LAB 3
BIG DATA ANALYTICS

Lab3 Assignment

Build an Android application that provides the following features
- Sensor Data Collection (you can use the application implemented for Lab 2)
- File Transfer (using Web Service)
- HBase CRUD operations (Create, Retrieve, Update, Delete) (Using Web Services)

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Task1: Sensor Data Collection

We used the application implemented in lab2, which collects different data types from the sensor and generate a text file with data records in the Data folder of the tablet. Data types include:

- Humidity
- Temperature
- Geolocations
- Accelerometer
- Date

Running the application will result in Hello World screen on the device, while collecting data from the sensor. Data is recorded into the "GharibiData.txt" text file. We send this file to our laptop.

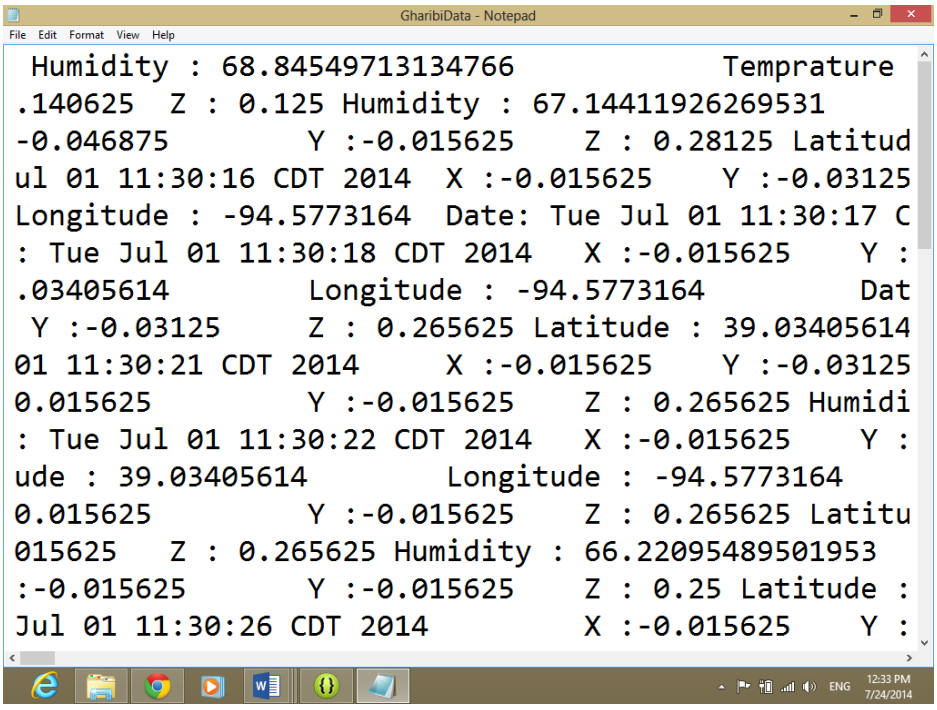

Figure 1. Data collection file

Task2: Uploading the Data collection file to Cloudera

We used the ConnectionSSH method provided by our TA (thanks to him). The method will transfer the collected data file from our mobile phone to the remote Cloudera server, using “group4” as logon authentication. This function is deployed in our Android application interface as well (see figure3).

The following figure is a snapshot of the source code:

```
public  void connectSSH()
   {
        // Initialize a SSHExec instance without referring any object.
        SSHExec ssh = null;
        // Wrap the whole execution jobs into try-catch block
        try {
            // Initialize a ConnBean object, parameter list is ip, username, password
            ConnBean cb = new ConnBean("134.193.136.127", "group4","group4");
            // Put the ConnBean instance as parameter for SSHExec static method getInstance(ConnBean)
            //to retrieve a real SSHExec instance
            ssh = SSHExec.getInstance(cb);

            // Connect to server
            ssh.connect();
            // Upload sshxcute_test.sh to /home/tsadmin on remote system
            File file = new File("/storage/sdcard0/Lab4/punch.txt");
            if(file.exists()){
            ssh.uploadSingleDataToServer("/storage/sdcard0/Lab4/punch.txt", "/home/group4/");
            }else{
                System.out.println("no file exits");
            }

        }
        catch (TaskExecFailException e)
        {
            System.out.println(e.getMessage());
            e.printStackTrace();
```

Figure 2. ConnectSSH source code

Task3: Android application of HBase CRUD operations using Web Services

The following screenshot displays our android application used for both lab3 and lab4 requirements. For lab3, the following buttons provided to complete the HBase CRUD operations:

- Create Table
- Delete Table
- Insert into Table
- Retrieve

In addition, two input boxes are provided to input the Table name to be created and the column's families. See the following figure

Figure 3. Application interface (lab3 and lab4)

The HBase web-services are provided in the following links (please note that “tabName” and “family” represent the text called form the text input boxes provided by the user)

- Create table

http://134.193.136.127:8080/HbaseWS/jaxrs/generic/hbaseCreate/"+tabName+"/"+family

- Insert into table

http://134.193.136.127:8080/HbaseWS/jaxrs/generic/hbaseInsert/"+tabName+"/-home-group4-GharibiData.txt/"+family

- Retrieve table

http://134.193.136.127:8080/HbaseWS/jaxrs/generic/hbaseRetrieveAll/"+tabName

- Delete Table

http://134.193.136.127:8080/HbaseWS/jaxrs/generic/hbasedeletel/"+tabName

…The End…