TrueHb - Hemoglobin Test app is used for testing hemoglobin with the help of truehb devices. In app using USB serial communication protocol to transfer the data between android application and the truehb device. App URL on google play store:- <https://play.google.com/store/apps/details?id=com.wring.android.truehb>

**Application Version**

1. CompileSdkVersion 28
2. MinSdkVersion 23
3. TargetSdkVersion 28
4. VersionCode 18
5. VersionName "2.7.2"

## Third party dependencies

1. com.opencsv:opencsv:4.4
2. com.itextpdf:itextg:5.5.10
3. com.android.volley:volley:1.1.1
4. org.jsoup:jsoup:1.10.2
5. sun.bob:mcalendarview:1.0.0'
6. implementation 'androidx.cardview:cardview:1.0.0'

## Commands for control TrueHb device

1. Device on U371
2. Device off U370
3. Get batch code U402
4. Set batch code U403+” new batch code”
5. Start test U401

## User login activity (class User Login)

1. User Id (mandatory field).
2. Password (mandatory field)
3. OTP (mandatory field)
4. Login button checks the provided credential by user is valid or not, if credential is valid server send the OTP to the register number of the user after OTP verification activity sync the local database to the server-side database.

Note (Admin is the only authorized to create the new user)

## Client data input activity (class Patient\_Input)

1. Client name (mandatory field).
2. Client mobile number (mandatory field) without country code if the user enters the mobile number length less than 10 at the time of submitting its show error message
3. Client date of birth (mandatory field) user can add the date of birth manually or select number is not valid. The date of birth using by default popup calendar, calendar by default start date set is 1, Jan, 2000, user is resected to select future date for the date of birth field.
4. Client age (mandatory field) is auto calculated with the help date of birth field, it calculates the difference between the current system date and the user selected date.
5. Client weight (mandatory field) user needs to enter the client weight.
6. Client height (mandatory field) user needs to enter the client height.
7. Client gender (mandatory field) user need to select the client gender from the spinner (drop down), spinner store the fields using the strings arrays, gender categorize in three part (i) Male, (ii) Female and (iii) Transgender, if user not selected any of from tree at the time of submission its generate the error for gender selection.
8. Client pregnancy status checkbox (optional field) if the user selects gender as female then only option for pregnancy is enabled.
9. Client RCH portal (optional field) number is 12-digit unique number is provided by the Kerala government to the female’s, if the user selects the gender as female then only option to enter the RCH portal number is activated if RCH portal number is enter less than 12 digits then it generate msg for enter the right number.
10. Client pallor status checkbox (optional field).
11. Client systolic blood pressure (optional field).
12. Client diastolic blood pressure(optional).
13. Place of test (mandatory field) to track the location of the test, application use Geocoder class to find the current place of the test, Geocoder class use GPS (Global Positioning System) system to calculate the current place of test.
14. Client Aadhar number (optional field) is a unique 12-digit number provided by the Indian government to every citizen of India, if Aadhar number is entered less than 12 digits’ then it generates error msg for entering the right number.
15. Health worker category (optional field) user needs to select the category from the spinner, spinner load the field from strings array, health workers divided into four-part (i) Asha Worker, (ii) Anganwadi Worker, (iii) Anganwadi Helper, (iv) Ads Worker. If a user does not select any of them its store other by default.
16. Health worker district, health block, institution, subcenter (mandatory fields) user need to select according to the appointed for the job, all data for these spinner load from the database table name Kerala data define in Database Helper class, if user not select the values at the time of submission it generates error msg.
17. Submit button when user presses the submit button its check all mandatory fields are available or not if available it’s stored the data in shared Preferences class (name=user data) and moves to screen3 activity.
18. Auto fil client details process if user entered the same mobile number and date of birth entered in previous tests its load the other fields from the current patient details table present in the database.

## Test begin activity (class Screen3)

1. At this class USB Service try to create a connection between android app and truehb device. USB Service uses the USB serial protocol for creating the communication path with the device and app.
2. The Begin button sends the command(U371) to the device. If the device starts its return **ON** or **Hi** according to the return value application makes a decision to proceed to the next activity (Make\_Test).
3. Return button back to Patient\_Input activity.

## Make test activity (class Make\_Test)

1. Batch code (Mandatory field) in onResume function sends a command(U402) to the device to retrieve the current set batch code of the device.
2. Start test button sends the new batch command (U403+” batch code”) to the device first after setting the batch code device sends the command(U401) to start the test, after completing the test device return the hb value and start the result display activity.
3. Return button back to Patient\_Input activity.

## Result display activity (class Result\_Display)

1. Save button use to save all the records in patient\_details table, after generation of record if HB value is less than 8 and client is pregnant user needs to start the tracking of patient medicine.
2. The Retest button moves the user Screen3 activity for retest.
3. Start new test button use for start the new test it moves the user to patient activity
4. Device off button send command(U370) to device for turnoff.