

iHealth Birth Certificate App User Manual

Team Name: iHealth

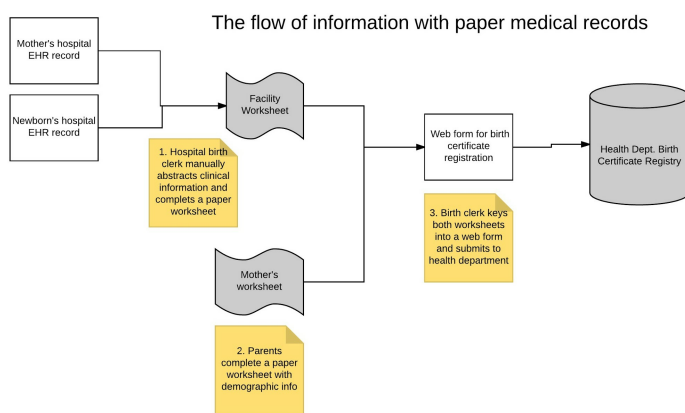
Team Members: Xiaoming Su, Lu Wang, Xue Liang, Lei Fang, Dong Li, Bo Lin

Project Name: Birth Certificates on FHIR

GitHub link: <https://github.gatech.edu/gt-hit-fall2017/Birth-Certificates-on-FHIR>

Introduction

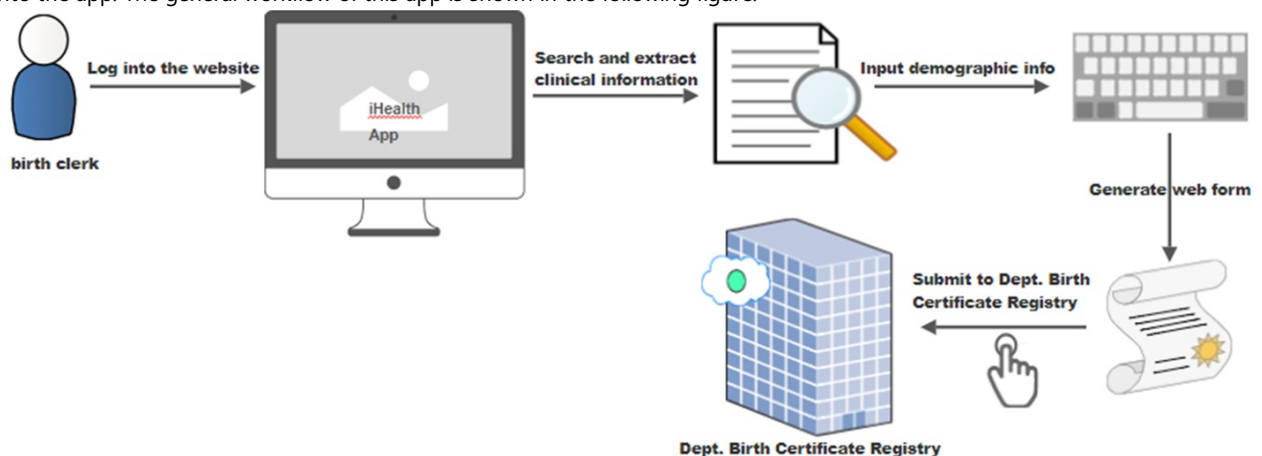
The collection and submission of birth certificate information to state vital statistics agencies is currently the responsibility of birth certificate clerks, typically staff in medical records departments of hospitals. For each birth occurring in a hospital, birth clerks are required to abstract clinical information from the records of both the mother and the newborn. This information is hand-written onto a facility worksheet. A second worksheet, the mother's worksheet, is completed by the mother and father, if applicable, and contains demographic information about the parents and the desired name of the newborn child. Both worksheets are entered into a web-based form called an electronic birth registration system (EBRS) and submitted to the state health department birth certificate registry.



The flow of information image is provided by Dr. Duncan

The process of manually abstracting information from mother and child records is labor intensive and error prone, and dates back to the time of paper medical records. Birth clerks also must be trained on the precise definitions of information required to be reported on the birth certificate, and their performance is routinely audited by the state with a focus on maintaining and improving quality.

This web application develops the FHIR resource mappings and birth certificate logic to support a SMART-on-FHIR application for birth certificate clerks. A birth certificate clerk in the EHR would launch the birth certificate app. The app would then fetch the necessary data elements, using the EHR's FHIR port. Other data (e.g. mother's worksheet) could then be manually entered by the birth certificate clerk directly into the app. The general workflow of this app is shown in the following figure.



System Requirements

- Operating Environment: IE, Safari, Chrome or Firefox.
- CPU: 1.2 GHz and higher

- RAM: 1.0 GB and larger
- Internet access through cellular or WLAN is available when necessary.

Docker

In docker compose file, there are three containers:

1. **mysql** for user authentication; user data is added using volumes
2. **fhir** server
3. **Website** which contains apache-php-mysql, php.ini is also required; project codes are added using volumes

Instructions to Run Application

The application has deployed at here: <https://fhirtesting.hdap.gatech.edu/BirthCertificates/>

Important notes

The port for web application is 8088. The port for FHIR server is 8080.

192.168.99.100 (shown in the following instructions) is the IP address of the docker container: IP address can be found using:

First get the container ID: `docker ps`
 Use the container ID to run to find container IP: `docker inspect <container ID>`

If docker is running in the Virtual Machine, the IP need to be found and website can be accessed at: `http://IP:8088/`. FHIR server can be accessed at: `http://IP:8080/`.

Otherwise, the website can be accessed at: `http://localhost:8088/`. FHIR server can be accessed at: `http://localhost:8080/`.

Please choose the correct URLs to access the website and FHIR server. Please replace the URLs in the following instructions according to docker container IP address.

The URL in `./project/web/populateForm.js` at line 11, it is the only place that the hard coded FHIR IP address is used. 1

Instructions

`docker-compose up` can be run at either root directory or Final Delivery (directory).

1. Download the Final Delivery folder
2. In docker terminal, go to the Final Delivery folder, run `docker-compose up`
3. Find the IP address of the docker container: IP address can be found using:

First get the container ID: `docker ps`
 Use the container ID to run to find container IP: `docker inspect <container ID>`

4. FHIR server web page can be accessed at: `http://IP:8080/` The fhir server URL can be found in this page.
5. Update the FHIR URL in the file at `./project/web/populateForm.js` at line 11. It is the only place that the hard coded FHIR IP address is used.

```

9     var demo =
10     //Please update the following URL to match the FHIR server
11     serviceUrl: "http://192.168.99.100:8080/baseDstu3",
12     patientId: getUrlVars()["BabyID"],
13     auth: {
14         type: 'none'
15     }}
  
```

6. Navigate to `http://IP:8088/` to access the index page of the website.

OR:

1. Download the root folder
2. In docker terminal, go to the root folder, run `docker-compose up`
3. Find the IP address of the docker container: IP address can be found using:

First get the container ID: `docker ps`

Use the container ID to run to find container IP: `docker inspect <container ID>`

4. FHIR server web page can be accessed at: `http://IP:8080/` The fhir server URL can be found in this page.
5. Update the FHIR URL in the file at `./project/web/populateForm.js` at line 11. It is the only place that the hard coded FHIR IP address is used.

```
9     var demo =
10         //Please update the following URL to match the FHIR server
11         serviceUrl: "http://192.168.99.100:8080/baseDstu3",
12         patientId: getUrlVars()["BabyID"],
13         auth: {
14             type: 'none'
15         }}
```

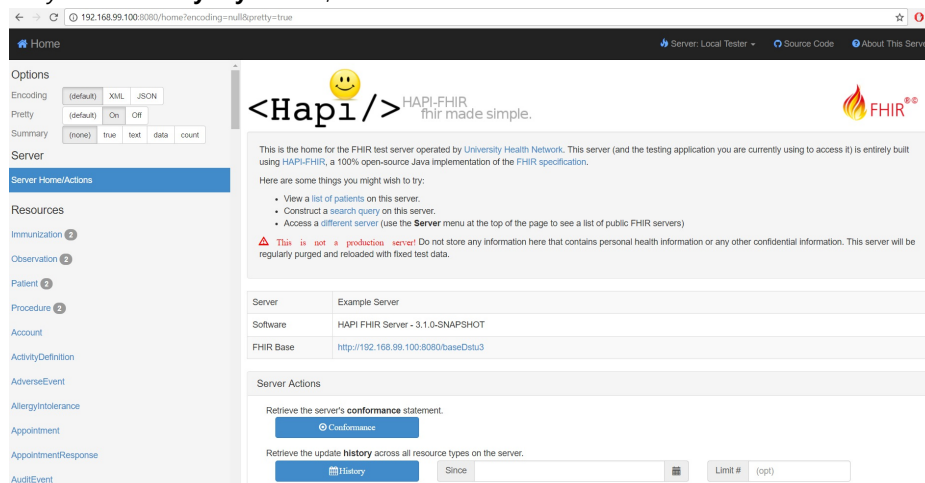
6. Navigate to `http://IP:8088/` to access the index page of the website.

FHIR Server Introduction

A new docker image of FHIR server with 2 babies' EHR data is created by modifying Daniel Johnson's original FHIR server.

Baby1: Name: **BabyTest lhealth**, ID: **cf-1509653935164**

Baby2: Name: **BabyBoy lhealth**, ID: **cf-11509653935164**



More data can be uploaded using tag-uploader (Detailed instructions can be found at <https://github.com/smart-on-fhir/tag-uploader>)

Web Application User Instruction

Register

1. Go to the website, click the "Get Started!" button
2. Click "Register" button on the upper right.
3. Input "Username", "Email Address", "Password" and "Confirm Password" in the blanks for the new register. The new register cannot be duplicated with old ones.
4. Click "REGISTER NOW" button to create the new register.

Login

1. Go to the website, click the "Get Started!" button
2. Select the "Login" button on the upper right.
3. Input "Username", "Password".
4. Click "LOGIN IN"

Logout

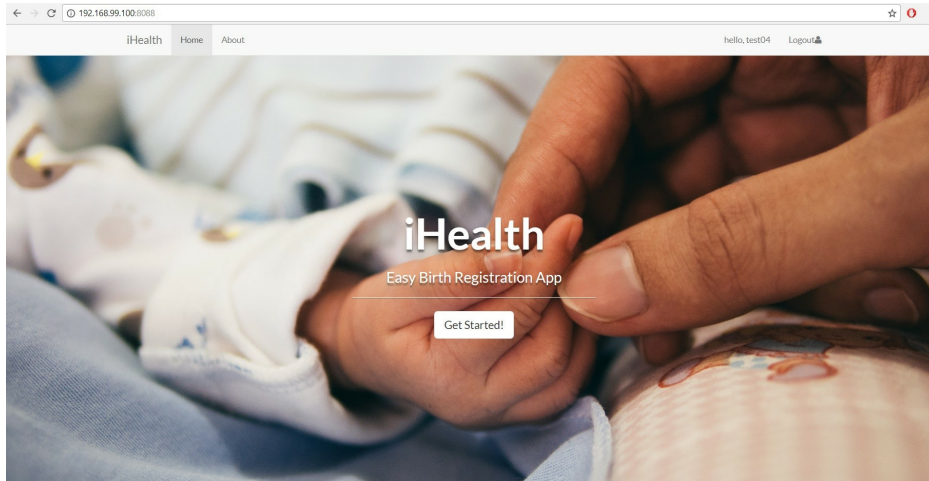
1. Click the "Logout" button in the menu.

Search

1. Login to the website.
2. Input a valid patient information .
3. Click the "Search" button.
4. You would see the details of patient information.

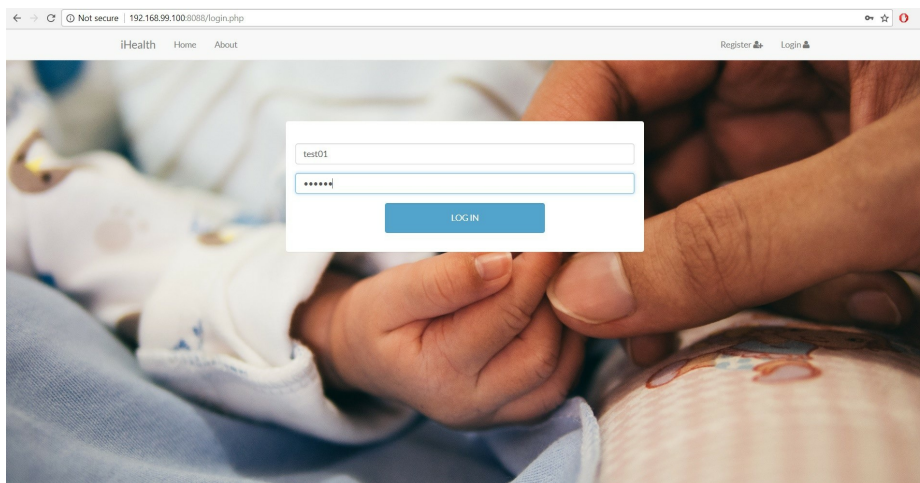
Demonstration

1. Go to the website index page (<http://192.168.99.100:8088/>), click the "Get Started!" button. The user will be navigated to login page if the user is not logged in. If the user already logged in, the search page will show up.

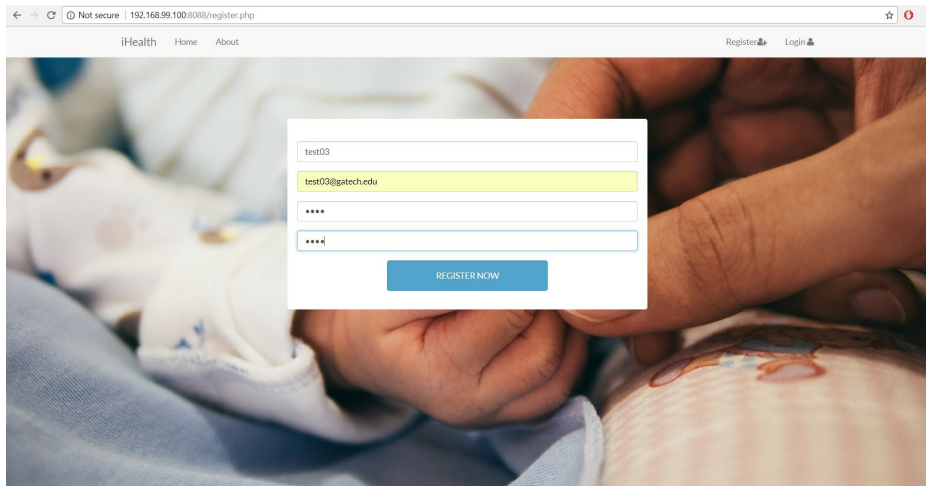


2. You need to login as an authorized user in order to deliver baby's registration form. There are two choices:

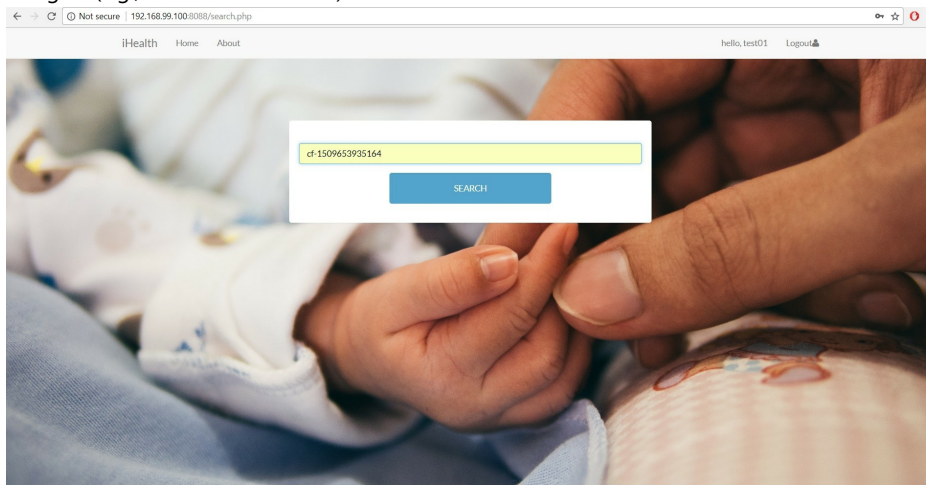
- Login with the test username and password:
Username1: **iHealth** Password: **1**
Username2: **test01** Password: **123456**
Username3: **test02** Password: **123456**



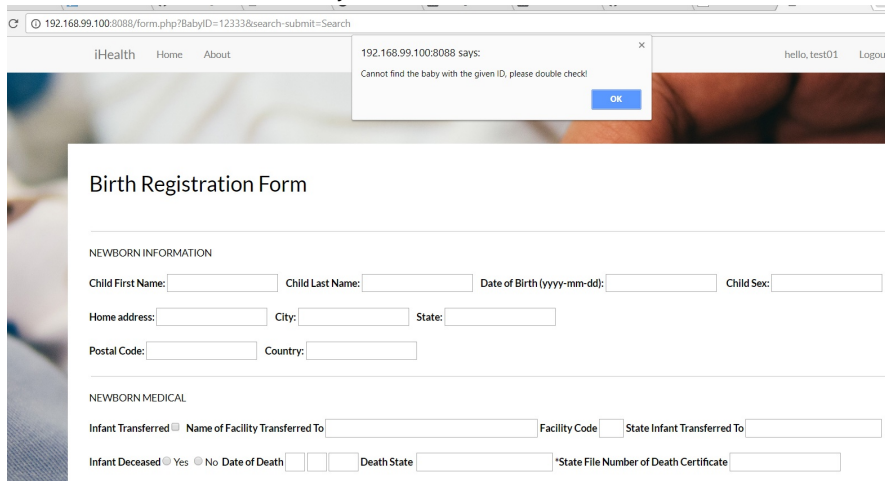
- Register as a new user. There will be notification if new register is duplicated with old ones. After registration, the user can login with the registered username. After login, the user can also logout the system easily.



3. After login, the user will be navigated to the search page automatically. The user can search the baby's information in the database using ID (e.g., cf-1509653935164).



There will be alert if the baby ID cannot be found in the database:



4. Click "SEARCH", then the populated form will show up. Only the information that can be found in the EHR database will be populated.

NEWBORN INFORMATION

Child First Name: Child Last Name: Date of Birth (yyyy-mm-dd): Child Sex:

Home address: City: State:

Postal Code: Country:

NEWBORN MEDICAL

Infant Transferred Name of Facility Transferred To: Facility Code: State Infant Transferred To:

Infant Deceased Yes No Date of Death: Death State: *State File Number of Death Certificate:

Hepatitis Vaccination *Date Given: Hepatitis Refused Newborn Screening Number: Newborn Screening Refused

Medical Notes:

ABNORMAL CONDITIONS OF NEWBORN

5. The user can manually input other information according to mother's worksheet. After confirming all the information is correct, the user can click "confirm and submit!"

ABNORMAL CONDITIONS OF NEWBORN

PLEASE CHECK ALL THAT APPLY: None

- Anemia
- Assisted Ventilation Required Immediately Following Delivery (first 30 minutes)
- Assisted Ventilation Required for More Than Six Hours
- Respiratory Distress Syndrome (RDS) / Hyaline Membrane Disease
- Seizure or Serious Neurologic Dysfunction

MOTHER INFORMATION

Mom Marital Status at Time of this Birth: Married to Father of Newborn Not Married Married, but not to Father of Newborn

Was Mom Ever Married: Yes No Unknown Was Mom Married at Conception, at Birth, or Any Time in Between: Yes No Unknown

(Mother Current Legal Name) First Name: Middle Name:

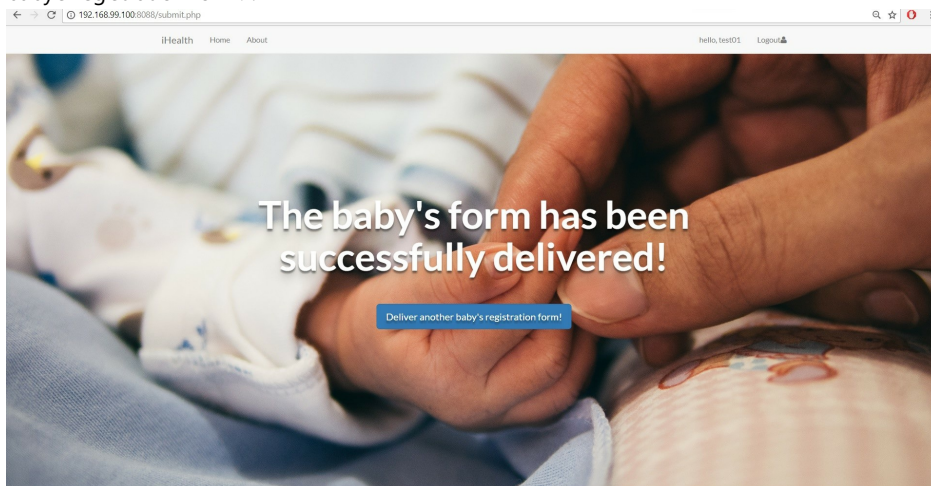
Last Name: Suffix: *Mother Date of Birth (YYYY-MM-DD):

MOTHER CONFIDENTIAL

*Mother Medicaid Number: Did Mother Receive WIC Food for Herself During Pregnancy: Yes No Unknown

Primary Source of Payment for This Delivery: Medicaid Private Insurance Self-Pay Indian Health Service CHAMPUS/TRICARE Other Government (Fed, State, Local) CHIP Other

6. Then form will be delivered to the birth registry. The user will be navigated to search page again if the user clicks on "Deliver another baby's registration form!"

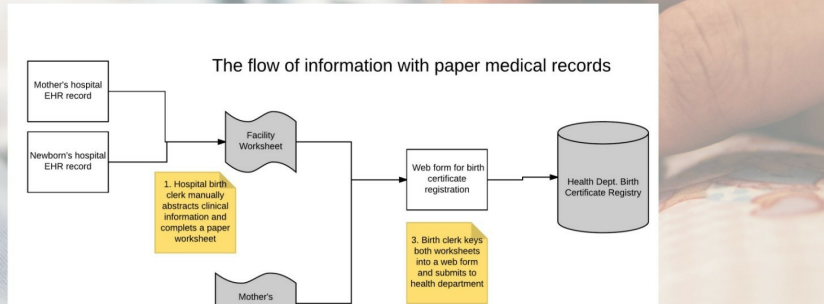


Note: We didn't submit the data to the birth registry server. This may have confidential problems, we also contacted our mentor Dr. Duncan and he agreed that this part is optional.

7. There's also a brief introduction about the web application by clicking on "About" in the navigation bar.

Easy Birth Registration App

The collection and submission of birth certificate information to state vital statistics agencies is currently the responsibility of birth certificate clerks, typically staff in medical records departments of hospitals. For each birth occurring in a hospital, birth clerks are required to abstract clinical information from the records of both the mother and the newborn. This information is hand-written onto a facility worksheet. A second worksheet, the mother's worksheet, is completed by the mother and father, if applicable, and contains demographic information about the parents and the desired name of the newborn child. Both worksheets are entered into a web-based form called an electronic birth registration system (EBRS) and submitted to the state health department birth certificate registry.



Technical Support

Technical support: iHealth Team