E- Lawyer Desktop Application

EGR 4402: Capstone Design

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Capstone Report

Approved by the Supervisor(s)

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**ABSTRACT**

The capstone project I have been working on is about the development of a desktop application for a lawyer, Mr. Abdelouahed JABRI. This application also called E-lawyer has as purpose to help my client in managing his work; as for any lawyer, organization, planning and management are important criteria required by this job. The different clients’ information, law cases’ documents and so on should be well saved and documented. E-lawyer application will offer several features such as managing clients, law cases, and documents; making the client work easy and efficient. The report reflects the work done and it’s progress and describes in more details the Capstone project’s stages.

The project’s first stage is the requirements and specification stage. During this stage, the client’s needs are gathered and proceeded; for e-lawyer application, the requirements were expressed explicitly. The lawyer gave me detailed specifications about the features the application should fulfill, documents used during the process of adding new clients/ court session… in addition of other extra information such as detailed information about the divers courts in Morocco.

Once this phase done, comes up the feasibility study where the technical aspect is tackled. This stage is partially driven by the application’s type to be developed, technology enablers such as programming language, and database.

After the feasibility study done comes the design and analysis phase with the design of database entities, main use case diagram and sequence diagrams.

Finally comes the implementation phase with a description of all the necessary tools used to develop the application.
1. INTRODUCTION

The majority of lawyers in Morocco still rely extensively in managing their work using the traditional way; which does not always help in achieving efficiency and keeping the work organized.

This type of business involves the usage of big quantity of documents, forms and notes, it also requires several transit between the office, and courts… some documents tend to be crucial and any lose can lead to the delay of court session and therefore a waste of time. Due to the high number of clients, law cases, and court sessions an automated application can turn out to be very helpful.

The client is Mr. Jabri, a lawyer with a fairly large number of clients and whose office is located in Casablanca. Mr. Jabri wants an automated solution that will help him in the achievement of his tasks.

E-Lawyer is a desktop application to be designed for a lawyer business usage. Its purpose is to automate the lawyer’s work and manage all the lawyer business aspects offering him several features such as, the possibility to know ahead of time his agenda (covering the whole week’s activities), the display and access of all his clients’ information, and his law cases with one click, keeping track of each case’s evolution with its details and more importantly preserving the confidentiality of clients.
2. STEEPLE Analysis

A steeple analysis applied to this Capstone project would help give an insight to the different macro-environmental factors relevant to it. Since the application is limited to the lawyer office and affect only his work, the seven macro-environmental factors do not witness a huge change; they are discussed briefly below:

- **Societal Consideration:** E-Lawyer application is limited to one user, who is the lawyer. Therefore only his work style will be affected and witness some changes; any other person won’t be affected.

- **Technical Consideration:** the application rely on a common already existing technology, and does not add up to the development or invention cycle.

- **Environmental Consideration:** this application will affect positively the environment by decreasing the rate of paper waste.

- **Ethical Consideration:** the application features are purely ethical.

- **Political Consideration:** the client’s business does not interfere with politics and is does not affect or threaten the country’s political stability or instability.

- **Legal Consideration:** the legal aspect will remain unchanged as well, since the e-lawyer application does not involve the legal aspect such as taxes.

- **Economic Consideration:** the economic growth is left untouched and the application will not suppress any job position or cause an inflation.
3. Methodology

As a Computer science student, having the skills and knowledge is often not enough; in many situations, the application to be developed will require a deep understanding of the functioning of the processes to be automated.

In my case, the capstone project involving law procedures, technical words, data and concepts requires a preliminary research. In order to build enough knowledge and gather the necessary information that will be needed during the conception of the application, besides the client information, I relied on interviews with another two Moroccan lawyers and on internet explanations.

On the other hand, for the software engineering model I choose to follow for this project the incremental technique. This technique allows to reduce the risks a project may hold by breaking the project into a step by step with the possibility to go back in case a change is to be made in the previous steps.
4. Requirements Specification

E-lawyer will be designed according to the needs of Dr. Jabri (the client). The requirements and specification phase was about gathering all necessary information about the features wanted. Those features were expressed explicitly by the client in details, in addition documents used in the lawyer’s office were given along with extra ones containing information about other entities related to the field, and with whom the lawyer interacts extensively. The client wants the e-lawyer application to manage all his work’s aspects; including his clients, documents, law cases, court meeting, and agenda; and emphasized on the easiness and usability of the desktop application.

Appendices at the end of the report gather the documents I relied partially on to build the requirements. Those documents including forms were handed by Dr. Jabri who uses them in his business and with his clients.

4.1. Feasibility study

During the feasibility study a number of approaches and possibilities were discussed. Since the client did not set any constrains regarding the technology enablers or software engineering approaches to use, I had a large choice of possibilities to choose from. In addition I decided to follow a basic approach, and therefore using a direct connection between the database and the application. The technology enablers I ended up choosing are described below:

4.1.1 Technology enablers

4.1.1.1. Database server:

MySql server, MySQL is an open source relational database management system (RDBMS) based on Structured Query Language (SQL) used for adding, removing, and modifying information in the database [1]. It has many advantageous features; such as running virtually on all platforms (Linux, windows and mac); and the possibility to be used in a wide range of applications mostly in web servers.
4.1.2. Language:
C# is the result of the improvement and updating of many C and C++ features. It is also a general object-oriented programming (OOP) language for networking and Web development [2].

4.1.3. Platform:
Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs for Microsoft Windows, as well as web sites, web applications and web services. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight [3].

4.2. Schedule
Table 1 illustrates the different tasks performed since the beginning of the capstone project with their corresponding dates and period of time it took to achieve them.

Table 1: Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Task to be performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31/8 – 4/9</td>
<td>-Project selection</td>
</tr>
<tr>
<td>2</td>
<td>7 – 11/9</td>
<td>-Initial specification</td>
</tr>
<tr>
<td>3</td>
<td>14 – 25/9</td>
<td>-Gathering requirements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Feasibility study and analysis</td>
</tr>
<tr>
<td>4-7</td>
<td>27/9 – 4/10</td>
<td>-Design and analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Interim report</td>
</tr>
<tr>
<td>8-11</td>
<td>6/10</td>
<td>-Implementation</td>
</tr>
<tr>
<td>12</td>
<td>20/11</td>
<td>-Finalization of e-lawyer application</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Testing</td>
</tr>
</tbody>
</table>
4.3. Functional requirements

The major functional requirements expressed by the client are described below in terms of purpose, input, output and if any exception:

4.3.1. Client information management: Add new client information form

4.3.1.1. Purpose:

The lawyer should be able to add a client information when handling his/her case.

4.3.1.2. Input:

Different information related to the client are entered by the lawyer.

4.3.1.3. Output:

The new client information will be among the clients forms’ list.

4.3.1.4. Exception:

Exceptions are raised when the user does not fill the case id.

4.3.2. Client information management: Delete client information form

4.3.2.1. Purpose:

The lawyer should be able to delete a client information form due to some circumstances (client don’t want to continue with the case for instance).

4.3.2.2. Input:

The lawyer performs a search, once the corresponding client form displayed; he can select it then press the delete button.

4.3.2.3. Output:

The client information form is directly deleted from the clients’ forms list.
4.3.2.4. Exception:

Exceptions are raised when the user does not select the row to be deleted.

4.3.3. Client information management: *Edit client information form*

4.3.3.1. Purpose:

The lawyer should be able to edit a client information form, to add new data or modify previous ones.

4.3.3.2. Input:

The lawyer start by performing a search, once the corresponding client form displayed; he can select it then press the edit button. Then the client form is displayed with the old data and the lawyer can edit it.

4.3.3.3. Output:

The client information form is directly updated with the modification.

4.3.4. Client information management : *Search client information form*

4.3.4.1. Purpose:

The lawyer should be able to perform a search to retrieve a client information form. Many options are offered to the lawyer; he can search by case id, last name or first name of client.

4.3.4.2. Input:

The lawyer choses which kind of search to use, and according to what has been chosen textfields and buttons are displayed. Once the lawyer has entered the required data to retrieve the form, he can see all the corresponding forms.

4.3.4.3. Output:

The client information form is retrieved from the clients’ forms list and displayed to the screen.

4.3.4.4. Exception:

Exception is raised when the no such form exist.

4.3.5. Client information management: *View client information form*

4.3.5.1. Purpose:

The lawyer should be able to view the detailed clients information forms.
4.3.5.2. Input:
The lawyer performs a search, click on the corresponding row and then click on view button.

4.3.5.3. Output:
The detailed client information form is retrieved from the clients’ forms list and displayed to the screen.

4.3.5.4. Exception:
Exceptions are raised when the user does not select the row to be viewed and when the no such form exist.

4.3.6. Case Management: Add Case form
4.3.6.1. Purpose:
The lawyer should be able after filling the client form to add a new case related to that client along with the necessary information.

4.3.6.2. Input:
The lawyer should enter the case id which links the client to the new case and display basic information entered previously, then the lawyer can add new data related to the court to create a case form.

4.3.6.3. Output:
The case form is created and added to the list of cases.

4.3.6.4. Exception:
Exceptions are raised when the case id form does not exist.

4.3.7. Case Management: Delete Case form
4.3.7.1. Purpose:
The lawyer should be able to delete a case form, for instance if the case is dropped.

4.3.7.2. Input:
The lawyer first perform a search then choses the row corresponding to the form to be deleted and click on delete button.

4.3.7.3. Output:
The case form is removed from the list of cases.

4.3.7.4. Exception:

Exceptions are raised when the case form does not exist.

4.3.8. Case Management: *Edit Case form*

4.3.8.1. Purpose:

The lawyer should be able to edit a case’s form.

4.3.8.2. Input:

The lawyer first perform a search then choses the row corresponding to the form to be edited and click on edit button. Then the case form is displayed with previous saved data and the lawyer can modify any field.

4.3.8.3. Output:

The case form is updated and saved with the new information.

4.3.8.4. Exception:

Exceptions are raised when the case form does not exist.

4.3.9. Case Management: *Search Case form*

4.3.9.1. Purpose:

The lawyer should be able to perform a search to retrieve the information that appear in a case form.

4.3.9.2. Input:

The lawyer has several search options: search by id/ search by first name/ search by last name.

4.3.9.3. Output:

A list of cases form is displayed if the search was by name, otherwise one result or none is displayed if the search was by id.

4.3.9.4. Exception:
Exception is raised when the case form does not exist.

4.3.10. Case Management: View Case form
4.3.10.1. Purpose:
The lawyer should be able to view detailed cases form.
4.3.10.2. Input:
The lawyer after performing a search can select the appropriate row to display more information about the case form.
4.3.10.3. Output:
A list of cases form is displayed with major information.
4.3.10.4. Exception:
Exception is raised when the case form does not exist and when the user click on button while no row was selected.

4.3.11. Court Session Management: Add court session
4.3.11.1. Purpose:
The lawyer can add several court sessions to cases and fill it with necessary details.
4.3.11.2. Input:
The lawyer enters the case id; which display the majority of client and case information, and allow the lawyer to add information related to court session.
4.3.11.3. Output:
The court session is then added to the list of court sessions.
4.3.11.4. Exception:
Exception is raised when the id entered does not exist.

4.3.12. Court Session Management: Delete court session
4.3.12.1. Purpose:
The lawyer can delete a court session in case this last got canceled for example.
4.3.12.2. Input:
The lawyer performs first a search to retrieve the court session, then chooses the row related to the case to be deleted and click on delete button.

4.3.12.3. Output:
The court session is then removed from the list of court sessions.

4.3.12.4. Exception:
Exception is raised when the id entered does not exist or when no row is selected.

4.3.13. Court Session Management: Edit court session
4.3.13.1. Purpose:
The lawyer can edit a court session information.

4.3.13.2. Input:
The lawyer performs first a search to retrieve the court session, then chooses the row related to the case to be edited and click on the edit button.

4.3.13.3. Output:
The court session is then updated and saved with the new modifications in the list of court sessions.

4.3.13.4. Exception:
Exception is raised when the id entered does not exist or when no row is selected.

4.3.14. Court Session Management: Search court session
4.3.14.1. Purpose:
The lawyer can perform a search to retrieve a court session information or delete it.
The search can be done by id, folder number, and date.

4.3.14.2. Input:
The lawyer first choses what search to perform then according to what has been chosen, textfields and buttons appear so that the lawyer can enter the information necessary to find the court sessions and then click on ok.

4.3.14.3. Output:
A list of court sessions is then displayed if a search by date was chosen, otherwise one result or none is displayed if the search was by id or folder nb.
4.3.14.4. Exception:

Exception is raised when id or folder nb or date field is empty.

4.3.15. Court Session Management: View court session

4.3.15.1. Purpose:

The lawyer can view the week court sessions and the information related to them.

4.3.15.2. Input:

The lawyer chose a date.

4.3.15.3. Output:

The week court sessions are then displayed starting from the date chosen.

4.3.15.4. Exception:

Exception is raised when no date is chosen before clicking on the button.

4.3.16. Appointments Management: Add appointment

4.3.16.1. Purpose:

The lawyer can add appointments.

4.3.16.2. Input:

The lawyer enters the details of the appointments including date, time, location and subject.

4.3.16.3. Output:

The appointment is added to the list of appointments.

4.3.17. Appointments Management: Delete appointment

4.3.17.1. Purpose:

The lawyer should be able to delete an appointment if for example it got canceled.

4.3.17.2. Input:

The lawyer should click on the appointment to delete.

4.3.17.3. Output:

The appointment is removed from the list of appointments.
4.3.18. Appointments Management: *Edit appointment*

4.3.18.1. Purpose:

The lawyer should be able to edit an appointment with new information.

4.3.18.2. Input:

The lawyer should click on the appointment to edit.

4.3.18.3. Output:

The appointment is updated and saved with the new modifications in the list of appointments.

4.3.19. Documents Management: *Add document*

4.3.19.1. Purpose:

The lawyer should be able to add documents like pieces of evidence to the case.

4.3.19.2. Input:

The lawyer should upload the pdf file and add it to a case by entering the case id.

4.3.19.3. Output:

The documents is added to the list of documents belonging to that case.

4.3.19.4. Exception:

Exception happens when no id is entered or no file is uploaded.

4.3.20. Documents Management: *Search document*

4.3.20.1. Purpose:

The lawyer should be able to search for documents by entering the case id; which display the whole list of documents saved under that case id.

4.3.20.2. Input:

The lawyer should enter the case id.

4.3.20.3. Output:

A list of documents is displayed.

4.3.20.4. Exception:

Exception happens when no id is entered before clicking on ok button.
4.3.21. Documents Management: *Delete document*

4.3.21.1. Purpose:

The lawyer should be able to delete documents by entering the case id and selecting one of the documents that appear in the list.

4.3.21.2. Input:

The lawyer should enter the case id and select the document to be deleted.

4.3.21.3. Output:

The document is removed from the list of documents.

4.3.21.4. Exception:

Exception happens when no id is entered before clicking on delete button.

4.3.22. Documents Management: *View document*

4.3.22.1. Purpose:

The lawyer should be able to see a preview of the documents.

4.3.22.2. Input:

The lawyer should enter the case id and select the document to be displayed or upload a pdf file.

4.3.22.3. Output:

The document is displayed on the screen.

4.3.22.4. Exception:

Exception happens when no id is entered or no pdf file is uploaded before clicking on ok button.

4.3.23. Contact Management: *Add contact*

4.3.23.1. Purpose:

The lawyer should be able to add contacts along with their information.

4.3.23.2. Input:

The lawyer should enter the contact information such as name, phonenb, and fax nb.

4.3.23.3. Output:

The contact is added to the list of contacts.
4.3.24. Contact Management: Search contact
4.3.24.1. Purpose:
   The lawyer should be able to search for contacts using different ways such as type, or name.
4.3.24.2. Input:
   The lawyer should enter the search information.
4.3.24.3. Output:
   A list of contacts is displayed to the lawyer with corresponding information.

4.3.25. Contact Management: Edit contact
4.3.25.1. Purpose:
   The lawyer should be able to edit contacts information.
4.3.25.2. Input:
   The lawyer should search for the contact then select corresponding row before clicking on edit button.
4.3.25.3. Output:
   The contact information is updated.
4.3.25.4. Exception:
   An exception happens if no row is selected before clicking on the button.

4.3.26. Contact Management: Delete contact
4.3.26.1. Purpose:
   The lawyer should be able to delete contact from contacts’ list.
4.3.26.2. Input:
   The lawyer should search for the contact then select corresponding row before clicking on delete button.
4.3.26.3. Output:
   The contact is deleted from contacts’ list.
4.3.26.4. Exception:
An exception happens if no row is selected before clicking on the button.

**4.3.27. Procedure Management: Add procedure**

4.3.27.1. Purpose:
The lawyer should be able to add a procedure and link it to a case.

4.3.27.2. Input:
The lawyer should enter at the beginning the case id and then the date and procedure description.

4.3.27.3. Output:
The procedure is added to the procedures’ list and linked to the case.

4.3.27.4. Exception:
An exception happens if no date or description is entered before clicking on save button.

**4.3.28. Procedure Management: Edit procedure**

4.3.28.1. Purpose:
The lawyer should be able to edit a procedure with new modifications.

4.3.28.2. Input:
The lawyer should search for the procedure by entering at the beginning the case id and then selecting the procedure to modify from the list displayed.

4.3.28.3. Output:
The procedure is updated to the procedures’ list with new modifications.

4.3.28.4. Exception:
An exception happens if id entered doesn’t exist or no row is selected.

**4.3.29. Procedure Management: Delete procedure**

4.3.29.1. Purpose:
The lawyer should be able to delete a procedure.

4.3.29.2. Input:
The lawyer should search for the procedure by entering at the beginning the case id and then selecting the procedure to delete from the list displayed.

4.3.29.3. Output:
The procedure is deleted from the procedures’ list.
4.3.29.4. Exception:
An exception happens if id entered doesn’t exist or no row is selected.

4.3.30. Procedure Management: Search procedure
4.3.30.1. Purpose:
The lawyer should be able to search for a procedure.
4.3.30.2. Input:
The lawyer should search for the procedure by entering at the beginning the case id.
4.3.30.3. Output:
The procedure information are displayed.
4.3.30.4. Exception:
An exception happens if id entered doesn’t exist.

4.3.31. Procedure Management: View procedure
4.3.31.1. Purpose:
The lawyer should be able to view the procedure.
4.3.31.2. Input:
The lawyer should search for the procedure by entering at the beginning the case id and then select the row to display.
4.3.31.3. Output:
The procedure information are displayed.
4.3.31.4. Exception:
An exception happens if id entered doesn’t exist.
4.4. Non functional requirements

4.4.1. Product requirement

4.4.1.1. Usability requirement:
The application is user friendly, and provide a simple interface to facilitate the interaction with the user and its understanding. The application has a simple and clear menu allowing the user to directly access his documents, cases….

4.4.1.2. Efficiency requirement:

4.4.1.2.1. Performance requirement:
The start time shall be quick as well as the response time which doesn’t exceed the 8 seconds since the throughput representing the number of operations performed in a second is not high.

4.4.1.2.2. Space requirement:
The memory size of the system shall be at most 1200 Kb

4.4.1.3. Reliability requirement:
The system shall be reliable and each of its functions shall perform as required.

4.4.1.4. Portability requirement:
The system shall be compatible with Windows operating systems.

4.4.2. Organizational requirement:

4.4.2.1. Delivery requirement:
E-lawyer application should be delivered by the beginning of December.

4.4.2.2. Development requirement:
The application should be developed using c#.
4.4.3. **External requirement:**

4.4.3.1. **Ethical requirement:**

E-lawyer application shall rely on ethics to make sure to not infringe any ethical rules or regulations like not disclosing the clients’ information.

4.4.3.2. **Legislative requirement:**

4.4.3.2.1. **Privacy requirement:**

The application shall not disclose any client information and protect data from an unauthorized access, this is ensured by the login page at the launch of the application.
5. Design and analysis

5.1. Entity relationship diagram

The entity relationship diagram reflects the project’s database’s tables with their entities, attributes and relationships. Figure 1 below reflects the EER (enhanced entity relationship) Diagram created in Mysql Workbench, reflecting the project database components.

Figure 1: EER Diagram
5.2. Use Case Diagram

The use case diagram gives a description of the system major components and features as well as representation of the functionality of your system from a top-down perspective [4]. It includes the actors, system, use case, and relationships between them. Regarding E-lawyer application, there is only one actor, who is the lawyer that will have access to it. Also a number of actions are available to him and are represented in more details in figure 2 below.

![Image: Use case diagram](image_url)

*Figure 2: Use case diagram*
5.3. Sequence diagrams

The sequence diagrams represent the interaction between the different objects over a specific period of time. They model the flow of logic within the system in a visual manner, enabling at the same time to both document and validate the logic, and are commonly used for both analysis and design purposes [5].

Figure 3 shows the sequence diagram of how the authentication process is done.

![Sequence diagram for authentication](image-url)
Figure 4 shows the sequence diagram of adding a new client information form. The add is done through a number of unique steps that the lawyer should follow in order to achieve the add client information process.

Figure 4: Sequence diagram for add client information
5.4. Class diagram

Class diagrams show the classes of the system, their interrelationships (including inheritance, aggregation, and association), and the operations and attributes of the classes [6]. The figure below illustrates the class diagram of E-lawyer application.

---

**Figure 5: Class Diagram**
6. Development and Implementation

6.1. Mysql database- Visual Studio connection

Figure 2 illustrates a snippet c# code from visual studio used to establish a connection between the database Mysql and the application platform.

```csharp
MySQLConnection con = new MySqlConnection();
MySqlCommand cmd;

public Form1()
{
    InitializeComponent();
    try
    {
        con.ConnectionString = "server=localhost;user id=root;persistsecurityinfo=True;data
        con.Open();
        MessageBox.Show("connected to mysql database");
    }
    catch (Exception e1)
    {
        MessageBox.Show("connection failed due to " + e1.ToString());
    }
}
```

*Figure 6: Visual studio connection to Mysql Database*
6.2. Authentication code

The figure below shows a snippet code for the authentication process required at the start of e-lawyer application.

```csharp
DataSet ds = new DataSet();

if (usernameTextBox.Text == "" || passwordTextBox.Text == "")
{
    MessageBox.Show("الرجو إدخال المعلومات");
    return;
}
try
{
    con.ConnectionString = "server=localhost;user id=root;password=saradkh";
    con.Open();

    string stm =
    "SELECT username, user_pass " +
    "FROM user " +
    "WHERE username = '" + usernameTextBox.Text +
    "' AND user_pass = '" + passwordTextBox.Text + "]";

    MySqlCommand cmd = new MySqlCommand(stm, con);
    MySqlDataReader rdr = cmd.ExecuteReader();

    if (rdr.Read())
    {
        this.Hide();

        test2 frm = new test2();
        frm.Size = Screen.PrimaryScreen.WorkingArea.Size;
        frm.FormBorderStyle = FormBorderStyle.None;
        frm.ShowDialog();
    }
}
```

Figure 7: Code snippet, Authentication
7. Difficulties

To achieve those results and fulfill my capstone design project, I had to go through a number of difficulties and face several obstacles. The majority of the problems I faced was due to my lack of knowledge about the law field, including how a lawyer business works, the new concepts and technical data… To get over this obstacles I did several interviews with other lawyers to understand more the concepts and how the application is supposed to work. The other obstacles were about the technical aspect; the implementation and the errors/ exceptions it raised, as well as the huge amount of time it required while being organized and focus; which wasn’t easy.
8. Outcomes

By the end of my capstone project, I got the chance to learn several things. I was able to gain more experience in my field, in developing desktop applications and learning a new programming language (C#). I also had the chance to acquire a certain knowledge concerning the law field and how a lawyer business works; in addition of getting a real experience similar to work field; with a real client.
9. Screenshots of E-lawyer application

Figure 8: Login interface

Figure 9: Menu page
Figure 10: Add client information page

Figure 11: Search client information form page
Figure 12: Add case information

Figure 13: Search case information form
Figure 14: Add procedure to case

Figure 15: Add court session information
Figure 16: Search court session information

Figure 17: View week court sessions
Figure 18: Preview, add and delete case’s document
8. CONCLUSION

This report introduces my capstone project and reflects the work’s results; in addition of details about each phase outcomes. During this period, the project requirements specification were first gathered then analyzed, the environment’s settings needed for the development of the application were chosen and established; and the implementation phase which was one of the major phases required a lot of work. The e-lawyer application is a full system offering the lawyer a way to handle several aspects of his business with one application.
9. REFERENCES


بطاقة المعلومات

المراجع: .................................
تاريخ التسجيل: ........................
الأتعاب: ................................. درهم.

لفائدة: .................................
رقم بطاقة التعريف الوطنية: ............................
العنوان: .................................
الهاتف: .................................
ضد: .................................
العنوان: .................................

موضوع الدعوى: .................................
الوقائع: .................................

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Appendix A

Abdelouahed JABRI
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## Appendix B

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### جدول الجلسات

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