TIME KEEP LEGAL BILLING

SOFTWARE DESIGN DOCUMENT

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1. Introduction:

This document defines the Software Design for the Time Keep Legal Billing software application. This application is to provide a solution to tracking billable legal resources and provide accurate billing statements to clients.

1.1. Goals and objectives

The Time Keep Legal Billing software provides small to mid-sized legal offices a software package capable of maintaining a database of billable hours for legal personnel and fees that a client incurs. The objective is to provide the law office with a system that accurately accrues billable items for each individual client and legal case, generates account statements for clients, and provides reporting to the law office of client account history and accounts receivable.

1.2. Statement of scope

The Time Keep Legal Billing application shall operate on Windows XP or Windows Server operating systems. The application shall be installed on a user's computer allowing a single user to input information and generate reports and statements. The applications database may reside on the same single user computer, or be installed on a server providing multiple user access. The applications input for client, attorney, and billable hours are received from the Windows application user interface. Outputs are viewed using the applications report generation.

1.2.1. Software context

Small and mid-sized legal offices succeed or fail based on the amount of hours they are able to charge clients. Therefore, the ability to accurately track time spent on a specific client matter is of the utmost importance. In addition, clients provided with clear and accurate billing statements are more likely to pay bills on time and without question. Although providing accurate billing information is important to legal offices, it is often difficult for the small office to manage time data accurately as they do not have the resources for expensive software solutions or personnel dedicated to time keeping activities. An inexpensive, easy to use software package that provides automation of the billing process is essential to the small legal office.

1.3. Major constraints

Time Keep shall be designed to run on a 32 bit version of the Microsoft Windows XP operating system. The minimum requirements of the computer shall be 512 MB of RAM, and 2 GB of free hard drive space. The source code for the display shall be written in Visual Basic 6.0. The data output shall be stored in an Access 2003 database using the ADO database connection library. The output reports shall be saved as crystal report files.

1.4. Assumptions and Dependencies

The Time Keep application assumes that, or depends upon, the following environmental characteristics being present for full functionality:

1. The General Constraints listed in section 1.4 of the SRS are met.
2. The customer shall have permissions to install the Time Keep application on the required workstation(s).
3. The user of the application shall have full read/write/execute access rights for all files and folders related to the application.

2. Development and Execution Environment

2.1. Development Environment

2.1.1. Hardware

The Time Keep Legal Billing software is designed to run on 32-bit Windows environments. Minimum requirements are the same as that for operation Windows XP operating system.

2.1.2. Software

Time Keep Legal Billing software to be developed using the following tools:

- Microsoft Windows XP Operating System
- Microsoft Visual Basic.NET 2003
- ADO.NET
- Microsoft Access 2003
- Microsoft Visio 2003

2.2. Execution Environment

2.2.1. Hardware

Time Keep Legal Billing software shall be run on IBM-PC compatible computers with the following minimum requirements:

- Intel Pentium CPU
- 1024MB RAM
- 200MB Hard Disk Space
- Internet connection via DSL, Cable modem, modem, LAN, etc.

2.2.2. Software

Time Keep Legal Billing software shall be run on IBM-PC compatible computers with the following software:

- Microsoft Windows XP or greater
- Microsoft Access 2003 or greater

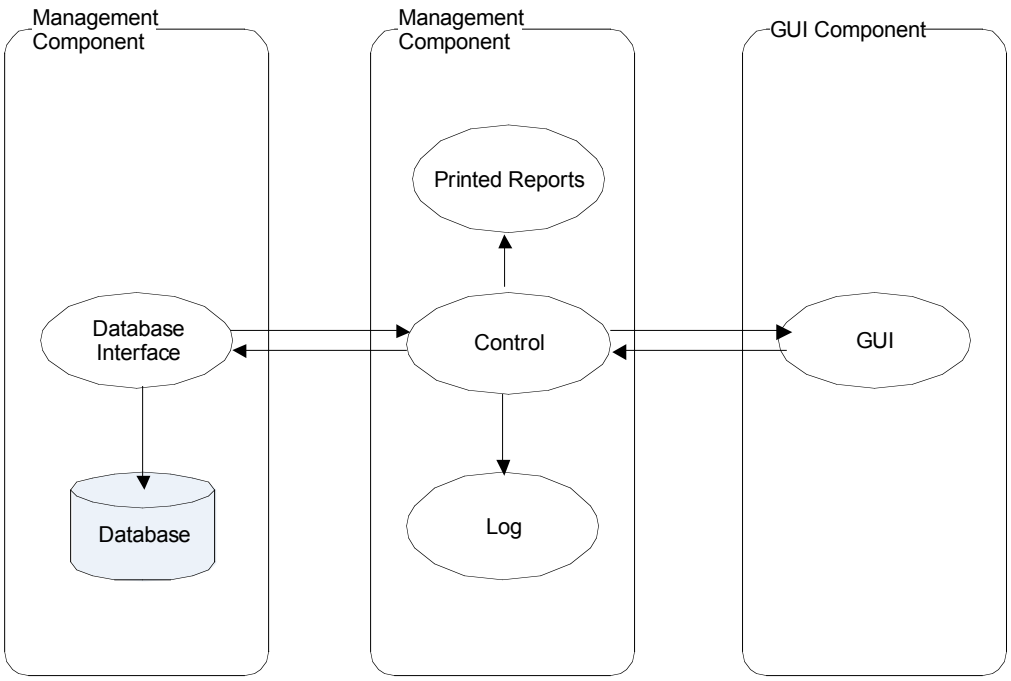
3. Design

3.1. Overview

The Time Keep Legal Billing software is a desktop Windows application which utilizes an Access database which tracks clients, employees, and billing information of clients. The user interface and application software is written in Visual Basic and connects to the Access database using ADO technology.

3.2. Architecture

3.2.1. System Components



3.2.2. Component Modules

This section provides the list of all the modules that comprise each high-level architectural component.

3.2.3. Graphical User Interface (GUI) Module

3.2.3.1.1. Login Screen

3.2.3.1.2. Administrator Screen

3.2.3.1.2.1.Create New Employee

3.2.3.1.2.2.Edit Employee

3.2.3.1.2.3.Create New Client

3.2.3.1.2.4.Edit Client

3.2.3.1.2.5.Prepare Invoice

3.2.3.1.3. User Screen

3.2.3.1.3.1.View Report

3.2.3.1.3.2.Time Entry

3.2.3.1.3.3.View Client

3.2.4. Control Module

3.2.4.1.1. Validate User

3.2.4.1.2. GetRecord

3.2.4.1.3. AddRecord

3.2.4.1.4. DeleteRecord

3.2.4.1.5. UpdateRecord

3.2.4.1.6. LogInformation

3.2.4.1.7. PrintReport

3.2.5. Print Reports Module

3.2.5.1.1. PrintInvoice

3.2.5.1.2. PrintReport

3.2.6. Log Module

3.2.6.1.1. LogEvent

3.2.7. Database Interface Module

3.2.7.1.1. dbGetRecord

3.2.7.1.2. dbAddRecord

3.2.7.1.3. dbGetAllRecords

3.2.7.1.4. dbUpdateRecord

3.2.7.1.5. dbOpen

3.2.7.1.6. dbClose

3.3. Database Design

3.3.1. Conceptual Schema

The diagram below shows the ERD of the Time Keep Database. The database consists of 8 entities.

[1,1]

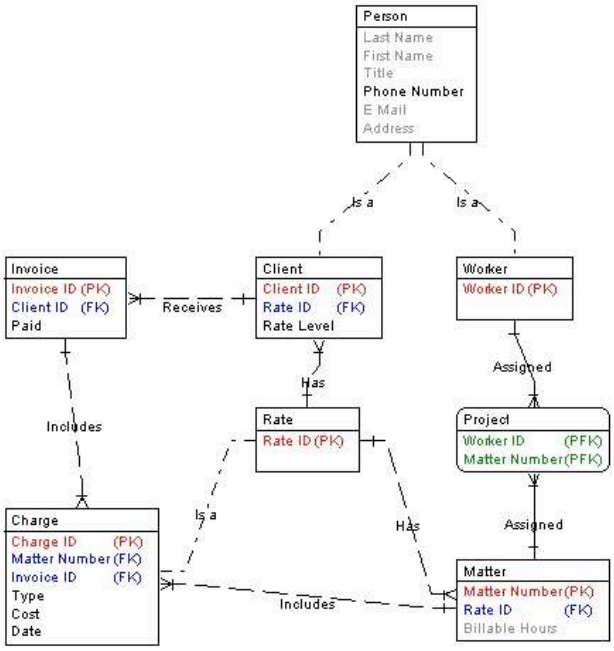


Diagram 1 – ERD of Time Keep database.

3.3.2. Logical Schema

Entity	Description
Person	Record Client and Employee information.
Invoice	Record Invoice information.
Rate	Record rate information for billing calculation.
Project	Record project information.
Charge	Record Charge information.
Matter	Record case Matter information.

3.3.3. Physical Schema

Person Table

	Key	Name	Column Name	Datatype	Not null	Unique	Description
1		Last Name	Last_Name	Text(50)			Last name of contact.
2		First Name	First_Name	Text(50)			First name of contact.
3		Title	Title	Text(50)			Formal Title of contact.
4		Phone Number	Phone_Number	Text(11)	Not null		Phone number of contact.
5		E Mail	E_Mail	Text(50)			E-mail address of contact.
6		Address	Address	Text(50)			Street Address of contact.

Client Table

	Key	Name	Column Name	Datatype	Not null	Unique	Description
1		Client ID	Client_ID	AutoNumber LI	Not null	Unique	Primary Key that uniquely identifies client.
2		Rate ID	Rate_ID	Long Integer	Not null		Uniquely identifies client's rate.
3		Rate Level	Rate_Level	Integer	Not null		Determines client's standard rate.

Worker Table

	Key	Name	Column Name	Datatype	Not null	Unique	Description
1		Worker ID	Worker_ID	AutoNumber LI	Not null	Unique	Uniquely identifies employee.

Rate Table

	Key	Name	Column Name	Datatype	Not null	Unique	Description
1		Rate ID	Rate_ID	AutoNumber LI	Not null	Unique	Primary Key that uniquely describes client's rate.

Project Table

	Key	Name	Column Name	Datatype	Not null	Unique	Description
1		Worker ID	Worker_ID	Long Integer	Not null		Primary Key that uniquely identifies a worker.
2		Matter Number	Matter_Number	Long Integer	Not null		Primary Key that uniquely identifies a Matter

Matter Table

	Key	Name	Column Name	Datatype	Not null	Unique	Description
1	PK	Matter Number	Matter_Number	AutoNumber LI	Not null	Unique	Primary Key that uniquely identifies a Matter.
2	FK	Rate ID	Rate_ID	Long Integer	Not null		Foreign Key that uniquely identifies a Rate.
3		Billable Hours	Billable_Hours	Double			Number of hours worked on the Matter.

Invoice Table

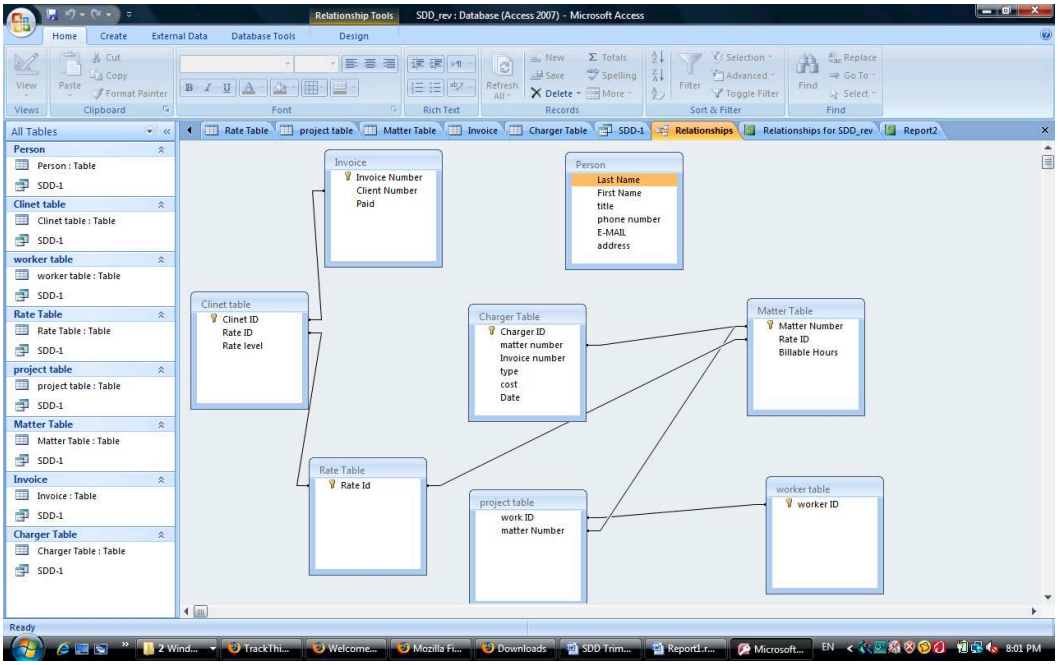
	Key	Name	Column Name	Datatype	Not null	Unique	Description
1	PK	Invoice ID	Invoice_ID	AutoNumber LI	Not null	Unique	Primary Key that uniquely identifies an Invoice.
2	FK	Client ID	Client_ID	Long Integer	Not null		Foreign Key that uniquely associates a Client with an Invoice.
3		Paid	Paid	Yes/No	Not null		Signifies if the bill has been paid in full or not.

Charge Table

	Key	Name	Column Name	Datatype	Not null	Unique	Description
1	PK	Charge ID	Charge_ID	AutoNumber LI	Not null	Unique	Primary Key that uniquely identifies a Charge.
2	FK	Matter Number	Matter_Number	Long Integer	Not null		Foreign Key that uniquely associates a Charge to a Matter.
3	FK	Invoice ID	Invoice_ID	Long Integer	Not null		Foreign Key that uniquely associates a Charge to an Invoice.
4		Type	Type	Text(50)	Not null		The type of Charge. Ex: Supplies, meals, research etc..
5		Cost	Cost	Currency	Not null		The dollar amount of the charge.
6		Date	Date	Date/Time	Not null		The date when the charge occured.

3.4. Relationship :

3.4.1.



4. Packaging

4.1. Documentation

Time Keep documentation shall be included with the software in a README file packaged within the TKsetup.exe file and a hard copy of the User's Manual shall be available on the Time Keep System website.

4.1.1. Source Code

Time Keep source code shall be available on the Time Keep System website. (User authentication required)

4.1.2. Executables

Time Keep application shall be delivered with one executable file (TKsetup.exe) and DLL files.

4.1.3. Data Files

Time Keep application will supply a Access database file.

4.1.4. Installation

Time Keep application is packaged with Visual Studio installer (VSI). VSI will combine the single TKset.exe file into an installable file. VSI will make the Microsoft Windows registry changes which will ensure that the software can be removed.

5. Naming and Coding Standards

5.1. Introduction:

We are using Time keeping database system and Microsoft Access SQL statement create table

Formatting:

In this document, it is not require showing codes however here is one of example creating tables :

```
CREATE TABLE person
(                ,
```

First_Name char(50),
Last_Name char(50),
Address char(50),
phone_number Text(15),
e-mail char(25),

)

Create table Client

(

Client_ID number primary key ,

Rate_level number,

Rate_ID integer references Rate(Rate_ID) , //rate_ID is foreign key

)

Alternate using Access 2007:

Here is rest of our table :

Person Table

Last Name	Text (50)	
First Name	Text(50)	
Title	Text	
Phone Number	Text(11)	
e-mail	Text(50)	
Address	Text(50)	

Client Table

Client ID	number	Primary Key

Rate ID	Long Integer	Foreign Key
Rate Level	Integer	

Worker Table

Worker ID	Number	Primary Key

Rate Table

Rate ID	Number	Primary Key

Project Table

Worker ID	Integer	Foreign Key
Matter Number	Integer	Foreign Key

Matter Table

Matter Number	Integer	Primary Key
Rate ID	Integer	Foreign key
Billable Hours	Double	

Invoice table

Invoice ID	Number	Primary Key
Client ID	Number	Foreign Key

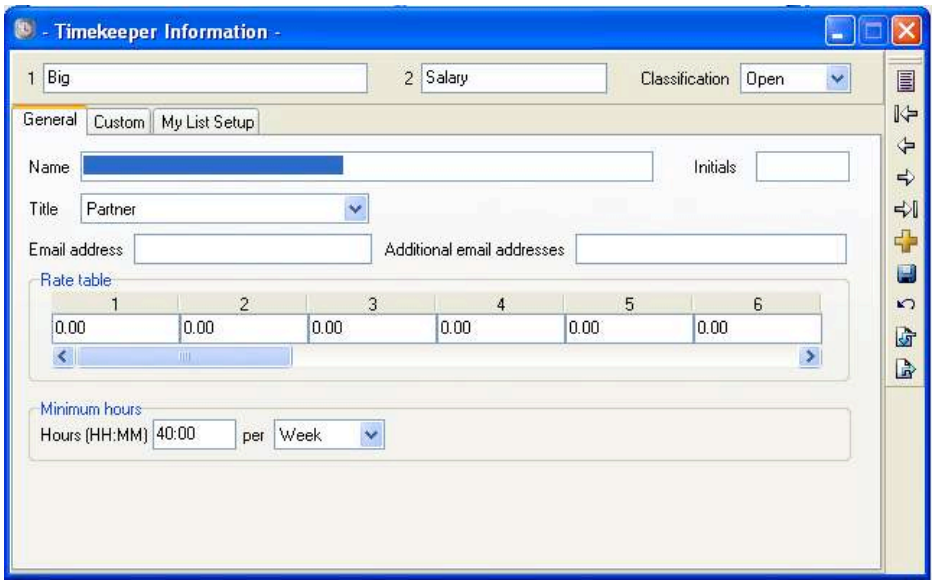
Paid	Yes/NO	

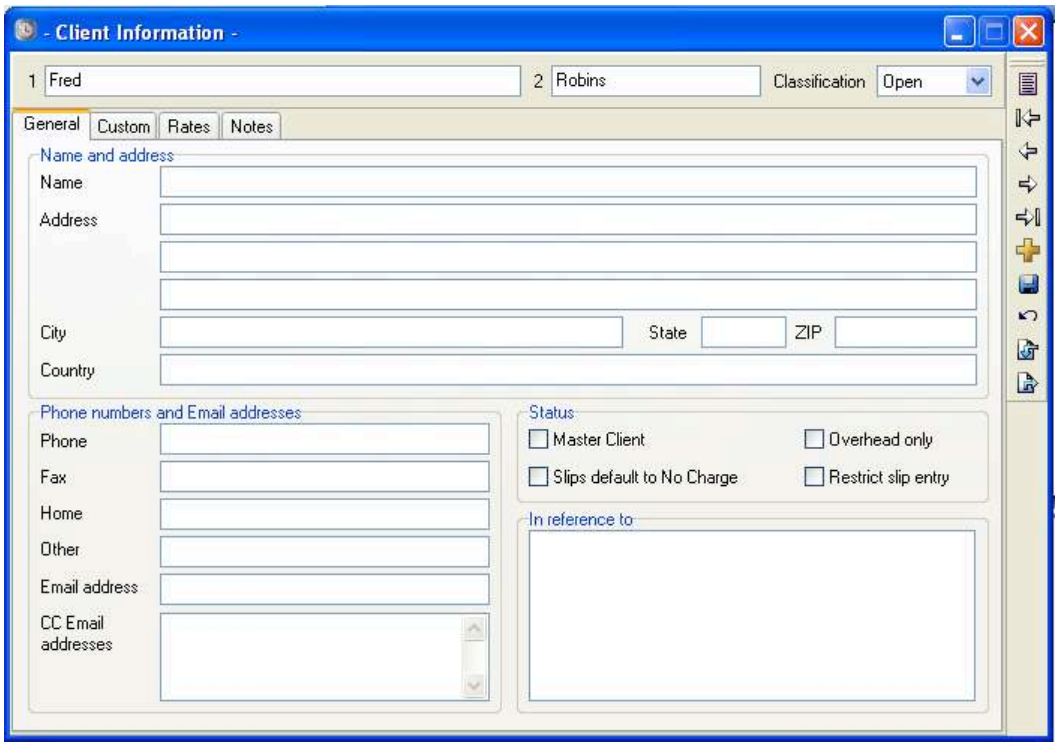
Charge Table

Charger ID	Number	Primary Key
Matter number	Integer	Foreign Key
Invoice ID	Integer	Foreign Key
Type	Text	
Cost	Currency	
Date	Date/Time	

5.2. GUI interface :

Here is GUI interface client , employee , Time entry forms





5.3. Naming Files

All database Naming is *. Mdb which is Microsoft Access 2003 format then save in SQL server

All files are lower case but the first letter of file name is capitalize , for example: Client.mdb, person.mdb

5.4. Comments

5.4.1. Use comments to describe the intentions of the programmer or provide a summary of a section of code.

5.4.2. Do not use a comment to restate what the code does.

5.4.3. Use a complete sentence if appropriate and direct the comments to the appropriate teammate.

5.4.4. Use correct English grammar.

5.4.5. Comment each major block of code with a brief description of its intention.

5.4.6. Indent comments at the same indentation level as the code they're commenting.

5.4.7. Avoid placing comments at the end of a line of code.

5.4.8. Example: // foreign key refer to customer table

6. Restrictions, limitations, and constraints

There are some of restriction for different user's privilege for protection database system. The administrative has fully control whole database system. Administrative can backup, restore database system. Department manager also has fully control database system too. However , due to customers privacy, administrative cannot edit client and billing system unless two password require to change database system. Employees such as, cashier or front desktop only can input client information. After they save data to the sever, if employees need modify client information, they need manager prove and password in order to modify client database. Under billing system, if employees need modify client billing and statement, first, they need manager password to prove to modifying billing information. After employee finish the job , they need two password to prove this os correct information then prenatally saving in Database system. For customers and employees protection, the complex step is required.