UNIT STANDARD TITLE			SAQA US ID	Assignment No
Use computer technology to research a computer topic			115398	1
Date	**Learner Name**	**Learner Signature**	**Assessor Name**	**Assessor Signature**
12 January 2015	Junior Chitaka			

TSC Technologies

Asset booking and Management System

DETAILED DESIGN DOCUMENT BY:

Full names: Junior Chitaka

Postal address: TSC Technologies 210 Missa Park, No. 15 Cathrine Street , North cliff, Gauteng

TITLE: Mrs.

Telephone number: 073 3704834

E-mail: junior.chitaka@tsctech.com

Date of submission: 12 January 2015

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1. Introduction

The purpose of this document is to show the design of the system Asset Booking and Management System its architecture design that makes it easier for the reader to follow. The program being documented are for the login and database design showing the table structures its creation structure to show where the table were created as well as the database diagrams which shows the relationships of the tables the primary keys and the foreign keys used to link the table.

Also shown in this is the dialogue design of the login function with the explanation of ACID (atomicity, consistency, isolation and durability) properties of transactions (programs that access databases.) The explanation of the acronyms for the benefit of the client will also be done as on appendix.

The Related programs were used in the designing are the following:

- Creatly to design the architectural diagram and Login Dialogue
- Toard for My SQL table design
- HelpNDoc for documentation
- Gliffy for floor plan designing
- Dream Weaver for GUI design

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The Related documents are:

- Research document
- Technical Report

2. Architecture Design

The architectural design is the design of the entire software system; it gives a high-level overview of the software system, such that the reader can more easily follow the more detailed descriptions in the later sections. It provides information on the decomposition of the system into modules (classes), dependencies between modules, hierarchy and partitioning of the software modules.

Click here to go to Creately to design an architectural diagram for your project. This is an overview of equipment which will be used in your project. Attach the completed diagram below as follows: (Anon n.d.)

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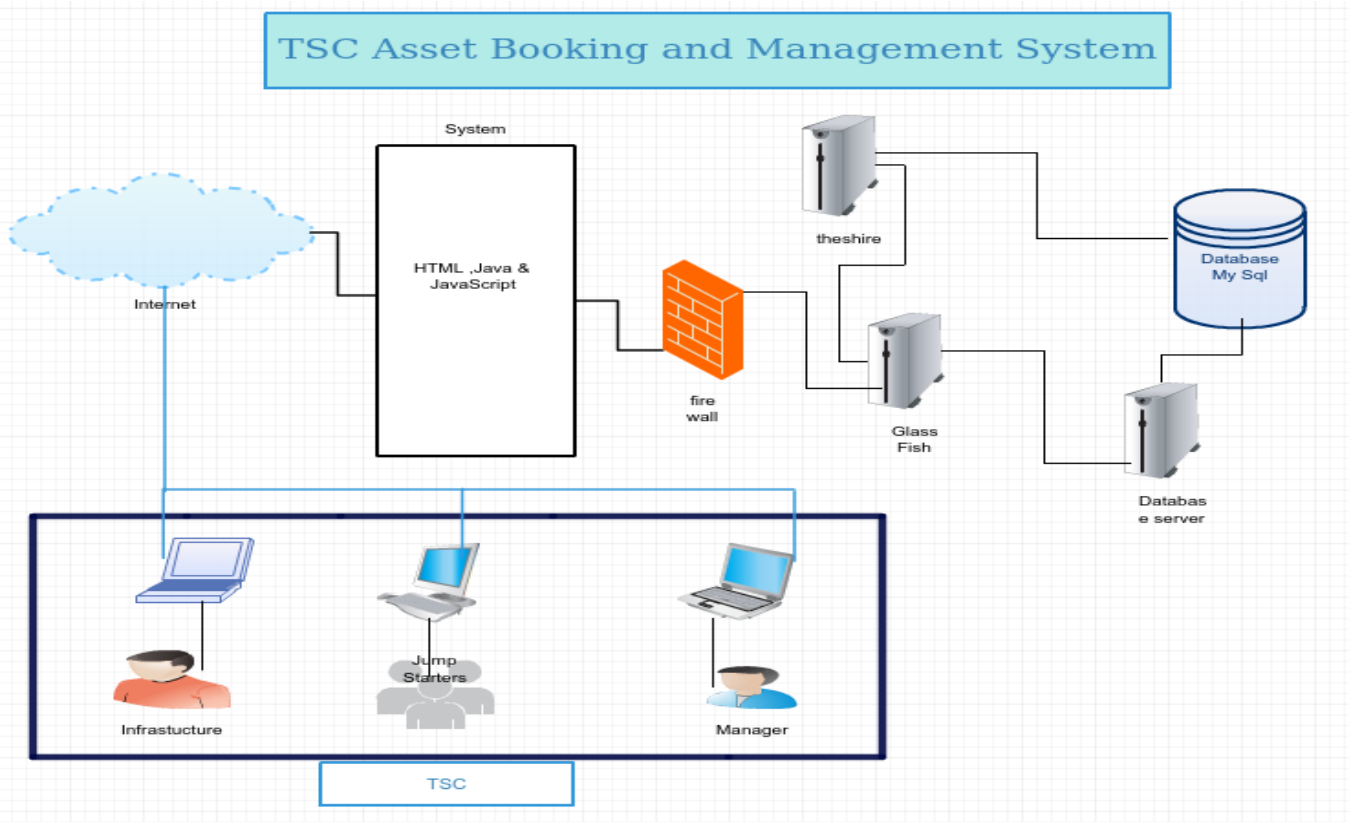

3. Database Design

The database design specifies how the data of the software is going to be stored.

The complete (compilable) set of CREATE TABLE statements (and other SQL statements) that declare the database schema, including integrity constraints, domain specifications, assertions, and access privileges -- documented in a template with the intended use of each table and column.

This is a suggested template you may use[1].

3.1 Tables data:

The tables have to be populated by you and your client. Each table must contain an appropriate number of data. The contents of the tables have to be provided (in an organized way.) Look at the example below. Give at least 3 examples.

[1] You may define your own template. This is only a suggestion.

3.1.1 Table Name : Asset location

a) Table Structure

1. Asset location

Field *	Type *	Collation	Null *	Key *	Default	Extra *	Privileges *	Comment *
Location_code	int(5)	{null}	NO	PRI	{null}		select,insert,update,references	
Email_address	varchar(20)	latin1_swedish_ci	NO		{null}		select,insert,update,references	
Phone_no	int(10)	{null}	NO		{null}		select,insert,update,references	
Home_Address	varchar(40)	latin1_swedish_ci	NO		{null}		select,insert,update,references	
Employee_id	varchar(6)	latin1_swedish_ci	NO	MUL	{null}		select,insert,update,references	

Asset location table helps in the location of an asset to know where the asset is and it had the email address of the employee to send messages when necessary. It also provide the phone number of the employee who is in possession of the asset with the home address in case there is need for follow up that needs the physical address. Employee id will uniquely identify the employee who has the asset.

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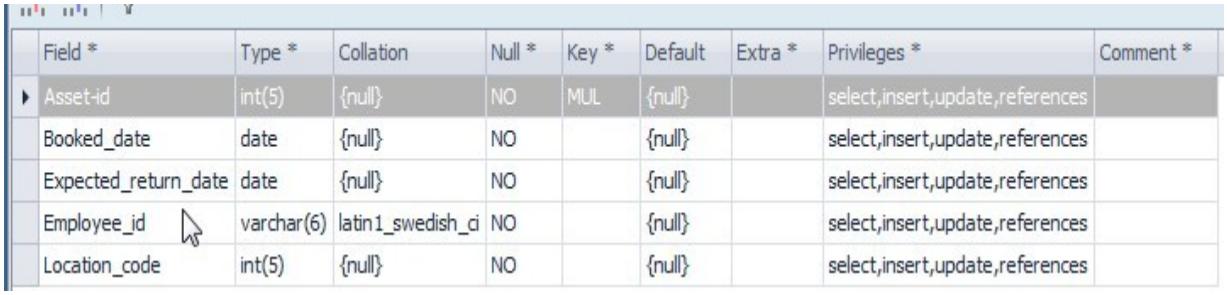
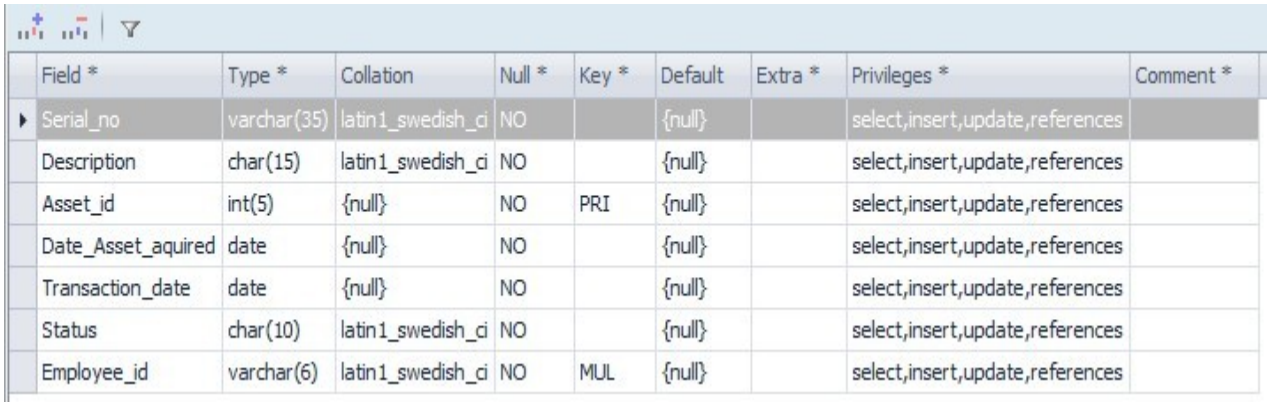
2. Custodian Table



Field *	Type *	Collation	Null *	Key *	Default	Extra *	Privileges *	Comment *
Asset-id	int(5)	{null}	NO	MUL	{null}		select,insert,update,references	
Booked_date	date	{null}	NO		{null}		select,insert,update,references	
Expected_return_date	date	{null}	NO		{null}		select,insert,update,references	
Employee_id	varchar(6)	latin1_swedish_ci	NO		{null}		select,insert,update,references	
Location_code	int(5)	{null}	NO		{null}		select,insert,update,references	

As the asset is booked this table helps to provide the details of the date the asset was booked and the date that asset is expected to be returned so that when it is not returned on the desired date the will be need of reminders to be send. Location will help to tell on the whereabouts of the asset and the employee involved will be uniquely identified by the employee id.

3. Asset Register table



Field *	Type *	Collation	Null *	Key *	Default	Extra *	Privileges *	Comment *
Serial_no	varchar(35)	latin1_swedish_ci	NO		{null}		select,insert,update,references	
Description	char(15)	latin1_swedish_ci	NO		{null}		select,insert,update,references	
Asset_id	int(5)	{null}	NO	PRI	{null}		select,insert,update,references	
Date_Asset_aquired	date	{null}	NO		{null}		select,insert,update,references	
Transaction_date	date	{null}	NO		{null}		select,insert,update,references	
Status	char(10)	latin1_swedish_ci	NO		{null}		select,insert,update,references	
Employee_id	varchar(6)	latin1_swedish_ci	NO	MUL	{null}		select,insert,update,references	

Asset register table collect the information of an asset and the date that asset was bought into the company. As well as the date it was recoded in the database the transaction dates. The asset Id field will uniquely identify an asset and the description will state what the asset is like Laptop, camera, projector etc. the status will be used provide weather as asset is booked or available or under service to make the users be able to go ahead with their booking after getting the information on the asset availability.

4. Employee Table

Columns | Data | Information | Indexes | Constraints | Triggers | Script

Field *	Type *	Collation	Null *	Key *	Default	Extra *	Privileges *	Comment *
Employee_id	varchar(6)	latin1_swedish_ci	NO	PRI	{null}		select,insert,update,references	
Name	varchar(20)	latin1_swedish_ci	NO		{null}		select,insert,update,references	
Surname	varchar(20)	latin1_swedish_ci	NO		{null}		select,insert,update,references	
Address	varchar(60)	latin1_swedish_ci	NO		{null}		select,insert,update,references	

The employee id table collects the particulars of the employees with the employee id as the primary key to uniquely identify the employee. The address points to where the employee is staying.

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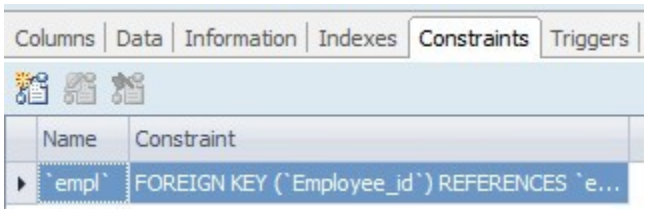
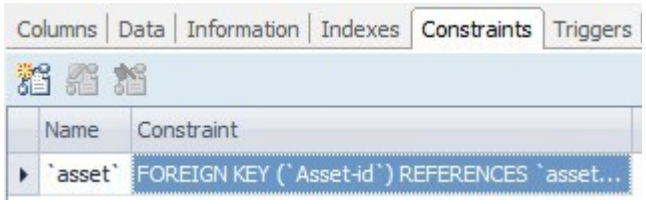
b) Primary and foreign keys



Custodian table

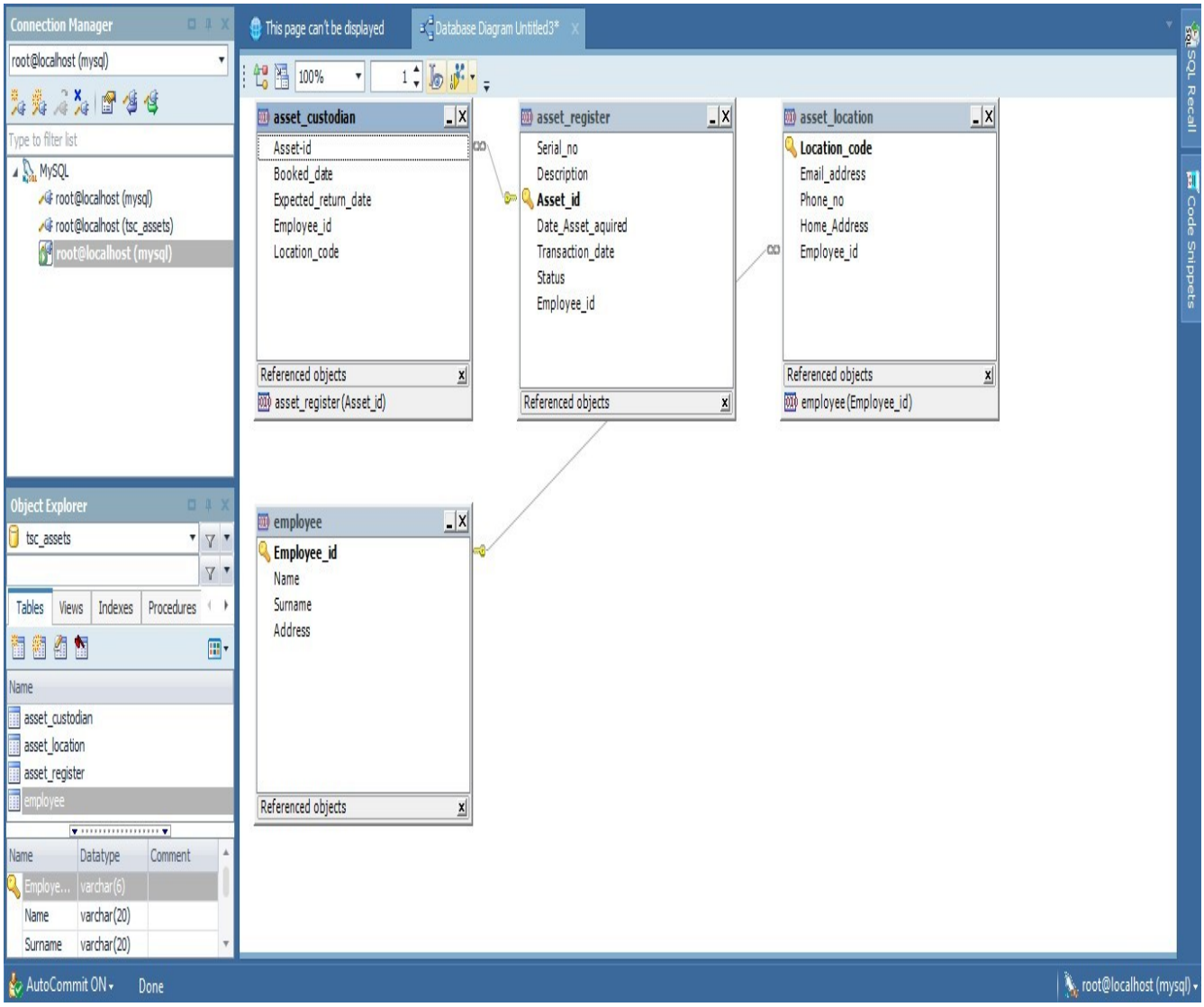


c) Table creation script

```
CREATE TABLE `asset_custodian` (
  `Asset-id` int(5) NOT NULL,
  `Booked_date` date NOT NULL,
  `Expected_return_date` date NOT NULL,
  `Employee_id` varchar(6) NOT NULL,
  `Location_code` int(5) NOT NULL,
  KEY `asset` (`Asset-id`),
  CONSTRAINT `asset` FOREIGN KEY (`Asset-id`) REFERENCES `asset_register`
(`Asset_id`)
CREATE TABLE `asset_location` (
  `Location_code` int(5) NOT NULL,
  `Email_address` varchar(20) NOT NULL,
  `Phone_no` int(10) NOT NULL,
  `Home_Address` varchar(40) NOT NULL,
  `Employee_id` varchar(6) NOT NULL,
  PRIMARY KEY (`Location_code`),
  KEY `empl` (`Employee_id`),
  CONSTRAINT `empl` FOREIGN KEY (`Employee_id`) REFERENCES `employee`
(`Employee_id`)
CREATE TABLE `asset_register` (
  `Serial_no` varchar(35) NOT NULL,
  `Description` char(15) NOT NULL,
  `Asset_id` int(5) NOT NULL,
  `Date_Asset_aquired` date NOT NULL,
  `Transaction_date` date NOT NULL,
  `Status` char(1) NOT NULL,
  `Employee_id` varchar(6) DEFAULT NULL,
  PRIMARY KEY (`Asset_id`),
  KEY `Ub` (`Employee_id`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
CREATE TABLE `employee` (
  `Employee_id` varchar(6) NOT NULL,
  `Name` varchar(20) NOT NULL,
  `Surname` varchar(20) NOT NULL,
  `Address` varchar(60) NOT NULL,
  PRIMARY KEY (`Employee_id`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

3.2 Database diagram

Attach the database diagram as per example below. (Tip use TOAD). ("Download Toad for MySQL - Toad for MySQL Free Download," n.d.)



3.3 Transactions implementation:

Explain how you will implement the ACID (atomicity, consistency, isolation and durability) properties of transactions (programs that access databases.). (“mysql - How to implement the ACID model for a database - Stack Overflow,” n.d.)

Transaction is an action that reads from, write to a database and this may include things like the updates, insert and selects statements, the transaction unit of work must be ***entirely completed or entirely aborted*** to avoid data inconsistence.

Atomicity

Refers to the ability of the database to guarantee that either all of the tasks of a transaction are performed or none of them are. Database modifications must follow an all or nothing rule. Each transaction is said to be atomic if when one part of the transaction fails, then the entire transaction fails also.

Consistency

Consistency property ensures that the database remains in a consistent state before the start of the transaction and after the transaction is over (whether successful or not). For example, in a double-entry accounting system illustrates the concept of a true transaction. Every debit requires an associated credit. Both of these happen or neither happens. If an

asset is however booked then all the records should at any time keep the record of that asset to reflect the current status same as is the booking fails the database should remain at the status it was before the booking.

The designed database will provide consistency and isolation, so that when one customer is reducing or booking an item in stock and in parallel is increasing the basket by one, this is isolated from another user who will have to wait while the data store catches up. At the other end of the spectrum is **BASE** (Basically Available Soft-state Eventual consistency).

Weak consistency is sometimes referred to as eventual consistency; the database eventually reaches a consistent state. Weak consistency systems are usually ones where data is replicated; the latest version is sitting somewhere in the cluster, older versions are still out there. Eventually all nodes will see the latest version. However in the development of this database this needs to be given attention so as to hardly have such inconsistency.

Isolation

Isolation refers to the requirement that other operations cannot access or see the data in an intermediate state during a transaction. This constraint will be used to maintain the

performance as well as the consistency between transactions in a database. Thus, each transaction is unaware of another transactions executing concurrently in the system.

Durability

Durability refers to the guarantee that once the user has been notified of success, the transaction will persist, and not be undone. This means it will survive system failure, and that the database system has checked the integrity constraints and will not abort/ or terminate the transaction. Many databases implement durability by writing all transactions into a transaction log that can be played back to recreate the system state right before a failure. A transaction can only be deemed committed after it is safely in the log.

Durability does not imply a permanent state of the database. Another transaction may overwrite any changes made by the current transaction without hindering durability.

4. Graphical User Interface

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- Provide, in an organized way, the pictures of all the forms in the graphical user interface with a reference to the functional requirement it implements. You may use html to present the graphical user interfaces.
- Tip - Use any Java Development Environment, add and run a web server. Use the tutorial ***115388 Ten Quick Steps for Deploying a JSP*** for further instructions
- For each form in the graphical user interface, provide:
    - The names of the controls and fields on that form,
    - The names of the events, methods, or procedures that cause that form to be displayed, and
    - The names of the events, methods, or procedures triggered by each control.
- Provide at least 3 Graphical User Interface. ("Hello, World! Web App • Tutorial: Ten Quick Steps for Deploying a Super Simple JSP Web App (WAR) on JBoss AppServer," n.d.)

4.1 Graphical User Interface - login.jsp

a) JSP GUI

The log in screen allows the user to login to the system by entering then user name and the password. The login button will submit the details that have been entered for verification.

The asset register for gets the details of an asset like the Asset id that helps to identify the asset and will have the serial number that will identify a particular asset from other assets the description will tell what the asset is that is if it's a computer, projector, or camera etc. The date the asset acquired will have the date that particular asset was purchased by the organization and the transaction date will indicate when the asset was registered on the asset register database date the record was inserted. The edit button will allow for changes to be made on the captured information and the arrows allows for database navigation.

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The employee table gets the data pertaining the employee. The employee ID is the primary key to uniquely identify a particular employee then the name and surname will be supplied accordingly with the buttons delete, insert, view and update to manipulate the data of information as required also there are arrows to navigate the data base as well.

a) **JSP script**

Login Code script

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```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">

<head>

<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />

<title>Untitled Document</title>

<style type="text/css">

<!--

.style1 {

        font-family: "Times New Roman", Times, serif;

        font-size: xx-large;

}

body,td,th {

        font-family: Times New Roman, Times, serif;

}

body {

        background-color: #FF9933;

        background-repeat: no-repeat;

}

.style3 {font-family: Geneva, Arial, Helvetica, sans-serif}
```

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```
-->

</style>

</head>



<body>

<form id="form1" name="form1" method="post" action="">

</form>



<p align="left" class="style1">

  <label>

   <div align="center"><span class="style3"><img src="ScreenHunter_22 Jan. 08
22.01.jpg" width="660" height="148" alt="" /></span></div>

  </label>

</p>

<p align="center" class="style1">  <img src="ScreenHunter_27 Jan. 12 10.29.jpg"
width="664" height="66" /></p>

<p>

  <label>

  <div align="center"><span class="style1"><strong>

    Asset Booking and Management System<br />
```

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```
   LOGIN</strong></span></div>

  </label>

</p>

<table width="200" border="3" bordercolor="#000000" bgcolor="#FF9900">

  <tr>

            <th bordercolor="#000000" bgcolor="#FF9900" scope="col"><div
align="center">Username

      <input name="textfield" type="text" maxlength="15" />

   </div></th>

  </tr>

  <tr>

   <td><div align="center">Password

      <input type="text" name="textfield2" />

   </div></td>

  </tr>

</table>

<input name="Submit" type="submit" value="LOGIN" />

<p> </p>

<p> </p>

<p> </p>
```

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```
</body>

</html>
```

Asset register form script

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>Untitled Document</title>
<style type="text/css">
<!--
.style1 {
        font-family: "Courier New", Courier, monospace;
        font-weight: bold;
        font-size: xx-large;
}
body {
        background-color: #999999;
}
-->
</style>
</head>

<body>
<p><label>
<div align="center">
<div align="center"><span class="style1">Asset Register</span></div>
</label>
<form action="" method="post" name="Asset Register form" id="Asset Register
form">
  <p></p>
  <div align="center">
    <table width="420" >
      <tr>
```

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```
      <td width="153"> <label> Asset Id</label></td>
        <td width="255"><input name="textarea" type="text" value="" size="35"
/></td>
    </tr>
    <tr>
     <td><label>Serial Number</label> </td>
     <td><label>
       <input name="textfield2" type="text" size="35" />
     </label></td>
    </tr>
    <tr>
     <td><label>Description</label> </td>
     <td><label>
       <input name="textfield3" type="text" size="35" />
     </label></td>
    </tr>
    <tr>
     <td><label>Date Asset Aquired </label>
        </td>
     <td><label>
       <input name="textfield4" type="text" size="35" />
     </label></td>
    </tr>
    <tr>
     <td><label>Transaction Date</label> </td>
     <td><label>
       <input name="textfield5" type="text" size="35" />
     </label></td>
    </tr>
    <tr>
     <td><label>Status</label> </td>
     <td><label>
        <input name="textfield6" type="text" size="35" />
     </label></td>
    </tr>
    <tr>
     <td>Employee Id </td>
     <td><label>
```

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```
        <input name="textfield7" type="text" size="35" />
      </label></td>
    </tr>
  </table>
 </div>
 <p>
  <label></label>
  <label></label>
  <label></label>
  <label></label>
 </p>
 <div align="center">
  <table width="200" >
    <tr>
      <td>
        <div align="center">
          <input name="Submit" type="submit" value="|&lt;" />
          <input type="submit" name="Submit2" value="&lt;&lt;" />
          <input type="submit" name="Submit3" value="&gt;&gt;" />
          <input type="submit" name="Submit4" value="|&gt;" />
        </div></td>
    </tr>
    <tr>
      <td><div align="center"><a href="#">Edit</a></div></td>
    </tr>
    </table>
 </div>
 <div align="center"></div>
 <p> </p>
</form>
<p> </p>
</body>
</html>
```

Employee form code script

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

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```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>Untitled Document</title>
<style type="text/css">
<!--
.style1 {	font-family: "Courier New", Courier, monospace;
	font-weight: bold;
	font-size: xx-large;
}
body,td,th {
	color: #000000;
}
body {
	background-color: #999999;
}
-->
</style>
</head>

<body>
<div align="center">
  <p class="style1">Employee Form </p>
</div>
<div align="center">
  <table width="420" >
    <tr>
      <td width="153"><label>Employee Id </label></td>
        <td width="255"><input name="textarea" type="text" value="" size="35"
/></td>
    </tr>
    <tr>
      <td><label>Name</label>
         </td>
      <td><label>
        <input name="textfield2" type="text" size="35" />
      </label></td>
    </tr>
```

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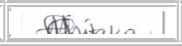
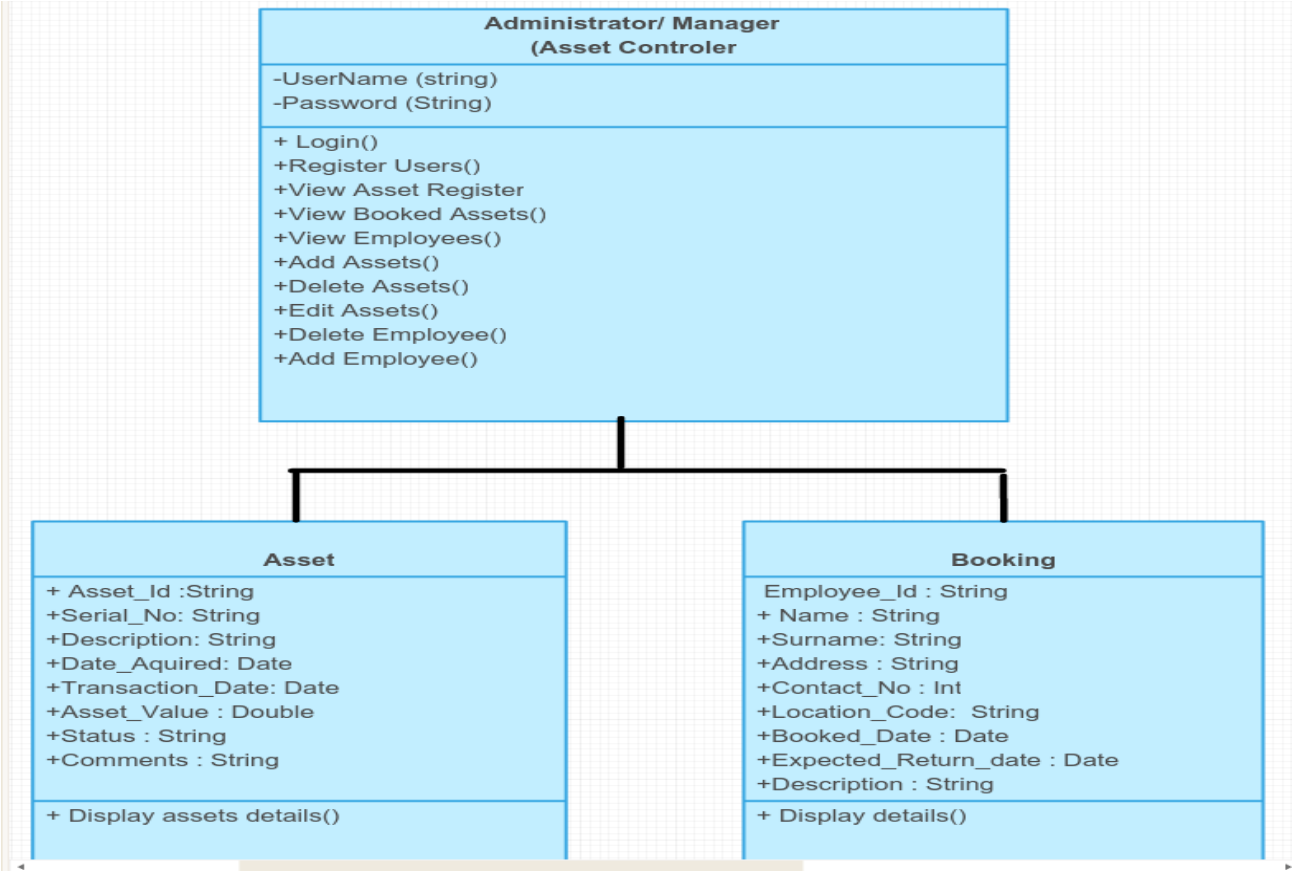
```
  <tr>
   <td><label>Surname</label>
     </td>
   <td><label>
    <input name="textfield3" type="text" size="35" />
   </label></td>
  </tr>
  <tr>
   <td><label>Physical Address </label>
     </td>
   <td><label>
    <input name="textfield4" type="text" size="35" />
   </label></td>
  </tr>
 </table>
 <p>   </p>
 <p>
  <input name="Submit5" type="submit" value="Delete" />
  <input name="Submit6" type="submit" value="Insert" />
  <input name="Submit7" type="submit" value="View" />
  <input name="Submit8" type="submit" value="Update" />
 </p>
 <p> </p>
</div>
<div align="center">
 <table width="200" >
  <tr>
   <td><div align="center">
    <input name="Submit" type="submit" value="|&lt;" />
    <input type="submit" name="Submit2" value="&lt;&lt;" />
    <input type="submit" name="Submit3" value="&gt;&gt;" />
    <input type="submit" name="Submit4" value="|&gt;" />
   </div></td>
  </tr>
  <tr>
   <td><div align="center"><a href="#">Edit</a></div></td>
  </tr>
 </table>
```

UNIT STANDARD TITLE						SAQA US ID
Apply the principles of designing computer system inputs and outputs						115398
Date	**Learner Name**	**Learner Signature**	**Facilitator Name**	**Facilitator Signature**	**Assessor Name**	**Assessor Signature**
12 January 2015	Junior Chitaka					

```
</div>
<p align="center"> </p>
</body>
</html>
```

5. Class Diagram and Classes

Provide a class diagram. Click here to go to Creately to design a dialog diagram for your project. Attach the completed diagram below as follows:



("Dialog Builder (Class Diagram (UML)) | Creately," n.d.)

6. Online Help

Click here to go to HelpMaker to create an online documentation ("Helpndoc downloading 17751kB file," n.d.)
Update the Help Maker Document Designer created in Module 13 by adding this detailed design document. Attach the diagram below as follows

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12 January 2015	Junior Chitaka					

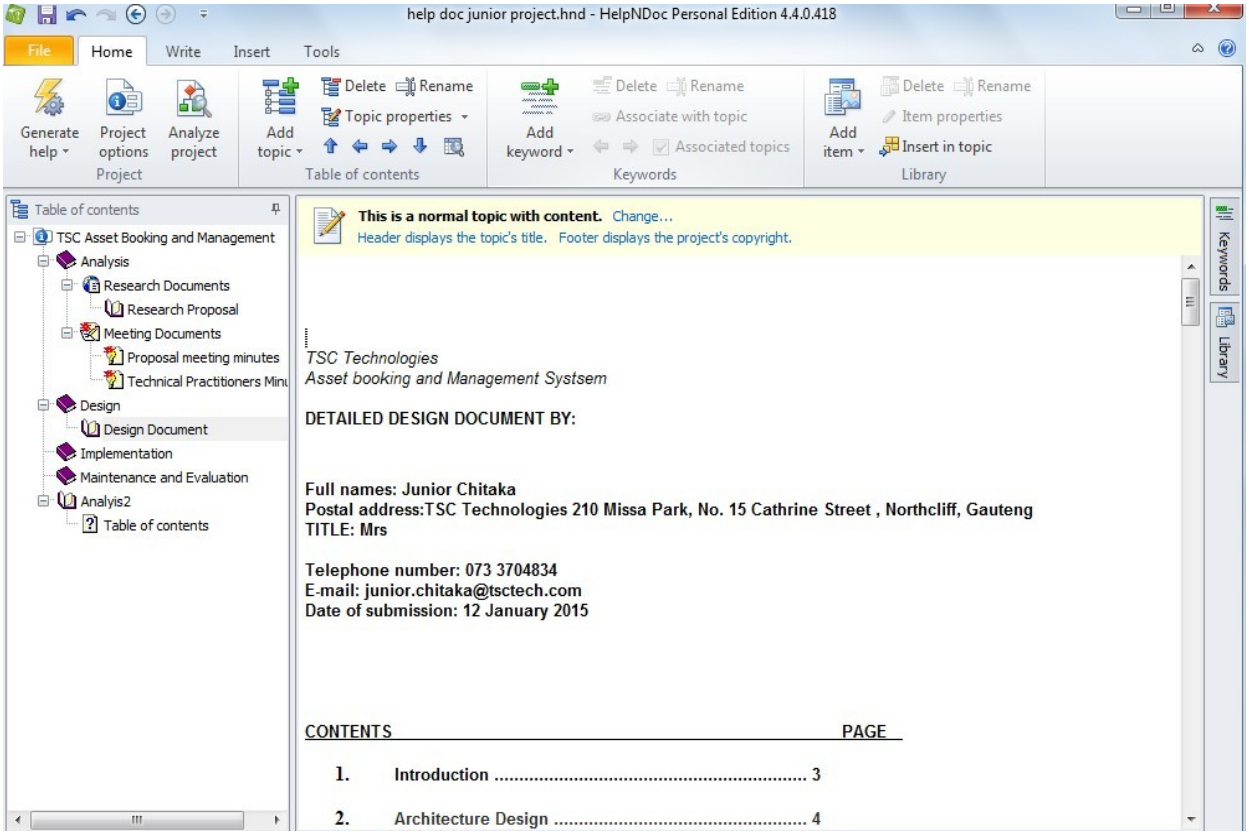

Fig 1: Help Maker Document Designer

7. Appendix

Hard copy or pointers to the documents that permitted you to assemble this document in collaboration with your client

- Refer to Research document in the HelpNdoc/ on line help

- Technical report

Definitions of the important terms and acronyms used in the document.

GUI - Graphical User Interface.

UML - Unified Modeling Language.

ACID - (atomicity, consistency, isolation and durability) properties of transactions (programs that access databases.).

SQL - Structured Query Language.

8. References for the template

ADDIN Mendeley Bibliography CSL_BIBLIOGRAPHY Dialog Builder (Class Diagram (UML)) | Creately. (n.d.). Retrieved August 10, 2014, from http://creately.com/diagram/example/htnwmrqx2/Dialog+Builder

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12 January 2015	Junior Chitaka					

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