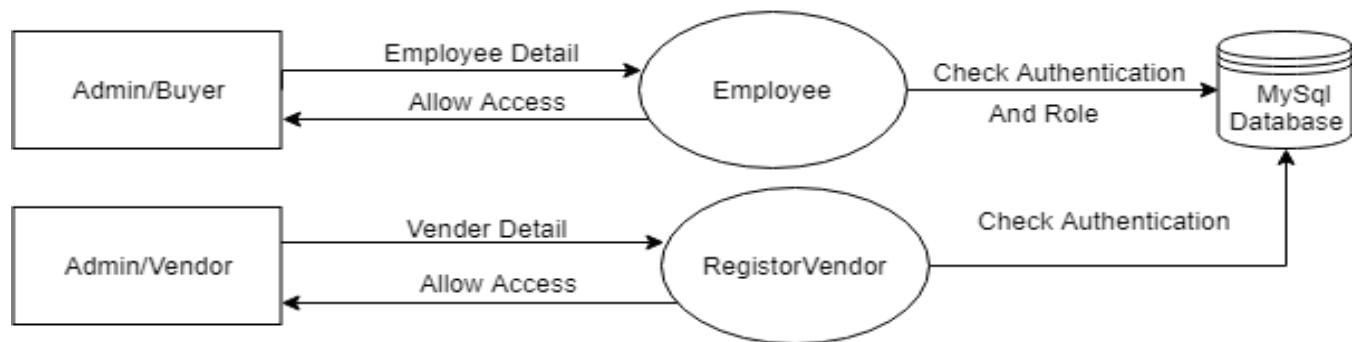
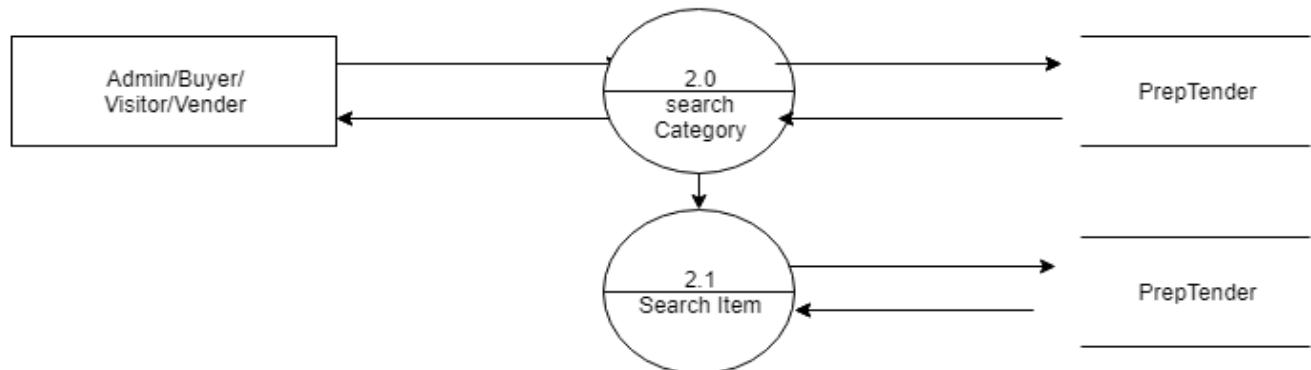
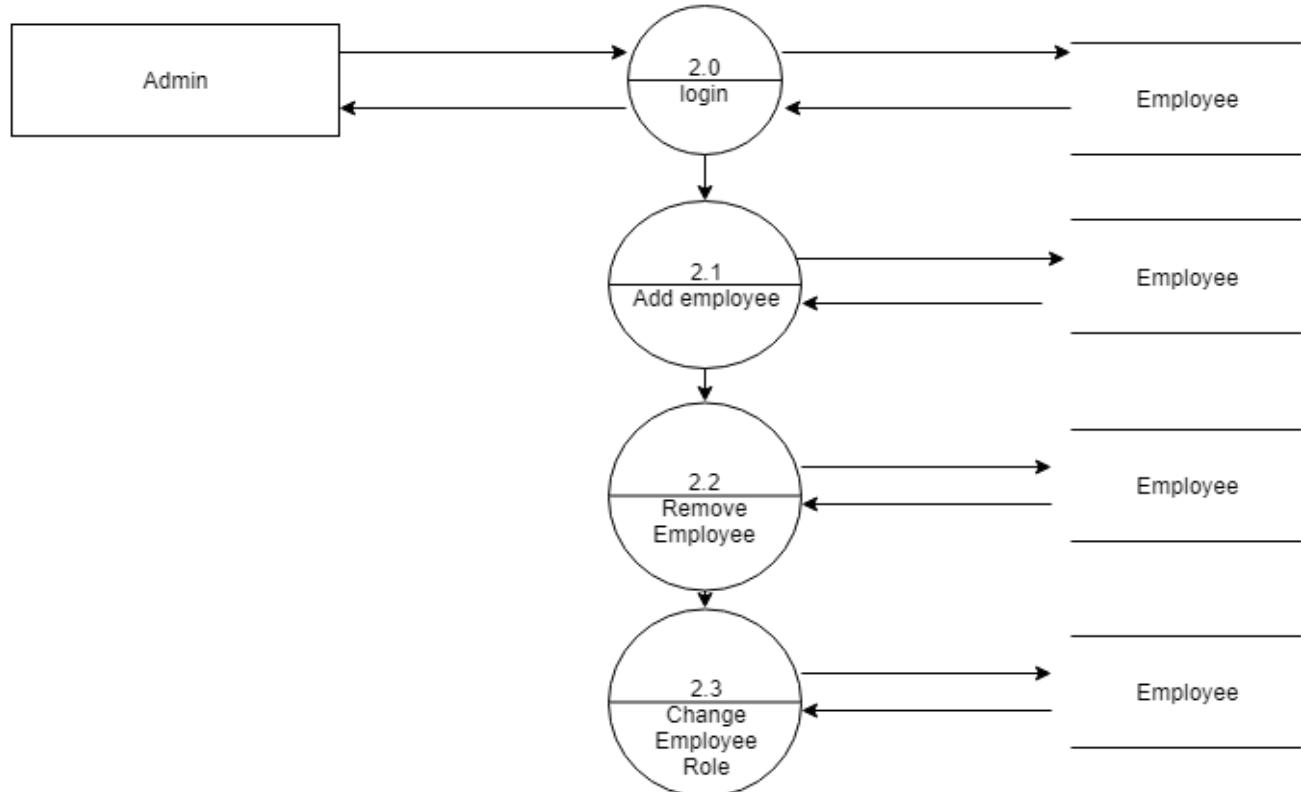


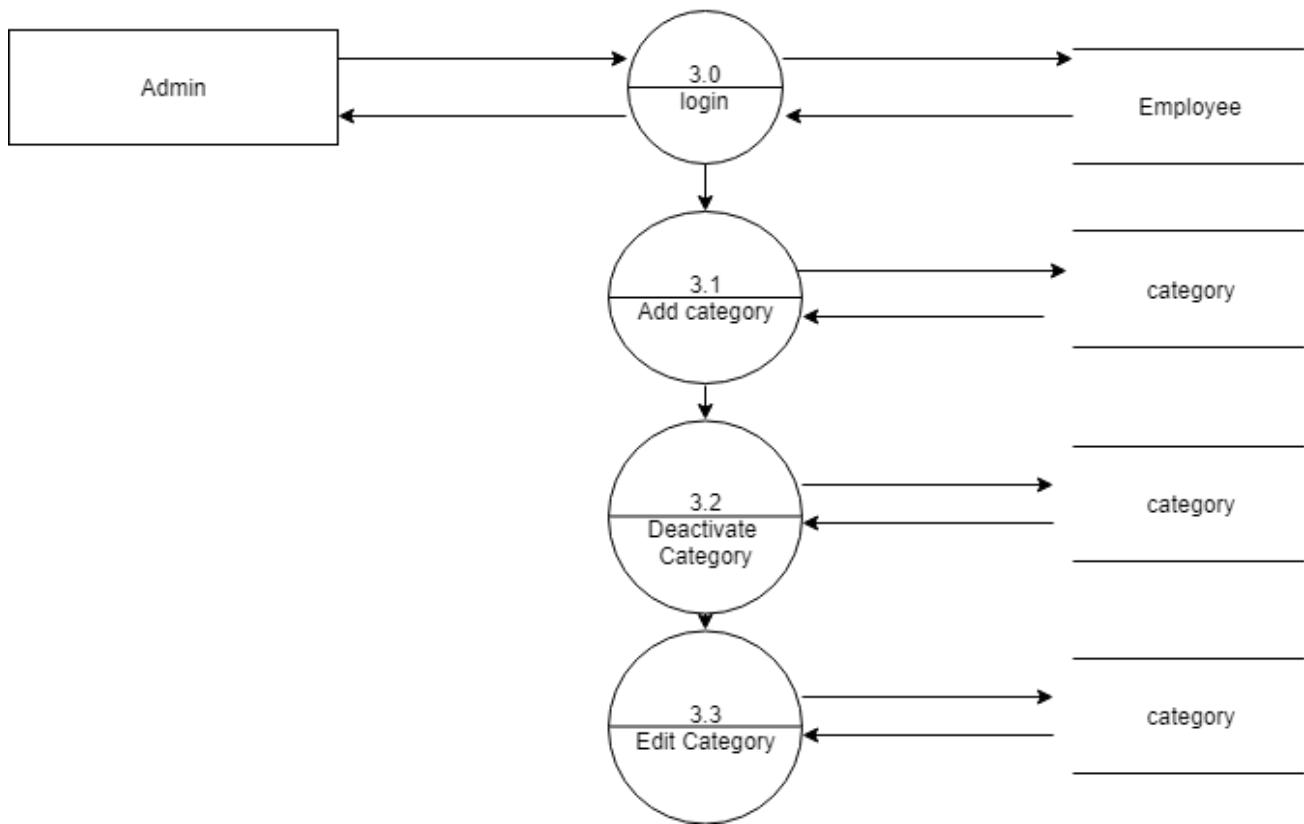
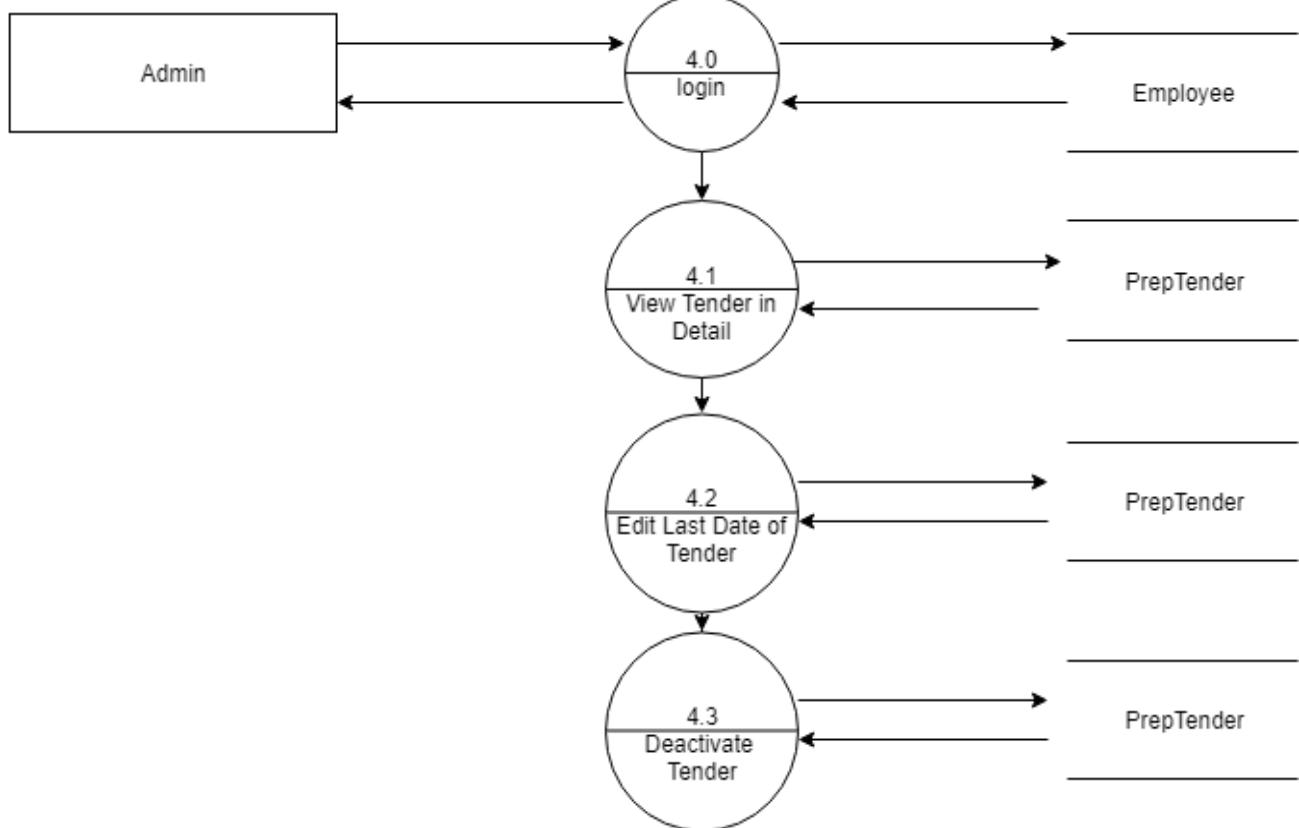
4.4.2 DFD – LEVEL 1

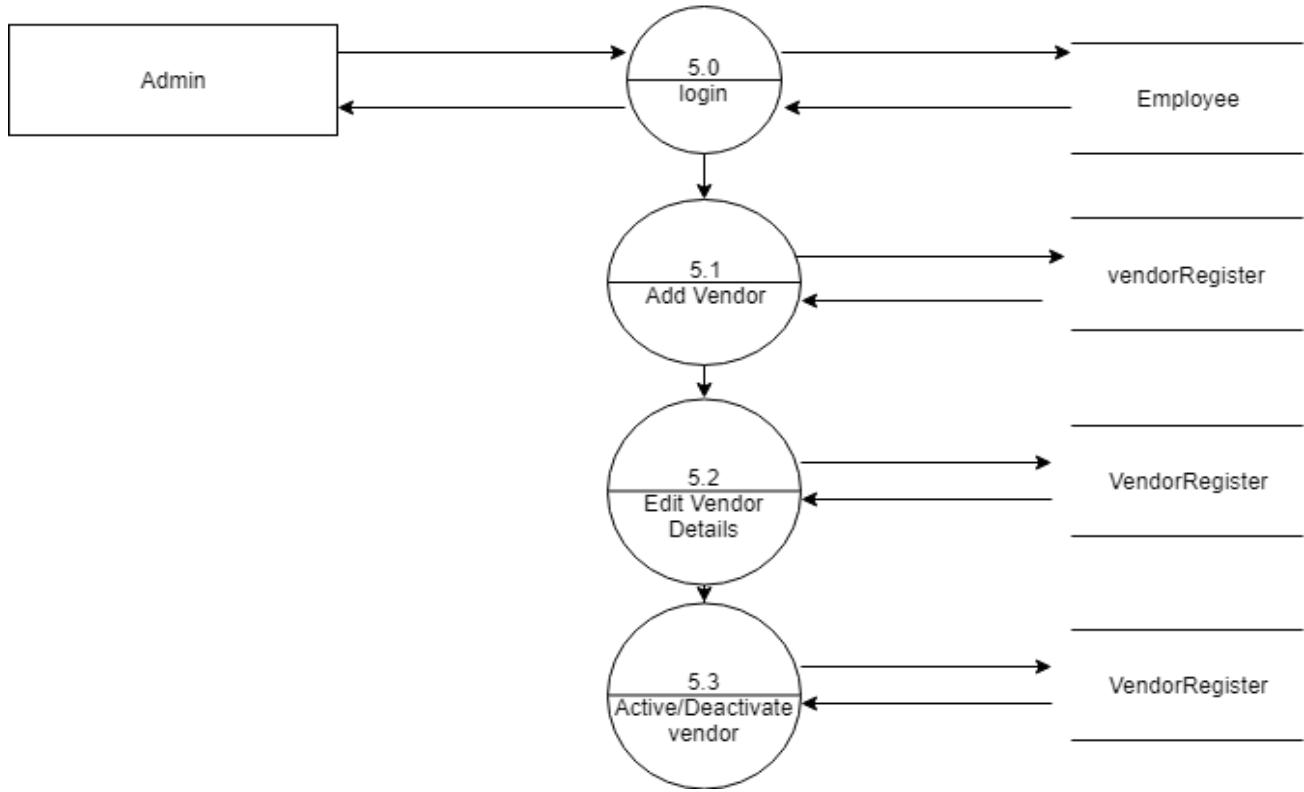
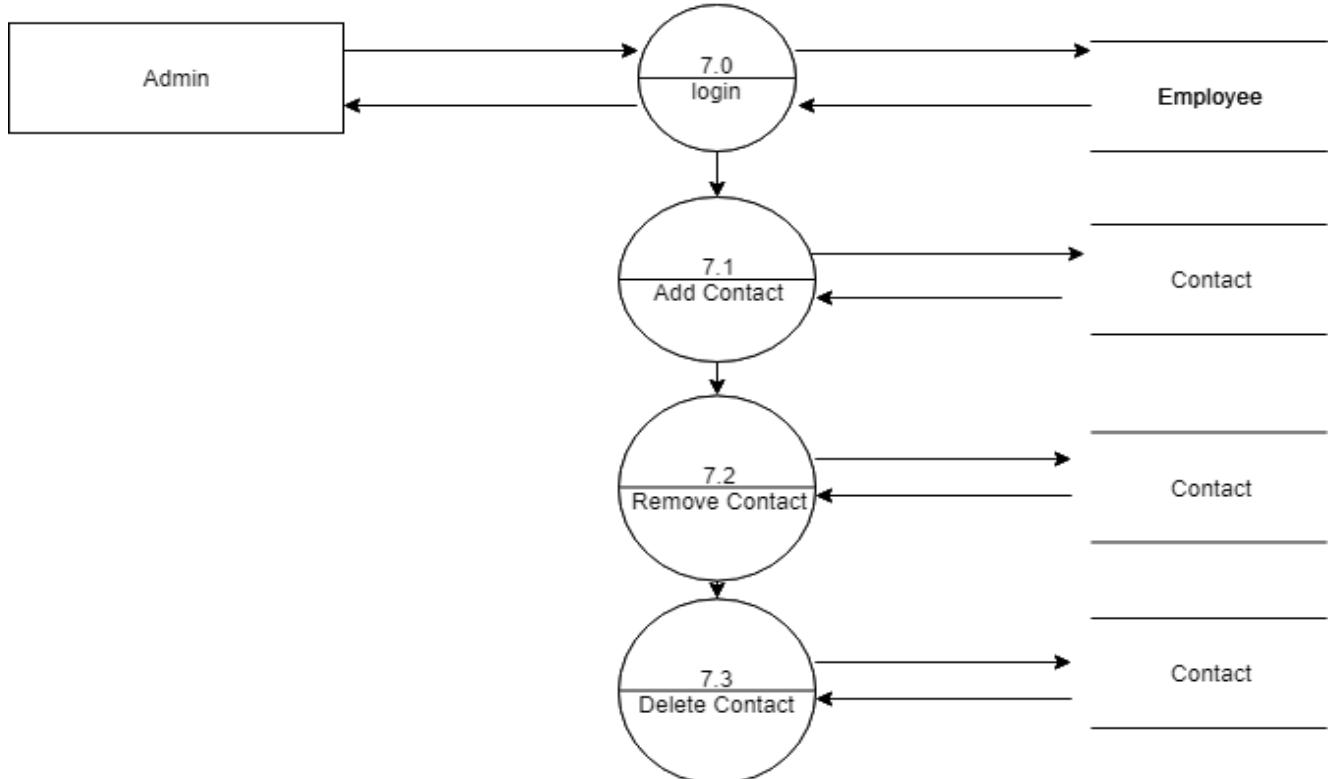
Visitor Side DFD - Level 1**Vendor Side DFD - Level 1**

Buyer Side DFD - Level 1

Admin Side DFD - Level 1

DFD - Level 2 (Login)**DFD - Level 2(Search)****Admin Side DFD - Level 2 (2.0)**

Admin Side DFD - Level 2(3.0)**Admin Side DFD - Level 2(4.0)**

Admin Side DFD - Level 2 (5.0)**Admin Side DFD - Level 2 (7.0)**

4.5 TESTING

Software testing is the process of evaluation a software item to detect differences between given input and expected output. Also, to assess the feature of A software item. Testing assesses the quality of the product. Software testing is a process that should be done during the development process. In other words, software testing is a verification and validation process. Generally, no system is perfect due to communication problems between user and developer, time constraints, or conceptual mistakes by developer.

The purpose of system testing is to check and find out these errors or faults as early as possible so losses due to it can be saved.

Testing is the fundamental process of software success. Testing is not a distinct phase in system development life cycle but should be applicable throughout all phases i.e. design development and maintenance phase.

Testing is used to show incorrectness and considered to success when an error is detected.

OBJECTIVES OF SOFTWARE TESTING

The software testing is usually performed for the following objectives: -

SOFTWARE QUALITY IMPROVEMENT: -

The computer and the software are mainly used for complex and critical applications and a bug or fault in software causes severe losses.

So, a great consideration is required for checking for quality of software.

VERIFICATION AND VALIDATION Verification means to test that we are building the product in right way. i.e. are we using the correct procedure for the development of software so that it can meet the user requirements.

SOFTWARE RELIABILITY ESTIMATION: -

The objective is to discover the residual designing errors before delivery to the customer.

The failure data during process are taken down in order to estimate the software reliability.

Testing is an extremely creative and challenging task.

Some important principles of software testing are as given: - All tests should be traceable to customer requirements.

Testing time and resources should be limited i.e. avoid redundant testing. It is impossible to test everything.

Use effective resources to test. Test should be planned long before testing begins i.e. after requirement phase.

Test for invalid and unexpected input conditions as well as valid conditions. Testing should begin in “in the small” and progress towards testing “in the large”.

STRATEGY FOR SOFTWARE TESTING

Different levels of testing are used in the test process; each level of testing aims to test different aspects of the system.

The first level is unit testing. In this testing, individual components are tested to ensure that they operate correctly.

It focuses on verification efforts. The second level is integration testing. It is a systematic technique for constructing the program structure.

In this testing, many tested modules are combined into the subsystem which is then tested.

The goal here is to see if the modules can be integrated properly. Third level is system testing.

System testing is actually a series of different tests whose primary purpose is to fully exercise computer-based system.

These tests fall outside scope of software process and are not conducted solely by software engineers.

WHITE BOX TESTING

White box testing is the detailed investigation of internal logic and structure of the code. White box testing is also called glass testing or open box testing. In order to perform white box testing on an application, the tester needs to possess knowledge of the internal working of the code.

White box testing sometimes-called glass box testing is a test case design method that uses the control structure of the procedural design to derive test cases.

Using white box testing Methods, the software engineer can derive test cases that:

- 1) Guarantee that all independent paths within a module have been exercise at least once.
- 2) Exercise all logical decisions on their true and false sides.
- 3) Execute all loops at their boundaries and within their operational bounds.
- 4) Exercise internal data structure to assure their validity.

BLACK BOX TESTING

The technique of testing without having any knowledge of the interior workings of the application is Black Box testing. The tester is oblivious to the system architecture and does not have access to the source code. Typically, when performing a black box test, a tester will interact with the system's user interface by providing inputs and examining outputs without knowing how and where the inputs are worked upon.

Black box testing is not an alternative to white box techniques.

Rather it is a complimentary approach that is likely to uncover a different class of errors than white box method. Black box testing attempts to find errors in their following categories:

- 1) Incorrect on missing functions.
- 2) Interface errors.
- 3) Performance errors.
- 4) Errors in data structures or external data-based access.
- 5) Initialization and termination Errors.

TEST CASE

A web-based system needs to be checked completely from end-to-end before it goes live for end users. The UI design and functionality are the captains of website testing.

→ Web testing checklists

- 1) Functionality Testing
- 2) Usability testing
- 3) Interface testing
- 4) Compatibility testing
- 5) Performance testing
- 6) Security testing

→ First, check all the validations on each field.

→ Check for default values of the fields.

→ Wrong inputs in the forms to the fields in the forms.

→ Options to create forms if any, form delete, view or modify the forms.

→ Like, it needs to check if all the function of all web pages is working properly or not. Here First we checked if vendor can easily register with avoiding duplicate registration with reference to PAN number.

→ As visitor, user must not able to see tender details.

→ After successfully login, vendor should be able to submit bid.

→ This all data should be automatically visible to admin.

→ This all can be count in database and usability testing.

→ the server-side interface should be tested. This is done by verifying that communication is done properly. Compatibility of the server with software, hardware, network, and the database should be tested.

→ Content should be logical and easy to understand. Check for spelling errors. Usage of dark colors annoys the users and should not be used in the site theme.

→ Compatibility of your website is a very important testing aspect. See which compatibility test to be executed:

Browser compatibility, Operating system compatibility, Mobile browsing

→ The web application should sustain to heavy load. Web performance testing should include.

→ It should be tested on various networks like Dial-Up, ISDN etc.

→ Test by pasting internal URL directly into the browser address bar without login. Internal pages should not open.

→ Test the CAPTCHA for automating script logins.

→ If one is logged in using username and password and browsing internal pages then try changing URL options directly. I.e. If you are checking some publisher site statistics with publisher site ID= 123. Try directly changing the URL site ID parameter to different site ID which is not related to the logged in user.

→ Access should be denied for this user to view others stats.

→ Try some invalid inputs in input fields like login username, password, input text boxes etc. Check the system's reaction to all invalid inputs.

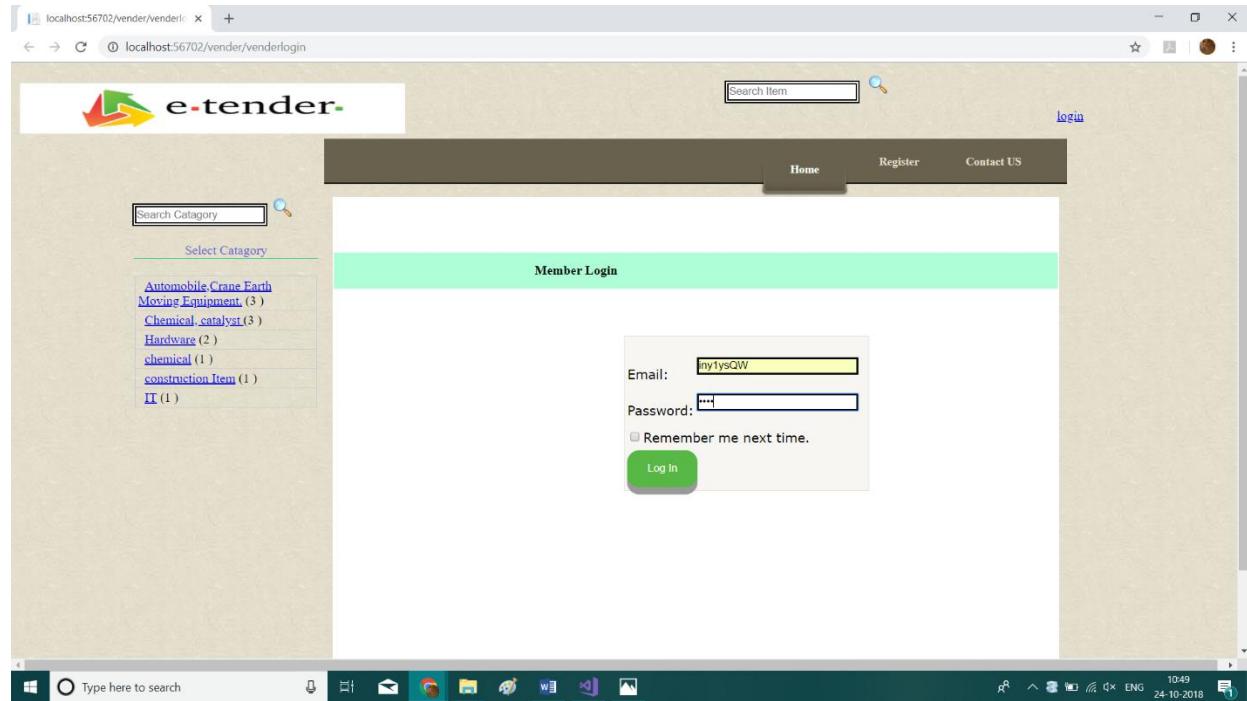
→ Check email should not land in spam as junk mail.

→ Other designing testing should also be performed like favicon, extra spacing, copyright information, field alignment, navigation, menu should be correct.

5 SYSTEM SHREENSHOT

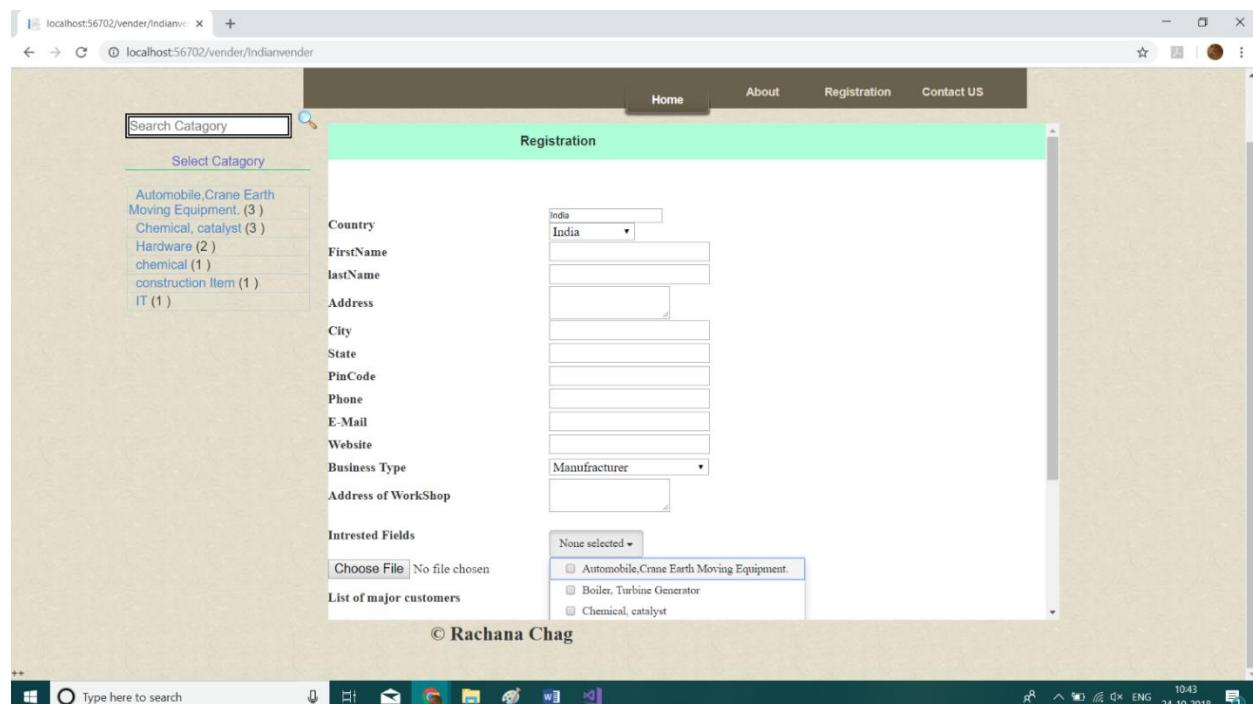
1) SCREENSHOTS OF THE USER INTERFACE FOR ALL USERS

1. LOGIN PAGE FOR ADMIN, BUYER AND VENDOR



This is general login form for Vendor, Admin and Buyer.

2 REGISTRATION PAGE FOR VENDOR



With this registration page, only vendor can register using their PAN Number.

3.LANDING PAGE (HOME PAGE): BUYER, ADMIN, VENDOR, VISITOR

Welcome

The procurement procedure is the process that will be followed by the government to assign the contract, and it will generally be referred to in this PPP Guide as the 'tender process'.

As in any public procurement, the usual process should be a competitive process, in other words, there will be a tender to gather competitive bids to select an awardee among a number of candidates. The tender process should follow a published set of rules or guidelines described in the procurement framework (either in the form of policies or laws). Guidelines and standard procedures are important to smooth the process and present a consolidated approach to the market.

Recent Tenders

RegisterId	category name	Start Date	Last Date	Item
9	Chemical, catalyst	23-Oct-2018	25-Oct-2018	1
10	chemical	23-Oct-2018	31-Oct-2018	
11	Chemical, catalyst	20-Oct-2018	09-Nov-2018	m
12	Boiler, Turbine Gene	14-Oct-2018	08-Nov-2018	MN
13	Chemical, catalyst	12-Oct-2018	31-Oct-2018	
14	Boiler, Turbine Gene	12-Oct-2018	02-Nov-2018	m1
15	IT	11-Oct-2018	27-Oct-2018	m
16	Hardware	11-Oct-2018	31-Oct-2018	m
6	a	08-Oct-2018	02-Nov-2018	xyz
3	Hardware	05-Oct-2018	27-Oct-2018	sre

This is main landing page for all three users buyer, vendor and admin. which shows open tender overview.

4 ABOUT ME (VENDOR, ADMIN)

About Me

Name	Rachana
Email Id	Rachanachag@gmail.com
Address	Jamnagar
Country	India
state	Gujarat
pincode	361008
country	
Phone	
Email	
website	
Business Type	Manufacturer
WareHouse Address	
Pan Number	
Major Customer	
Key Skill	

Edit Detail

Edit Password

© Rachana Chag

This will show details of one's profile as per log-in Id. Admin can also view all vendee's details as per RegisterId.

5 EDIT DETAILS (VENDOR, ADMIN)

Search Catagory

Select Catagory

- Automobile, Crane Earth Moving Equipment. (3)
- Chemical, catalyst (3)
- Hardware (2)
- chemical (1)
- construction Item (1)
- IT (1)

Country: Out Of India

FirstName:

lastName:

Address:

City:

State:

PinCode:

Phone:

E-Mail:

Website:

Business Type: Manufacturer

Address of WorkShop:

Interested Fields

- Automobile, Crane Earth Moving Equipment.
- Boiler, Turbine Generator
- Chemical, catalyst
- Hardware

With this page, Log-in Vendor can change their details and admin can also change vender's details as per RegisterId.

6 CHANGE PASSWORD (VENDOR/ADMIN/BUYER)

Name: Rachana

Enter Current Password:

Enter New Password:

Reenter New Password:

Change

With this page All three users can change their password. But they have to enter current password correct.

7 SEARCH ITEMS (VENDOR/ADMIN/BUYER/VISITOR)

TenderId	catagory name	Start Date	Last Date	Item
4	Automobile, Crane	05-Oct-2018	02-Nov-2018	xyz
5	construction Item	10-Nov-2018	09-Nov-2018	xyz
6	a	08-Oct-2018	02-Nov-2018	xyz
8	Boiler, Turbine Gene	28-Sep-2018	30-Oct-2018	xyz

All three users can search for item, if the tender is in open state then it will display as above.

8 CATEGORY VIEW (VENDOR/ADMIN/BUYER/VISITOR)

catagory name	Start Date	Last Date	Item	TenderId
Chemical, catalyst	23-Oct-2018	25-Oct-2018	1	9
Chemical, catalyst	23-Oct-2018	25-Oct-2018	1	9
Chemical, catalyst	12-Oct-2018	31-Oct-2018	m	13
Chemical, catalyst	20-Oct-2018	09-Nov-2018	m	14

All three users can search for category and can get open tenders overview as per selected category.

9 CONTACT DETAILS (VISITOR/VENDOR)

The screenshot shows a web browser window for the URL localhost:56702/Vender/Contact. The page title is "contact details". The header includes a logo, search bars for "Search Item" and "Search Catagory", and a welcome message "welcome Rachana [LogOut](#)". The menu bar has links for "Home", "About", "Bid", and "Contact US". The main content area is divided into sections: "Contact for technical query" and "Contact for Tender related query". Under "Contact for technical query", it lists a contact person named Ram shahh with mobile number 6565656565 and email s@gmail.com. Under "Contact for Tender related query", it lists a contact person named Darshita kapoor with mobile number 9853457895 and email darshita@gmail.com.

This will show contact details for technical query and tender related query.

4 VENDER PAGES

10 TENDER DETAILS(VENDOR)

Tender Detail

TenderId	3
Category	Hardware
StartDate	05 Oct 2018
LastDate	27 Oct 2018
Required Item	srte
Contact Person	asa
Contact Number	989
Email	as
Documents	Download

This will show details of open tender to vendors and they can also submit bid.

11 SUBMIT BID(VENDOR)

Bid Now

DELETE	FileName	DefaultSeqName
Delete	PREMIER CERAMIC PVT LTD.pptx	GST certificate

After clicking on submit bid, vendor will be redirected here. They can submit priced and unpriced bid until tender is closed.

12 My BID(VENDOR)

The screenshot shows the 'My Bid' section of the e-tender application. The table data is as follows:

Document	bidId	RegisterId	BidType	Price	description
Download	1	5	Priced Bid	asa	a

Category Tree (Sidebar):

- Automobile, Crane Earth Moving Equipment (3)
- Chemical, catalyst (3)
- Hardware (2)
 - [chemical](#) (1)
 - [construction Item](#) (1)
- IT (1)

This will show submitted bid as per log-in Id.

13 FORGOT PASSWORD (VENDOR)

The screenshot shows the 'Forgot Your Password ? Enter Your PAN Number here' page. The form contains a single input field labeled 'PAN number :'. Below the input field is a 'Send' button.

After Entering pan number user will get temporary password in registered email which they have to change.

5 ADMIN'S PAGES

14 VENDOR LIST (ADMIN)

RegisterId	country	email	Pan Number	uid
1	India			zYJEDg26
2	India	s@gmail.comq	7777777777	mo4Kou7L
4	India	f	7777777777	0AukfP1Ml
5				iny1ysQW
6	India	f	7777777777	0A4aG0AtjL

[Click On RegisterId to know more](#)

Admin can view all the vendor list, by clicking on RegisterId they can get detailed information of particular vendor.

15 DETAIL VIEW OF VENDOR (ADMIN)

RegisterId	4
First Name	Rachana
Last Name	R
Address	m
City	,
State	d
Pincode	d
Country	India
Phone	d
Email	f
Website	f
Business Type	Manufacturer
WareHouse Address	
Pan Card Number	7777777777
Major Customer	
KeySkill	
User Id	0AukfP1Ml
Edit	
Documents	Download

want to Deactive?

Vendor is Active

After clicking on RegisterId, Admin will be redirected here. Where he can edit vendor details as well as deactivate vendor.

16 PENDING VENDOR STATUS LIST (ADMIN)

The screenshot shows a Windows desktop environment with a web browser window open to the URL localhost:56702/Admin/PendingVendor. The browser title bar indicates the page is titled "localhost:56702/Admin/PendingVendor". The main content area displays the "e-tender" logo and navigation menu. The menu includes links for Home, View Vendor, View Tender, View Category, Hold Tenders, View Employee, and Contact Detail. A search bar labeled "Search Item" is present. On the right side of the header, there is a welcome message "welcome A" and a "LogOut" link. Below the menu, a sidebar titled "Select Catagory" lists various vendor categories with their counts: Automobile, Crane, Earth Moving Equipment (2), Chemical, catalyst (3), Hardware (2), chemical (1), construction Item (1), and IT (1). The main content area is titled "Pending Vendor's List" and contains a table with the following data:

RegisterId	country	email	Pan Number	uid
6	India	f	7777777777	0A4aG0AtjL

The status bar at the bottom of the screen shows system information including the date (25-10-2018) and time (14:22).

This will show vendor list whose details should be seen and verify. Admin need to click on ID to verify other details.

17 DEACTIVATED VENDOR LIST (ADMIN)

The screenshot shows a Windows desktop environment with a web browser window open to the URL localhost:56702/Admin/HoldVendor. The browser title bar indicates the page is titled "localhost:56702/Admin/HoldVendor". The main content area displays the "e-tender" logo and navigation menu. The menu includes links for Home, View Vendor, View Tender, View Category, Hold Tenders, View Employee, and Contact Detail. A search bar labeled "Search Item" is present. On the right side of the header, there is a welcome message "welcome A" and a "LogOut" link. Below the menu, a sidebar titled "Select Catagory" lists various vendor categories with their counts: Automobile, Crane, Earth Moving Equipment (2), Chemical, catalyst (3), Hardware (2), chemical (1), construction Item (1), and IT (1). The main content area is titled "Temporary Deactive Vendor's List" and contains a table with the following data:

RegisterId	country	email	Pan Number	uid
2	India	s@gmail.comq	7777777777	mo4Kou7L

The status bar at the bottom of the screen shows system information including the date (24-10-2018) and time (11:56).

This Will show deactivated vendor due to some issue.

18 TENDER LIST (ADMIN)

RegisterId	category name	Start Date	Last Date	Upload Date	Item
1	Boiler, Turbine Gene	05-Oct-2018	22-Oct-2018	04-Oct-2018 09:10:30	srt
2	Automobile, Crane	05-Oct-2018	22-Oct-2018	04-Oct-2018 09:10:55	srt
3	Hardware	05-Oct-2018	27-Oct-2018	04-Oct-2018 09:10:04	srt
4	Automobile, Crane	05-Oct-2018	02-Nov-2018	04-Oct-2018 17:10:58	xyz
5	construction Item	10-Nov-2018	09-Nov-2018	08-Oct-2018 15:10:27	xyz
6	a	08-Oct-2018	02-Nov-2018	08-Oct-2018 16:10:34	xyz
7	Automobile, Crane Ea	08-Nov-2018	10-Nov-2018	09-Oct-2018 10:10:32	tiles
8	Boiler, Turbine Gene	28-Sep-2018	30-Oct-2018	09-Oct-2018 10:10:39	xyz
9	Chemical, catalyst	23-Oct-2018	25-Oct-2018	11-Oct-2018 12:10:51	1
10	chemical	23-Oct-2018	31-Oct-2018	11-Oct-2018 13:10:55	

This will show all tender list to admin. By clicking on Id one can get more information.

19 CLOSE TENDER LIST (ADMIN)

TenderId	category name	Start Date	Last Date	Upload Date	Item
1	Boiler, Turbine Gene	05-Oct-2018	22-Oct-2018	04-Oct-2018 09:10:30	srt
2	Automobile, Crane	05-Oct-2018	22-Oct-2018	04-Oct-2018 09:10:55	srt

This will show tender list which is closed for bidding. This will only show to admin.

20 NOT RELEASED TENDER (ADMIN)

This will show pre-uploaded tender list, which is yet to be released.

21 TENDER DETAIL (ADMIN)

After clicking on TenderId. Admin will be redirected here. Which will show detailed information of tender. Admin can edit date and view bid for tender from here.

22 BID VIEW (ADMIN, BUYER)

Bid According to Tender

Document	bidId	RegisterId	BidType	Price	description
Download	1	5	Priced Bid	asa	a

Admin will be redirected here after clicking on view bid. This will show uploaded bid for current tender.

23 HOLD TENDER (ADMIN)

Hold Tenders

TenderId	category name	Start Date	Last Date	Upload Date	Item
2	construction Item	27/Oct/2018	10/Nov/2018	27/Oct/2018 12:10:13	tiles

This will show Deactivated already released tenders.

24 MANAGE CONTACT DETAILS(ADMIN)

Add contact detail

Contact Catagory	Email Id	Mobile	Name	Edit	Delete
Contact for technical query	s@gmail.com	6565656565	Ram shah	Edit	Delete
Contact for Tender related query	darshita@gmail.com	9853457895	Darshita kapoor	Edit	Delete

Admin can Manage contact details for contact us page from here. They can add/edit/delete contact detail.

25 MANAGE CATEGORY (ADMIN)

Add Catagory

Category	Edit	Delete
Automobile, Crane Earth Moving Equipment.	Edit	Delete
Chemical, catalyst	Edit	Delete
Hardware	Edit	Delete
chemical	Edit	Delete
construction Item	Edit	Delete
IT	Edit	Delete

Inactive Categories

Admin can Manage category which is bounded in category section. They can edit/insert/deactivate category.

26 MANAGE EMPLOYEE (ADMIN)

The screenshot shows the 'Employee List' section of the e-tender Admin interface. On the left, there's a sidebar with a search bar and a 'Select Catagory' dropdown menu containing links like 'Automobile', 'Crane', 'Earth Moving Equipment', etc. The main area has a header 'Employee List' and a table with columns: EID, EMPLOYEE NAME, DESIGNATION, and two buttons 'Edit' and 'Delete'. The table contains five rows of data:

EID	EMPLOYEE NAME	DESIGNATION	Edit	Delete
1	A	Admin	Edit	Delete
2	jayna	Admin	Edit	Delete
3	CJ	Admin	Edit	Delete
4	B	Buyer	Edit	Delete
5	Shyam	Buyer	Edit	Delete

At the bottom of the table, there are 'Insert' and 'Cancel' buttons.

Admin can manage employee role (Admin/Buyer) from here. They can add new employee too.

27 EDIT LAST DATE OF TENDER (ADMIN, BUYER)

The screenshot shows the 'Tender Detail' page with a modal dialog titled 'Edit Last Date'. The dialog has a single input field and a 'Submit' button. In the background, there's a list of tenders with their details like 'Tender ID', 'Category', and 'Status'. One tender is highlighted with a red border and the status 'Active'.

Admin and buyer can edit last date of tender. Whereas admin can edit last date of closed tender while buyer can edit last date of released tender as per log-in buyer.

3 BUYER'S PAGES

28 TENDER PREPARATION (BUYER)

Search Category

Select Catagory

- [Automobile, Crane Earth Moving Equipment \(3\)](#)
- [Chemical, catalyst \(2\)](#)
- [Hardware \(2\)](#)
- [chemical \(0\)](#)
- [construction Item \(1\)](#)
- [IT \(1\)](#)

Prepare Tender

Select Catagory	Automobile, Crane Earth Moving Equipment.
Start Date	22/Oct/2018
Last date	24/Oct/2018
Required Item	tiles

Contact Person Detail

Name	Ram nayak
Mobile	9856234756
Email ID	r@gmail.com

Information Choose Files No file chosen

Select Document Type

Delete	3.Certificate.docx	Guideline
Delete	2Acknowledgement.docx	Information

© Rachana Chag

Only Buyer can prepare tender. They can also prepare tender in advance.

29 MY TENDERS (BUYER)

Search Item

welcome B [LogOut](#)

My Tenders

RegisterId	category name	Start Date	Last Date	Upload Date	Item
6	a	08-Oct-2018	02-Nov-2018	08-Oct-2018 16:10:34	xyz
7	Automobile, Crane Ea	08-Nov-2018	10-Nov-2018	09-Oct-2018 10:10:32	tiles
8	Boiler, Turbine Gene	28-Sep-2018	30-Oct-2018	09-Oct-2018 10:10:39	xyz
9	Chemical, catalyst	23-Oct-2018	25-Oct-2018	11-Oct-2018 12:10:51	l
10	chemical	23-Oct-2018	31-Oct-2018	11-Oct-2018 13:10:55	
11	Boiler, Turbine Gene	12-Oct-2018	02-Nov-2018	11-Oct-2018 13:10:56	m1
12	IT	11-Oct-2018	27-Oct-2018	11-Oct-2018 13:10:05	m
13	Chemical, catalyst	12-Oct-2018	31-Oct-2018	11-Oct-2018 13:10:05	
14	Chemical, catalyst	20-Oct-2018	09-Nov-2018	11-Oct-2018 14:10:12	m
15	Boiler, Turbine Gene	14-Oct-2018	08-Nov-2018	11-Oct-2018 14:10:00	MN
12					

This will show tender list as per log-in buyer.

30 MY NOT RELEASED TENDER (BUYER)

This will show not released tender list as per log-in buyer.

31 MY CLOSED TENDER (BUYER)

TenderId	catagory name	Start Date	Last Date	Upload Date	Item
2	Chemical, catalyst	23-Oct-2018	25-Oct-2018	11-Oct-2018 12:10:51	1

This will show closed tender list as per log-in buyer. As of now, there is no close tender.

32 MY RELEASED TENDER (BUYER)

The screenshot shows a web browser window for the 'e-tender' application. The URL in the address bar is 'localhost:56702/Buyer/MyReleasedTender'. The page has a header with the 'e-tender' logo, a search bar, and a 'Logout' link. A navigation menu at the top includes 'Home', 'Tender', 'Released Tender', 'My Tender', 'Pending Tender', and 'Closed Tender'. On the left, there is a sidebar titled 'Select Category' with a tree view of categories: 'Automobile, Crane, Earth Moving Equipment' (2), 'Chemical catalyst' (3), 'Hardware' (2), 'chemical' (1), 'construction Item' (1), and 'IT' (1). The main content area is titled 'Released Tenders' and contains a table with 16 rows of tender data. The table columns are: TenderId, Category name, Start Date, Last Date, Upload Date, and Item. The data is as follows:

TenderId	Category name	Start Date	Last Date	Upload Date	Item
6	a	08-Oct-2018	02-Nov-2018	08-Oct-2018 16:10:34	xyz
8	Boiler, Turbine Gene	28-Sep-2018	30-Oct-2018	09-Oct-2018 10:10:39	xyz
9	Chemical, catalyst	23-Oct-2018	25-Oct-2018	11-Oct-2018 12:10:51	l
10	chemical	23-Oct-2018	31-Oct-2018	11-Oct-2018 13:10:55	
11	Boiler, Turbine Gene	12-Oct-2018	02-Nov-2018	11-Oct-2018 13:10:56	m1
12	IT	11-Oct-2018	27-Oct-2018	11-Oct-2018 13:10:05	m
13	Chemical, catalyst	12-Oct-2018	31-Oct-2018	11-Oct-2018 13:10:05	
14	Chemical, catalyst	20-Oct-2018	09-Nov-2018	11-Oct-2018 14:10:12	m
15	Boiler, Turbine Gene	14-Oct-2018	08-Nov-2018	11-Oct-2018 14:10:00	MN
16	Hardware	11-Oct-2018	31-Oct-2018	11-Oct-2018 14:10:12	m

This will show already released tender as per log-in buyer.

6 LIMITATION, FURTHER ENHANCEMENT, CONCLUSION

6.1 LIMITATION

- Due to short period of time whole system is not completed.
- Maintenance is must.
- This site does not Provide protection against hackers, viruses, and some more external threats.
- Cannot Automatically save draft if system shuts down.

6.2 FURTHER ENHANCEMENT

Right now, we have just kept this project narrowed down due to short period of time but we can provide facilities like: -

- online help/support to Vendor i.e. Chat boat
 - Vendor can ask their queries
 - Buyer can negotiate with vendors
 - System will store chat history (for audit purpose)
- Automatically draft save can also be added.
- 24*7 Virtual Assistant can also be added for any query.
- Provide Mobility to vendors / buyers by providing Mobile application or responsive site
- Search & Reports
 - By Category
 - By Product /Item
 - By Tender Id

6.3 CONCLUSION

Finally, the project is work as chart generator. So, admin can maintain tenders easily. It is less time consuming. Using this system Admin can accurately maintain their details.

It is essential for project to understand the requirements of the project in terms of functional requirements, non-functional requirements, resources, technicality, timelines, information availability, delivery expectations and costs. At the same time, it is equally or more important to communicate this understanding to the client upfront and advise the client of the assumptions.

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And the required guidance, suggestions to develop website was given by faculty, staff members, family and friends.