



CS 353

DATABASE MANAGEMENT SYSTEMS PROJECT

Project Design Report

National Judiciary Informatics System

05.04.2018

Group 22

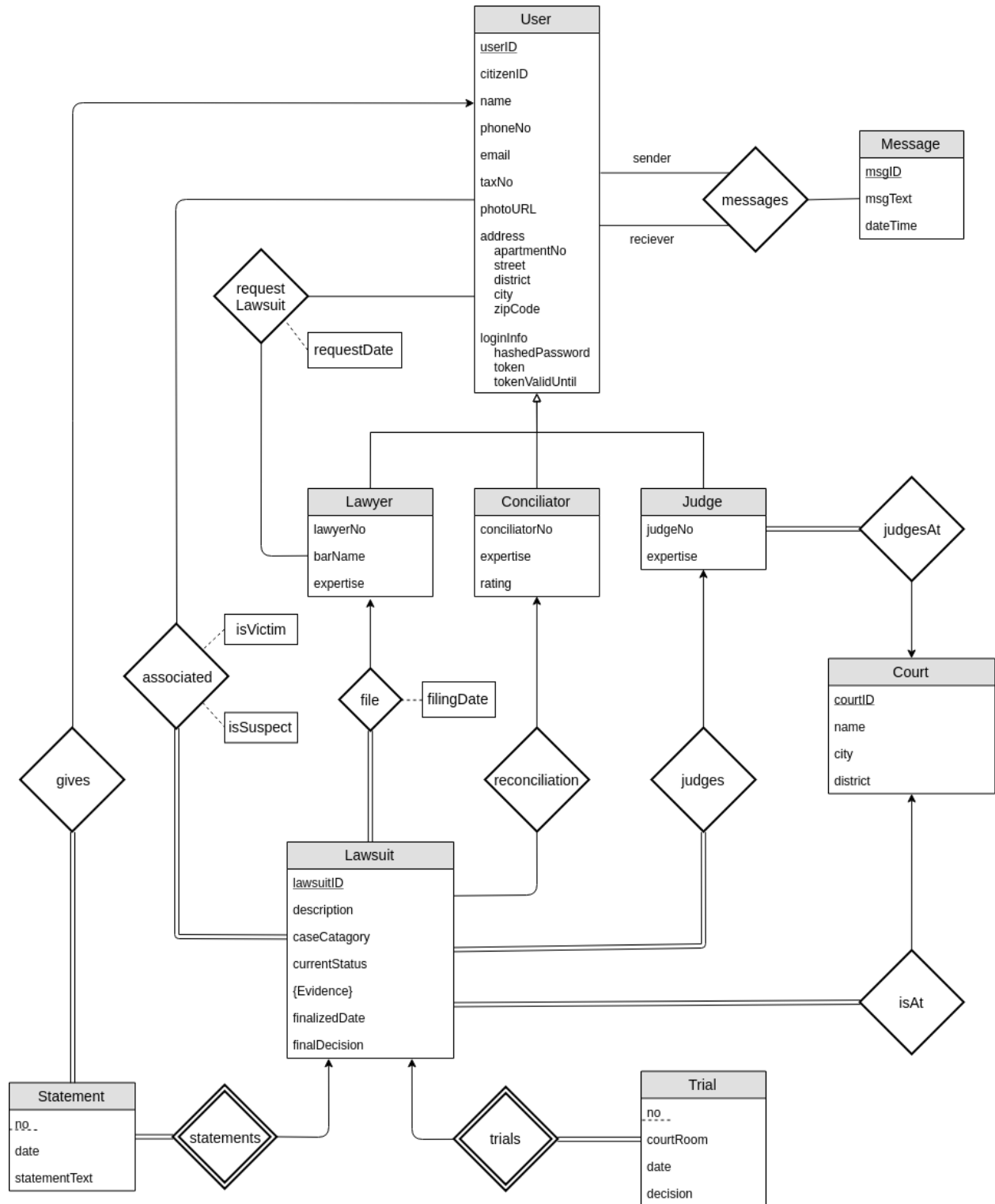
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1. REVISED E/R DIAGRAM



2. RELATION TABLE SCHEMAS

2.1 USER

Relational Model

User(userID, citizenID name, phoneNo, email, taxNo, photoURL, apartmentNo, street, district, city, zipCode)

2.2 LAWYER

Relational Model

Lawyer(userID, lawyerNo, barName, expertise)

FK: userID references User

2.3 CONCILIATOR

Relational Model

Conciliator(userID, conciliatorNo, expertise, rating)

FK: userID references User

2.4 JUDGE

Relational Model

Judge(userID, judgeNo, expertise, courtID)

FK: userID references User

2.5 COURT

Relational Model

Court(courtID, name, city, district)

2.6 LAWSUIT

Relational Model

Lawsuit(lawsuitID, description, filingDate, caseCategory, currentStatus, finalizedDate, finalDecision, courtID, judgeID, filedLawyerID)

FK: courtID references Court

FK: judgeID references Judge(userID)

FK: filedLawyerID references Lawyer(userID)

2.7 LAWSUIT EVIDENCE

LawsuitEvidence(lawsuitID, evidenceNo, evidenceDescription)

2.8 MESSAGE

Relational Model

Message(msgID, msgText, dateTime)

2.9 TRIAL

Relational Model

Trial(lawsuitID, no, date, courtRoom, decision)

FK: lawsuitID references Lawsuit

2.10 STATEMENT

Relational Model

Statement(lawsuitID, no, date, statementText, userID)

FK: lawsuitID references Lawsuit

FK: userID references User

2.11 RECONCILIATION

Relational Model

reconciliation = (lawsuitID, userID)

FK: lawsuitID references Lawsuit

FK: userID references Conciliator(userID)

2.12 ASSOCIATED

Relational Model

associated = (lawsuitID, userID, isVictim, isSuspect)

FK: lawsuitID references Lawsuit

FK: userID references User

2.13 REQUEST LAWSUIT

Relational Model

requestLawsuit = (userID, lawyerID, requestDate)

FK: userID references User(userID)

FK: lawyerID references Lawyer(userID)

2.14 MESSAGES

Relational Model

messages = (senderID, recieverID, msgID)

FK: senderID references User(userID)

FK: recieverID references User(userID)

FK: msgID references Message

3. FUNCTIONAL COMPONENTS

3.1 USE CASES / SCENARIOS

3.1.1 Administrator

Upgrade citizen accounts: Admins can upgrade citizen accounts to lawyer, judge or conciliator accounts.

Downgrade special accounts: Admins can downgrade lawyer, judge or conciliator accounts to citizen accounts.

View tables: Admins can view all the information in the system

Edit tables: Admins can edit all the information in the system. They can manually add and delete tuples in tables.

3.1.2 Citizen

Create an account: Citizens must create an account to participate in system

Login to system: Citizens must login to participate in system

Edit personal information: Personal information like contact information can be changed by citizens.

Open a lawsuit: Court, suspects, lawsuit type and claim should be given.

View lawsuits related to them: Citizens can see all information about lawsuits related to them, including trials of the lawsuit.

Accept an assigned lawyer: Lawyers assigned to a citizen have to be confirmed to be effective in system.

View a citizen's related lawsuits: The information about these lawsuits will be restricted.

3.1.3 Lawyer

Perform a citizen use case: Lawyers are also a citizen, hence have their use cases included.

Assign to a citizen: Lawyers can add clients.

Open a lawsuit for a client: They can open a lawsuit in name of their client.

View clients' lawsuits: They can see information about their clients' lawsuits, including trials.

3.1.4 Judge

Perform a citizen use case: Judges are also a citizen, hence have their use cases included.

Give a decision to an assigned lawsuit: Judges can finalize a lawsuit.

Setup a trial for an assigned lawsuit: Judges can create a new trial for their assigned lawsuits.

Cancel arranged trial: Judges can cancel a trial they arranged.

Archive trial: Judges will enter the statements of stakeholders in a trial

Assign a conciliator: Judges will be able to assign a conciliator to some type of lawsuits they are assigned to.

3.1.5 Conciliator

Perform a citizen use case: Conciliators are also a citizen, hence have their use cases included.

View cases assigned: Conciliators can see their assigned cases.

Reconciliate a case: Conciliators can finalize a lawsuit they are assigned by entering agreed terms from both parties.

3.2 ALGORITHMS

3.2.1 Filing a lawsuit (by a citizen or lawyer)

Any citizen can open a lawsuit against any citizen. Additionally, a lawyer of a citizen can open a lawsuit in name of their client. Lawsuits initially include information provided from the victim or their lawyer. This information include court, suspected citizens and type of the lawsuit. For extra information the suing party will also provide a description to the system. After a lawsuit is filed, the system will assign a judge to the lawsuit and begin trialing process, which is also managed by judge. Judges also manage the publicity of the lawsuits, and they can decide for which parts of the lawsuit can be seen by other citizens.

3.2.2. Deciding on a lawsuit (by a judge)

Judges will be assigned to manage lawsuits by the system. Judges will be able to see both their decided and ongoing lawsuits. They also manage trials of the lawsuits, they can arrange and cancel trials. They also fill the information about the trials to the system. Depending on the type of the lawsuit, a judge may decide to assign a conciliator to the lawsuit to grant access to finalize the lawsuit. A lawsuit and its trials are archived after being finalized.

3.2.3 Reconciliation (by a conciliator)

Conciliators manage reconciliation process in the system. They are assigned by judges to finalize lawsuits without unnecessary trials. They can see their assigned lawsuits both archived and ongoing. They can complete a reconciliation case by entering the agreed terms from both parties and finalize the case.

3.3 DATA STRUCTURES

For the numeric types in the project, we are going to use **int**, int variations such as **tinyint**, **shortint**, etc. and **bit**. Small variations of int will be used to decrease the need of storage.

Aside from the numeric types, **int(11)** will be used for dates represented in UNIX timestamps. (We will avoid storing dates in data structures such as **date**, **datetime** or **time**.)

For the string types, **varchar** will be used for shorter strings such as names, telephone numbers, citizen ID, etc. For long texts such as judge verdict details, **text** will be used.

4. UI DESIGN AND SQL STATEMENTS

4.1 LOGIN PAGE

A Web Page

http://nationaljudiciaryinfo.com

Sign Up

Logo

Welcome to National Judiciary Information System !

User ID:

Password:

Login

Forgot my password

Related SQL:

```
"SELECT citizenID FROM User
    WHERE citizenID = '$user_ID'
    AND password = '$pass'";
```

Where \$pass is the hashed password input to be compared with the hashed password stored in the database.

4.2 SIGN UP PAGE

A Web Page

http://nationaljudiciaryinfo.com/sign-up

Sign Up

Surname:*

Name:*

National ID:*

Adress:*

City:*

Zip Code: *

E-mail:*

Phone Number: *

(*) refers to obligatory information to register to the system

Create My Account

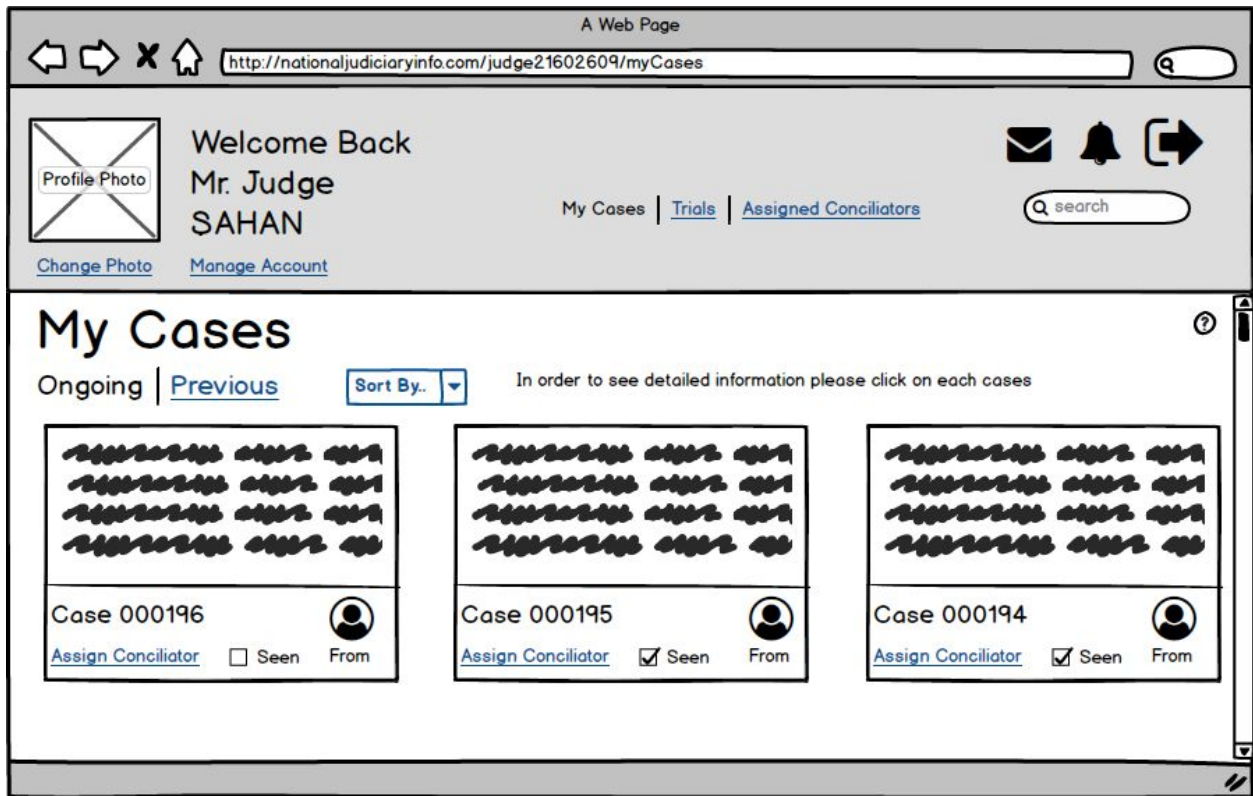
Related SQL:

```
"INSERT INTO User (citizenID, name, phoneNo, email, taxNo, address,
city, zipCode)
VALUES ('$citizen_id', '$name', '$phoneNo', '$email', '$taxNo',
'$address', '$city', '$zipcode');"

```

Where each string variable is the data obtained from manipulated input values.

4.3 JUDGE'S WELCOME PAGE



Related SQL:

```
"SELECT * FROM Lawsuit INNER JOIN LawsuitJudge ON Lawsuit.lawsuitID =  
LawsuitJudge.lawsuitID WHERE LawsuitJudge.judgeNo = '$judgeNo' AND  
Lawsuit.currentStatus = 0";
```

Where currentStatus = 0 indicates that the case is not yet finalized, (i.e. it is an open case) and \$judgeNo is the user's (judge) id.

4.4 MANAGING ACCOUNT PAGE

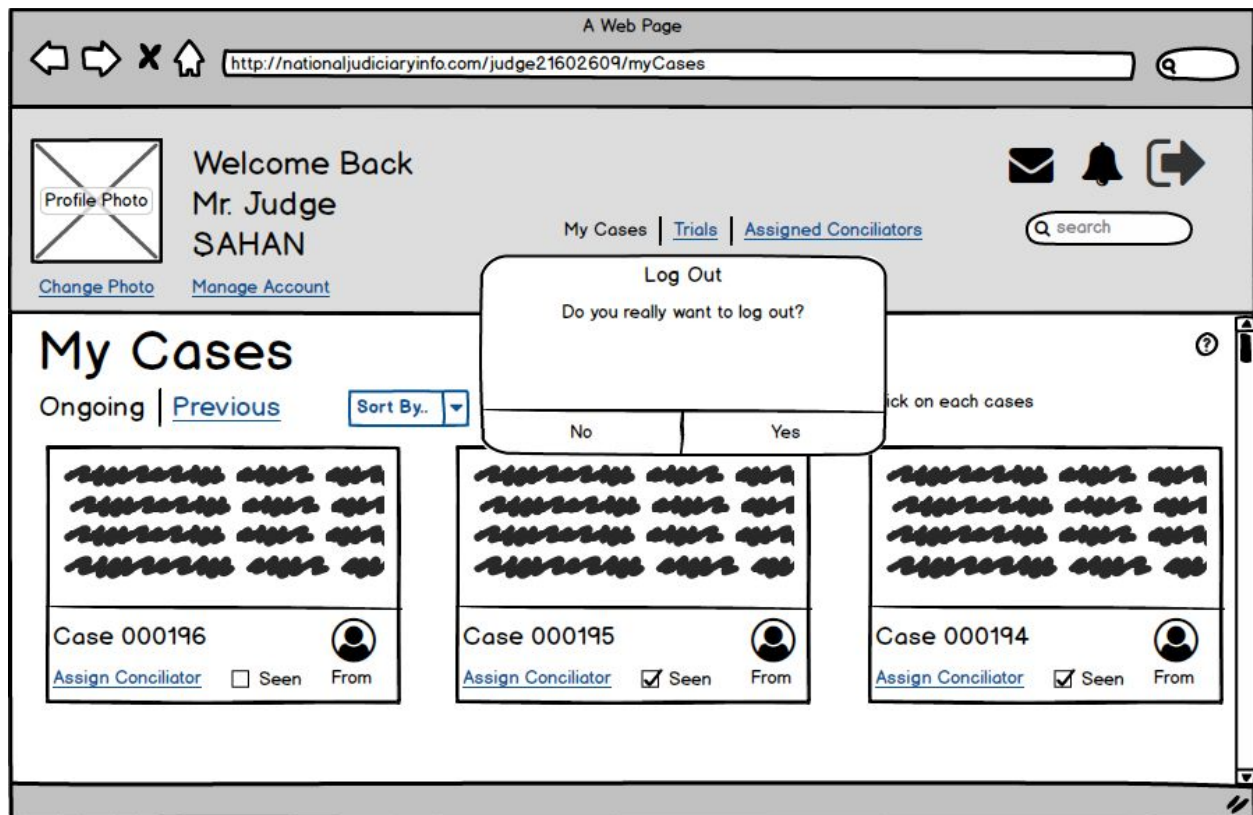
The screenshot shows a web browser window with the address bar displaying `http://nationaljudiciaryinfo.com/judge21602609/myCases`. The page title is "A Web Page". The header section includes a "Profile Photo" placeholder, a welcome message "Welcome Back Mr. Judge SAHAN", and navigation links: "My Cases", "Trials", and "Assigned Conciliators". There are also icons for email, notifications, and a search bar with the text "Q search". Below the header, the main section is titled "Manage Account". It features a large "Profile Photo" placeholder on the left. To the right of the photo are form fields for "Surname", "Name", "National ID", and "Address". The "Surname" field contains a scribbled name, the "Name" field contains a scribbled name, and the "National ID" field contains a scribbled ID number. The "Address" field contains a scribbled address string. An "Edit" button is located to the right of the "Address" field.

Related SQL:

```
"UPDATE User SET photoURL = '$photoURL', address = '$address' WHERE citizenID = '$citizen_id'";
```

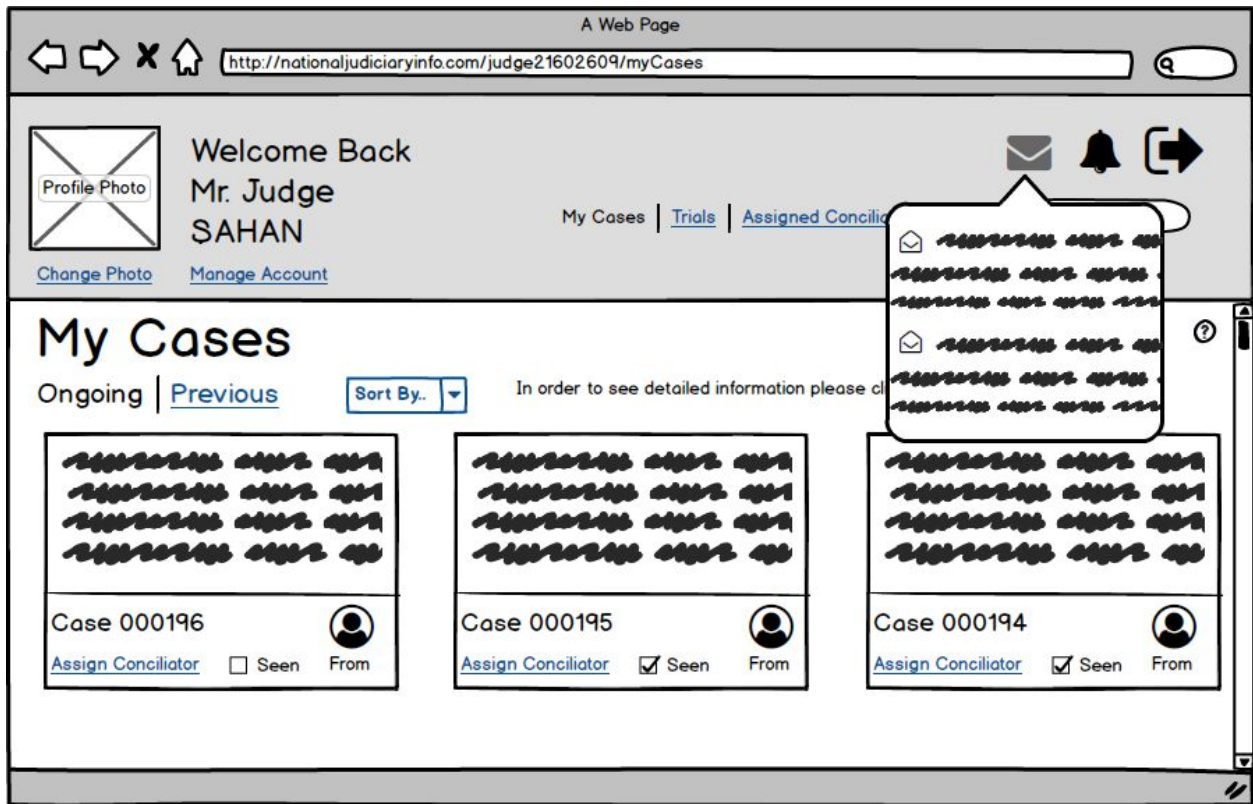
Where \$citizen_id is the variable which indicates the id of the edited account, \$photoURL is the URL which contains the URL of updated picture, \$address is the updated address string.

4.5 SIGN OUT PAGE



This action does not require any SQL statements, only changing the session cookies is necessary for logging out.

4.6 MESSAGE PAGE

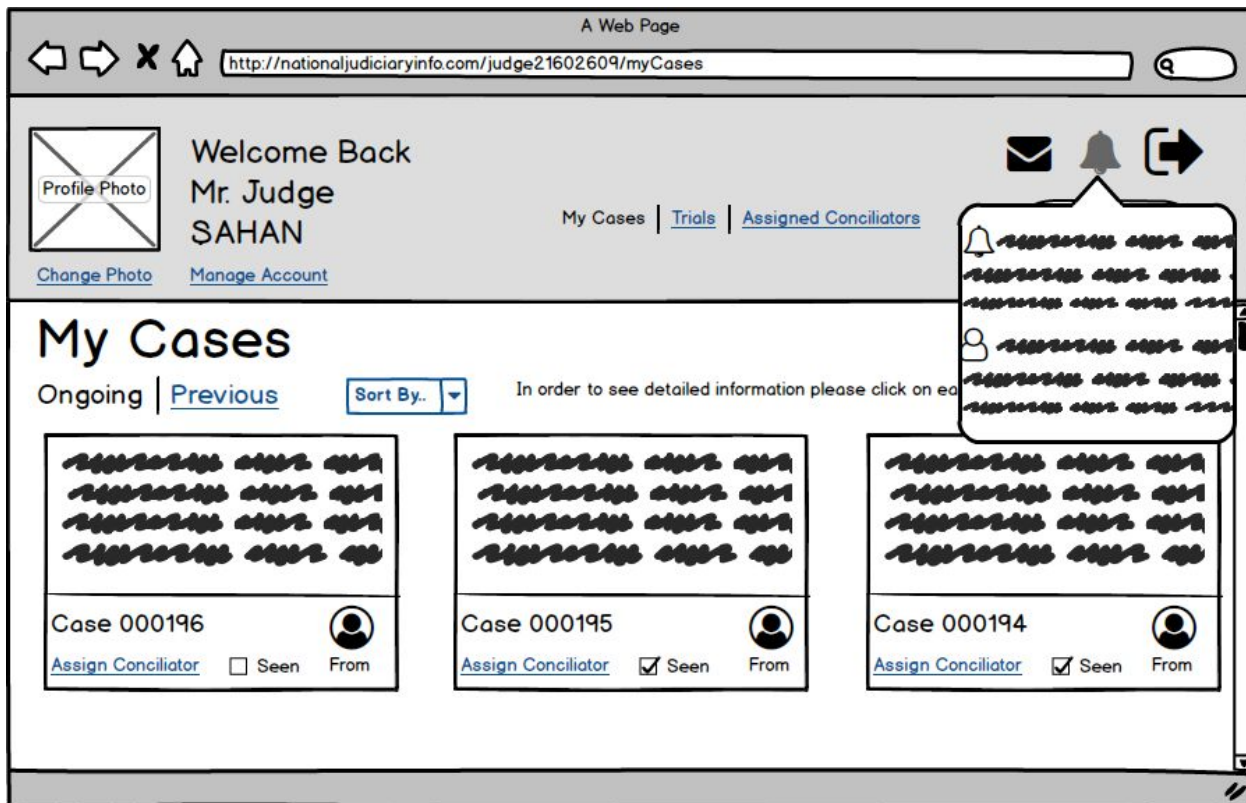


Related SQL:

```
"SELECT sender_id, subject, content FROM UserDMs where recipient_id =  
'$citizen_id'";
```

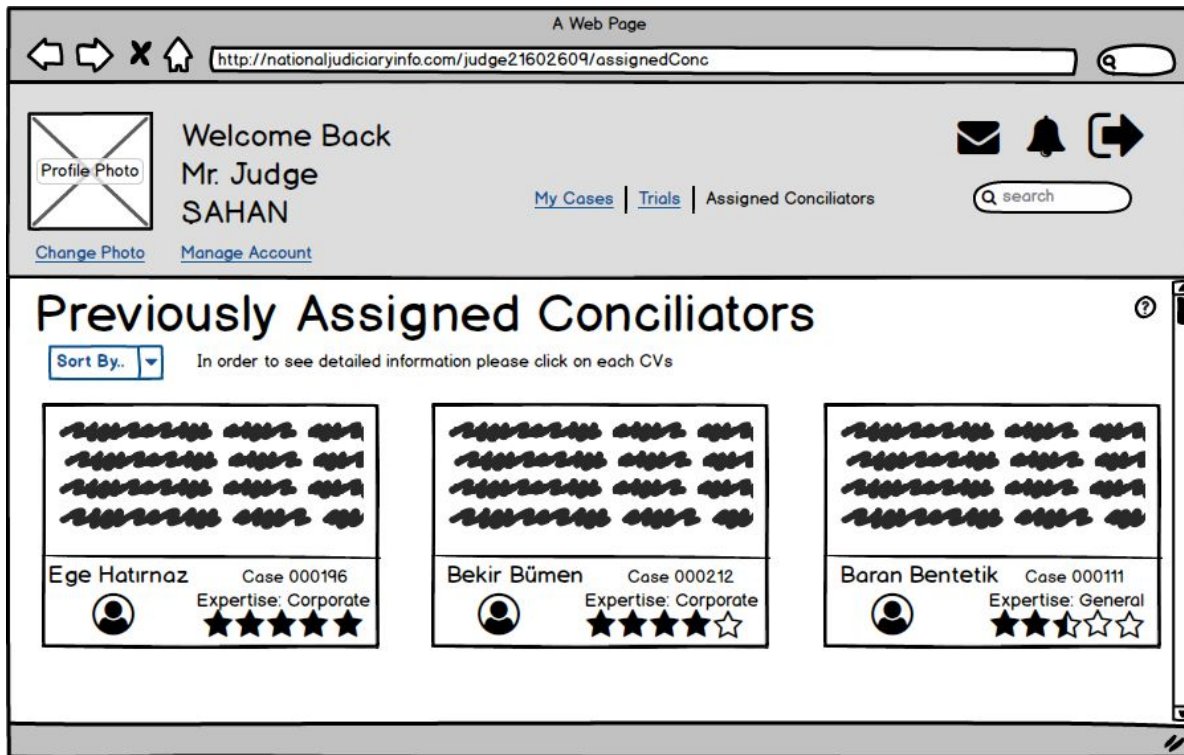
Where \$citizen_id is the user's citizen ID for obtaining the direct messages sent to that particular user.

4.7 NOTIFICATION PAGE



We do not need any SQL query to indicate notification page.

4.8 ASSIGNED CONCILIATORS

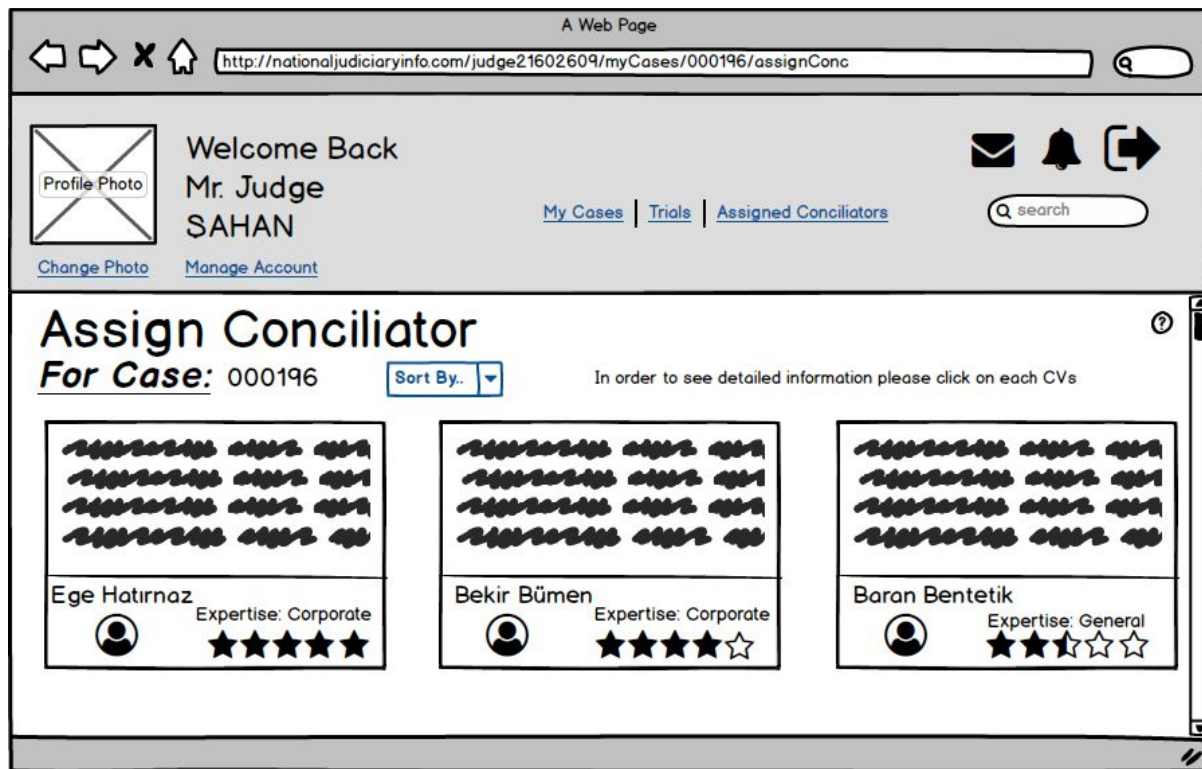


Related SQL:

```
"SELECT * FROM Lawsuit_Conciliator_table ORDER BY rating DESC";
```

Where Lawsuit_Conciliator_table is the table which includes the lawsuitID, conciliatorNo and every other detail regarding to that matchup such as rating, etc. The example is sorted in a descending rating order.

4.9 ASSIGN A CONCILIATOR

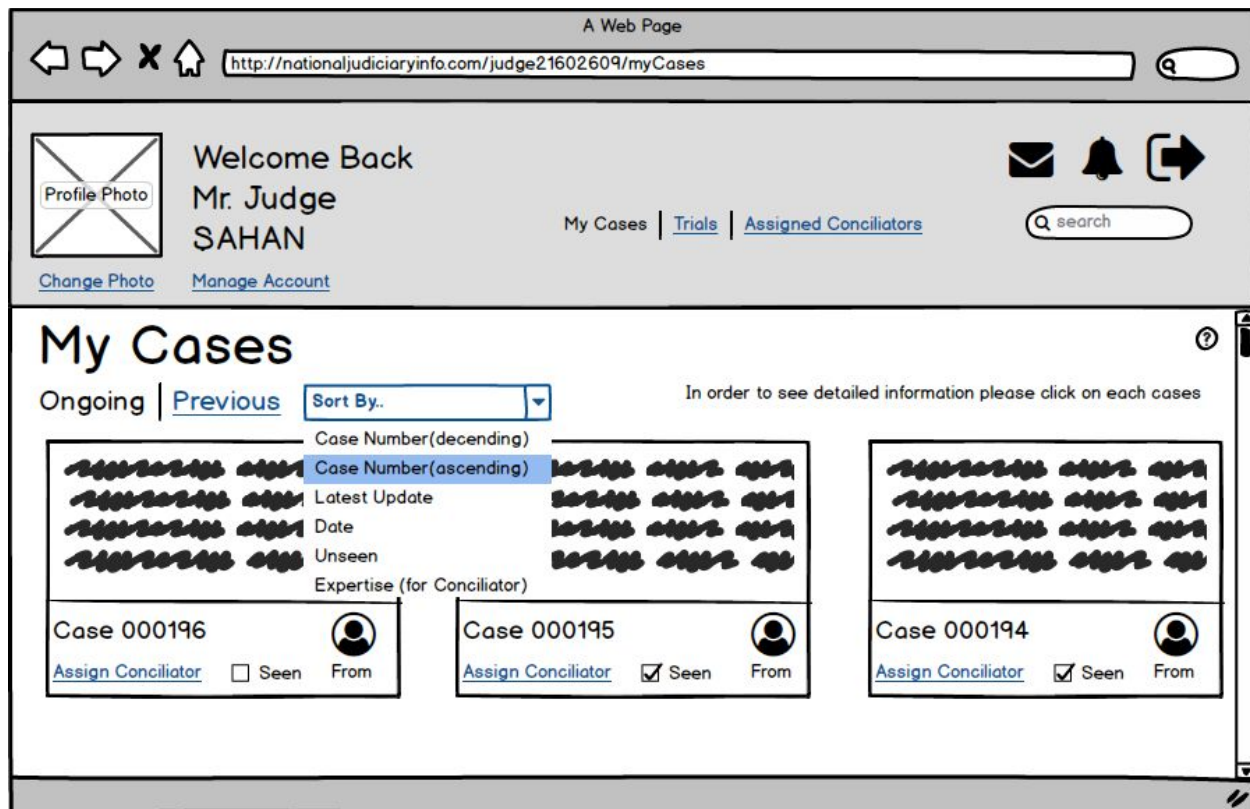


Related SQL:

```
"SELECT * FROM Conciliator INNER JOIN Lawsuit ON  
Conciliator.expertise = Lawsuit.caseCategory WHERE Lawsuit.lawsuitNo  
= '$caseNo' ORDER BY rating DESC";
```

Where \$caseNo is the case which conciliator will be assigned on. This will give only the related conciliators for the case at hand. The example is sorted in a descending rating order.

4.10 SORTING IN CASES

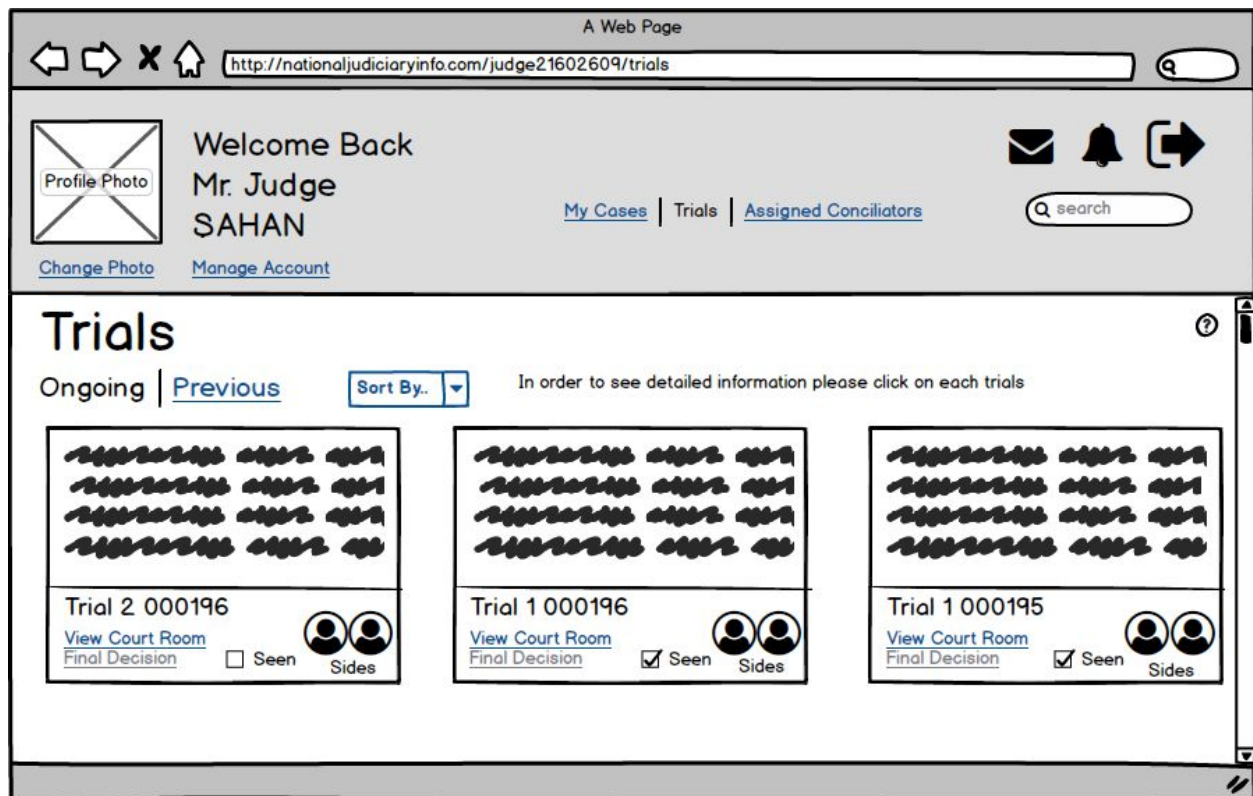


Related SQL:

```
"SELECT * FROM Lawsuit INNER JOIN LawsuitJudge ON Lawsuit.lawsuitID =  
LawsuitJudge.lawsuitID WHERE LawsuitJudge.judgeNo = '$judgeNo' AND  
Lawsuit.currentStatus = 0 ORDER BY '$sortingType'";
```

Where `currentStatus = 0` indicates that the case is not yet finalized, (i.e. it is an open case), `$judgeNo` is the user's (judge) ID and `$sortingType` is the string which would sort the data. `$sortingType` might be "caseNo DESC" which would indicate the cases will be sorted in a descending case number.

4.11 TRIALS (EXAMPLE OF JUDGES)

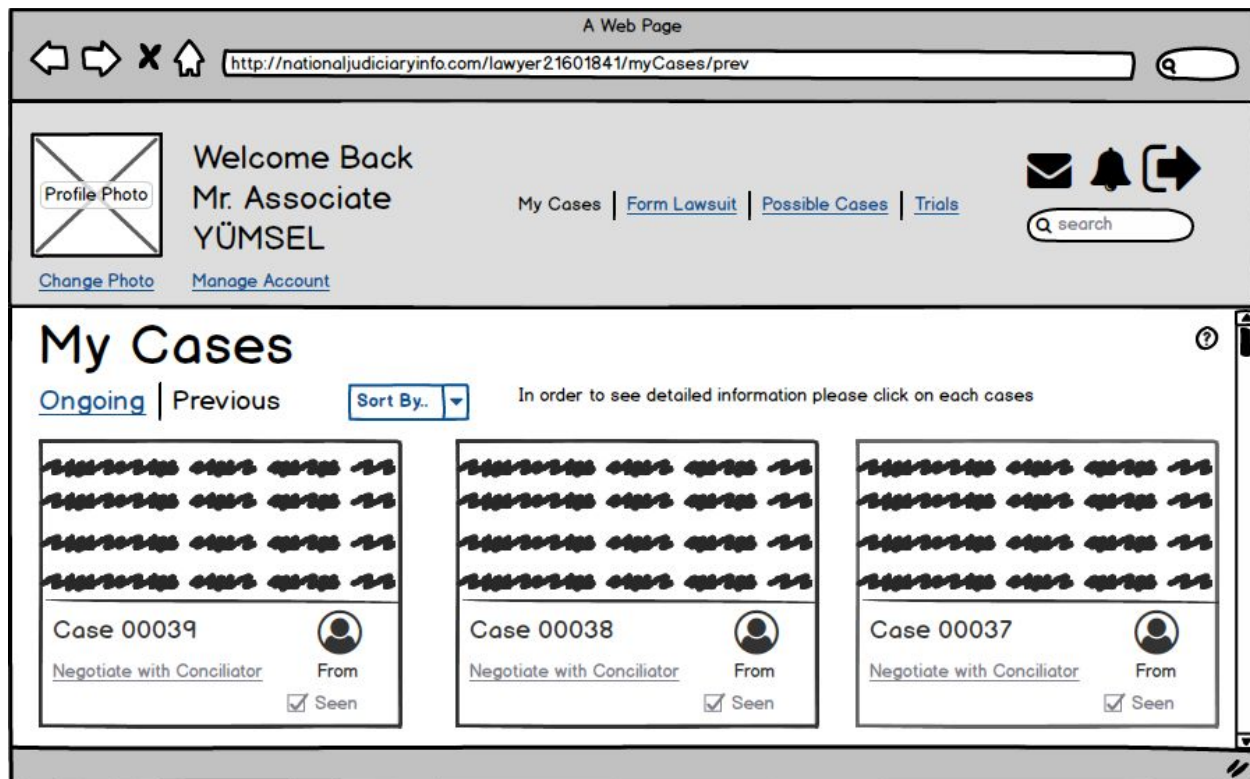


Related SQL:

```
"SELECT * FROM Trial INNER JOIN TrialJudge ON Trial.no =  
TrialJudge.trialNo WHERE TrialJudge.judgeNo = '$judgeNo'";
```

Where \$judgeNo is the user (judge) ID.

4.12 LAWYER'S WELCOME PAGE

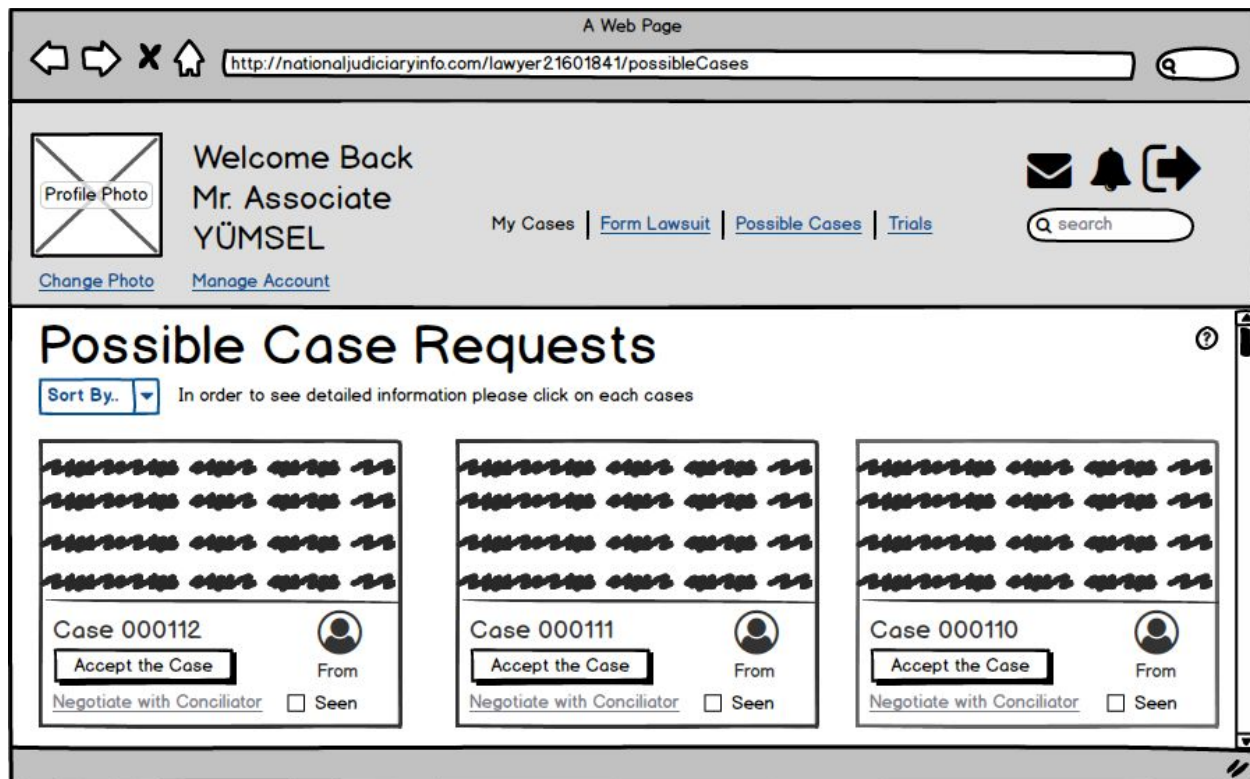


Related SQL:

```
"SELECT * FROM Lawsuit INNER JOIN LawsuitLawyer ON Lawsuit.lawsuitID  
= LawsuitLawyer.lawyerNo WHERE LawsuitLawyer.lawyerNo = '$lawyerNo  
AND Lawsuit.currentStatus = 0";
```

Where currentStatus = 0 indicates that the case is not yet finalized, (i.e. it is an open case) and \$lawyerNo is the user's (lawyer) id. LawsuitLawyer is the table which stores the lawsuit id's with corresponding lawyer id's.

4.13 LAWYER'S POSSIBLE CASES



Related SQL:

```
"SELECT * FROM Lawsuit INNER JOIN LawsuitLawyer ON Lawsuit.lawsuitID
= LawsuitLawyer.lawsuitID WHERE LawsuitLawyer.lawyerNo = '$lawyerNo
AND Lawsuit.currentStatus = 3";
```

Where `currentStatus = 3` indicates that the case is a request, (i.e. not opened yet and it is incomplete) and `$judgeNo` is the user's (judge) id. `LawsuitLawyer` is the table which stores the lawsuit id's with corresponding lawyer id's.

4.14 FORMING A LAWSUIT

The screenshot shows a web browser window with the URL `http://nationaljudiciaryinfo.com/lawyer21601841/formLawS`. The page header includes a welcome message for 'Mr. Associate YÜMSEL' and navigation links: 'My Cases', 'Form Lawsuit', 'Possible Cases', and 'Trials'. There is also a search bar and icons for email, notifications, and a share button. The main content area is titled 'New Lawsuit' and contains the following form fields:

- Victim**: A text input field.
- Category**: A dropdown menu with 'Categories' selected.
- Description**: A large text area for the lawsuit description.
- Suspect**: A text input field.
- Court**: A dropdown menu with 'Courts' selected.

At the bottom of the form is a button labeled 'Form'.

Related SQL:

```
"INSERT INTO Lawsuit (description, caseCategory, currentStatus)
VALUES ('$description', '$category', '0')";

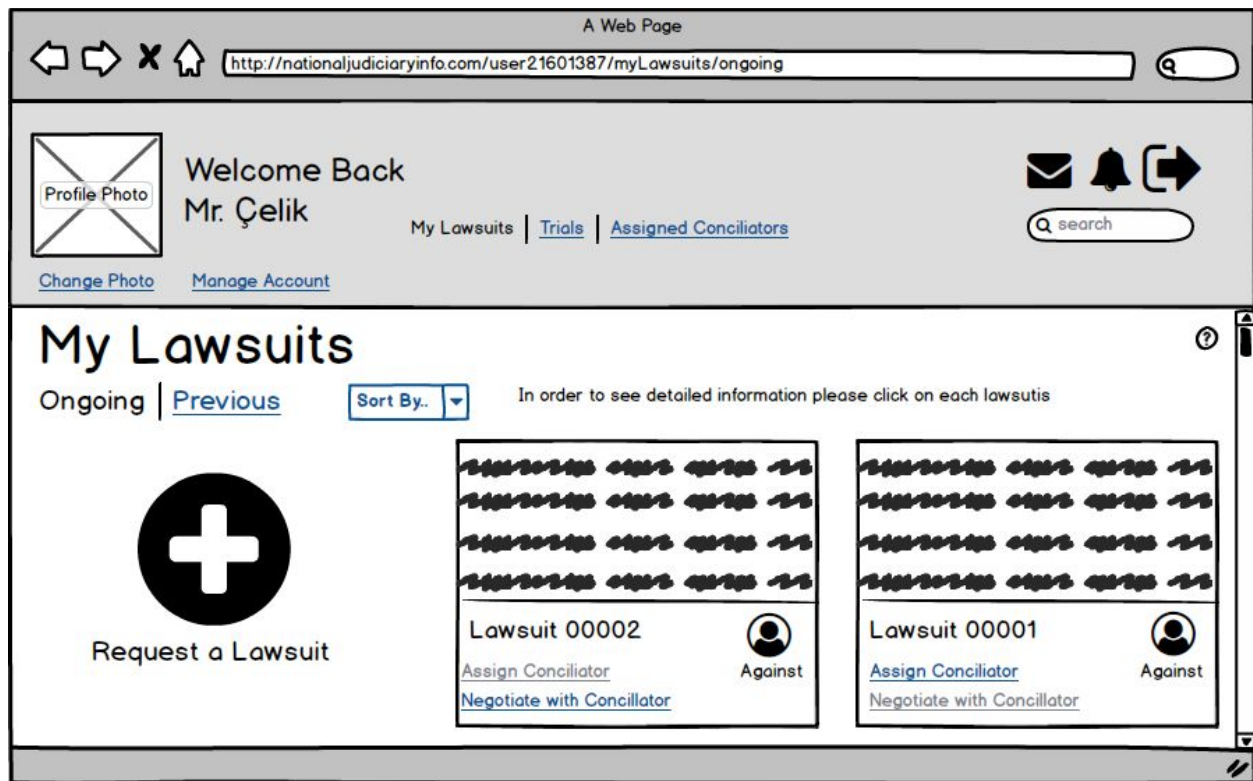
"INSERT INTO LawsuitVictim (lawsuitID, citizenID)
VALUES ('$lawsuitID', '$victimID')";

"INSERT INTO LawsuitSuspect (lawsuitID, citizenID)
VALUES ('$lawsuitID', '$SuspectID')";

"INSERT INTO LawsuitCourt (lawsuitID, courtID)
VALUES ('$lawsuitID', '$courtID')";
```

Where lawsuitID is the auto-incremented value of Lawsuit's lawsuitID.

4.15 USER'S WELCOME PAGE



Related SQL:

```
"SELECT * FROM Lawsuit INNER JOIN LawsuitVictim ON Lawsuit.lawsuitID
= LawsuitVictim.lawsuitID WHERE LawsuitVictim.citizenID = '$userID
AND Lawsuit.currentStatus = 0
UNION
SELECT * FROM Lawsuit INNER JOIN LawsuitSuspect ON Lawsuit.lawsuitID
= LawsuitSuspect.lawsuitID WHERE LawsuitSuspect.citizenID = '$userID
AND Lawsuit.currentStatus = 0";
```

Where currentStatus = 0 indicates that the case is not yet finalized, (i.e. it is an open case) and \$userID is the user's (citizen) id.

4.16 REQUEST A LAWSUIT

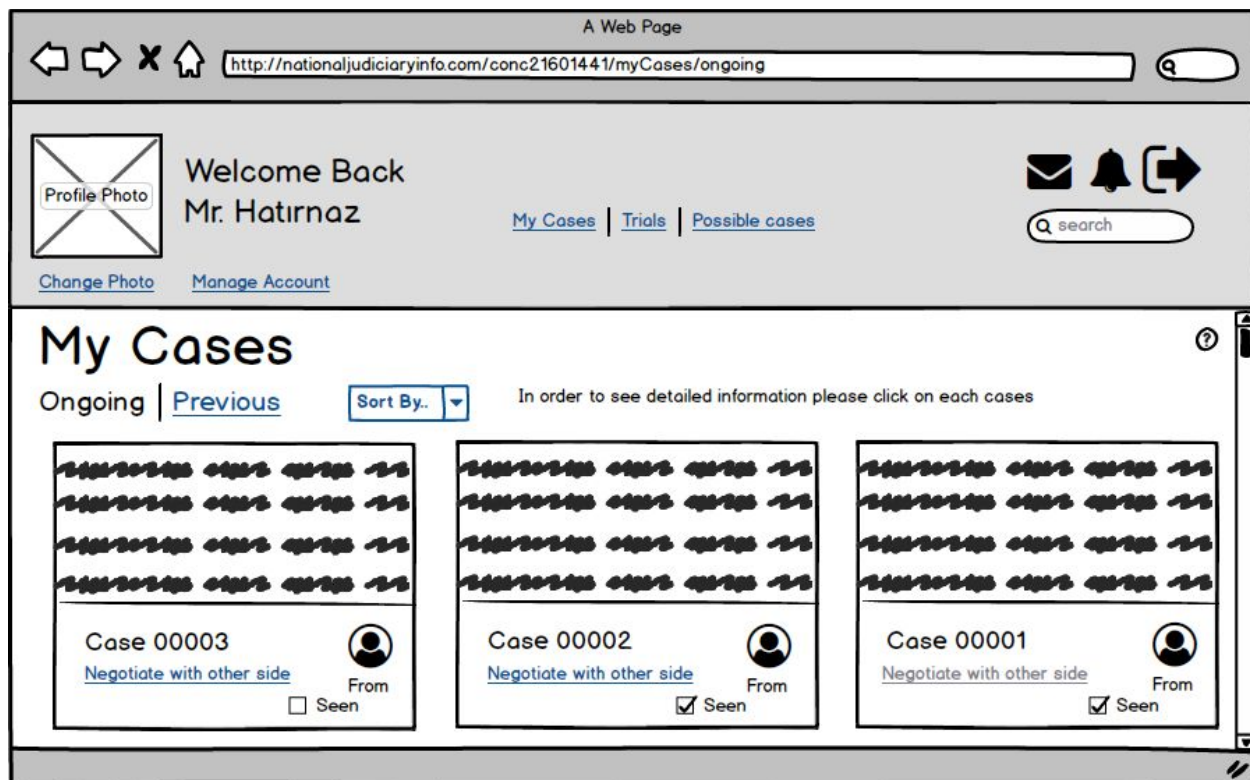
The screenshot shows a web browser window with the address bar displaying `http://nationaljudiciaryinfo.com/user21601387/reqLawS`. The page header includes a profile photo placeholder, the text "Welcome Back Mr. Çelik", and navigation links for "My Lawsuits", "Trials", and "Assigned Conciliators". There is also a search bar with a magnifying glass icon. The main content area is titled "Request a Lawsuit" and contains several input fields: "Victim" (text input), "Category" (dropdown menu showing "Categories"), "Description" (text area), "Suspect" (text input), and "Court" (dropdown menu showing "Courts"). A "Form" button is located at the bottom of the form area.

Related SQL:

```
"INSERT INTO Lawsuit (description, caseCategory, currentStatus)
VALUES ('$description', '$category', '3')";
"INSERT INTO LawsuitVictim (lawsuitID, citizenID)
VALUES ('$lawsuitID', '$victimID')";
"INSERT INTO LawsuitSuspect (lawsuitID, citizenID)
VALUES ('$lawsuitID', '$SuspectID')";
"INSERT INTO LawsuitCourt (lawsuitID, courtID)
VALUES ('$lawsuitID', '$courtID')";
```

Where lawsuitID is the auto-incremented value of Lawsuit's lawsuitID. currentStatus = 3 indicates a requested lawsuit.

4.17 CONCILIATOR WELCOME PAGE



Related SQL:

```
"SELECT * FROM Lawsuit INNER JOIN LawsuitConciliator ON  
Lawsuit.lawsuitID = LawsuitConciliator.lawsuitID WHERE  
LawsuitConciliator.conciliatorID = '$conciliatorID' AND  
Lawsuit.currentStatus = 0";
```

Where currentStatus = 0 indicates that the case is not yet finalized, (i.e. it is an open case) and \$conciliator is the user's (conciliator) id.

5. ADVANCED DATABASE COMPONENTS

5.1 VIEWS

5.1.1 RELATED LAWSUITS VIEW

```
CREATE VIEW related_lawsuits AS
SELECT * FROM Lawsuit INNER JOIN LawsuitVictim ON Lawsuit.lawsuitID =
LawsuitVictim.lawsuitID WHERE LawsuitVictim.citizenID = '$userID AND
Lawsuit.currentStatus = 0
UNION
SELECT * FROM Lawsuit INNER JOIN LawsuitSuspect ON Lawsuit.lawsuitID
= LawsuitSuspect.lawsuitID WHERE LawsuitSuspect.citizenID = '$userID'
AND Lawsuit.currentStatus = 0
```

5.1.2 JUDGE'S ONGOING LAWSUITS VIEW

```
CREATE VIEW judge_ongoing_lawsuits AS
SELECT * FROM Lawsuit INNER JOIN LawsuitJudge ON Lawsuit.lawsuitID =
LawsuitJudge.lawsuitID WHERE LawsuitJudge.judgeNo = '$judgeNo' AND
Lawsuit.currentStatus = 0
```

5.1.3 TOP RATED CONCILIATORS

```
CREATE VIEW top_rated_conciliators AS
SELECT * FROM Conciliator ORDER BY rating DESC";
```

5.2 REPORTS

5.2.1 LAST 30-DAY OPEN CASE REPORT:

```
CREATE VIEW last30_open_case AS
```

```
SELECT lawsuitID, type, crimeCategory, city, district, courtHouse
FROM (Lawsuit JOIN Trial ON lawsuitID = Trial.lawsuitID) WHERE
Lawsuit.currentStatus = 0 AND (UNIX_TIMESTAMP() - Trial.date <=
2592000)
```

5.2.2 LAST 30-DAY TRIAL REPORT:

```
CREATE VIEW last30_trial AS
SELECT * FROM Trial WHERE (UNIX_TIMESTAMP() - date <= 2592000)
```

5.3 TRIGGERS

- When new account is created by any user or new account is provided by the administration, the user would be added on to the related table (user) by administration with considering its national ID.
- When new lawsuit is filed by lawyer the following lawsuit would be added on relevant table(lawsuit) as tuple with required entities. The system itself would provide the lawsuitID automatically after creation.
- When conciliator is assigned to a new specific case, the attributes of reconciliation change accordingly
- After the finalized conciliated case, the rating of the relevant conciliator would be updated with regarding the success or the failure of the conciliator on that specific case.
- After acception of a possible case by lawyer, the system would automatically consider that case is filed by the lawyer, so it would be added on “My Cases” page.

5.4 CONSTRAINTS

- A conciliator cannot participate in a lawsuit that is not in their expertise area.
- A lawyer, a conciliator or a judge cannot be represented as suspect and/or victim associated in a lawsuit in which they participate in their respective roles.

- A statement date or a trial date related to a lawsuit cannot be later than the stated lawsuit's date of finalization.

6. IMPLEMENTATION PLAN

We will use PHP, HTML, CSS and Javascript in our website. To maintain responsiveness in our design, we intend to utilize Bootstrap. JQuery will be used with Javascript to enhance our development. For database management, we intend to use MySQL. The datas obtained from MySQL server will be manipulated and prepared to use in the views and interfaces of the website.

7. WEBSITE

The project information and the source code will be maintained on the following link:

Wiki Page: egehatirnaz.github.io/Judiciary-Informatics

Repository: github.com/egehatirnaz/Judiciary-Informatics