

DATA USER ASSISTANCE PROGRAM FOR MOBILE BROADBAND USERS

¹SHUBHRA BANERJEE, ²SEEMA BISHT, ³NIKHIL KURUP

^{1,2,3}Dept. of Electronics and Telecommunication, Army Institute of Technology, Pune, India
E-mail: shubhra8891@gmail.com, bishtseema23@gmail.com, nikhil.ait28@gmail.com

Abstract- The aim of the paper is to develop a software application for capturing and displaying various dongle parameters. Parameters are namely manufacturer ID, signal strength, operator information, cell ID, present status of dongle functioning. As a result of utilizing this application in every subscriber's dongle, it would be possible for users with no technical background to view their dongle issues. This might prove to be an excellent boon to the telecom industry.

Keywords- Attention commands (AT-Commands), Java Database Connectivity (JDBC), Global System for Mobile communications (GSM), Structured Query Language (SQL).

I. INTRODUCTION

The last few years have witnessed a phenomenal growth in the wireless industry, both in terms of mobile industry and its subscribers. There has been a clear shift from fixed to mobile cellular telephony, especially since the turn of the century. Both the mobile network operators and vendors have felt the importance of efficient networks with equally efficient design. This resulted in network planning and optimization related services coming into sharp focus. With all the technological advances, and the simultaneous existence of the 2G, 2.5G, 3G networks, the impact of services on network efficiency have become even more critical[5].

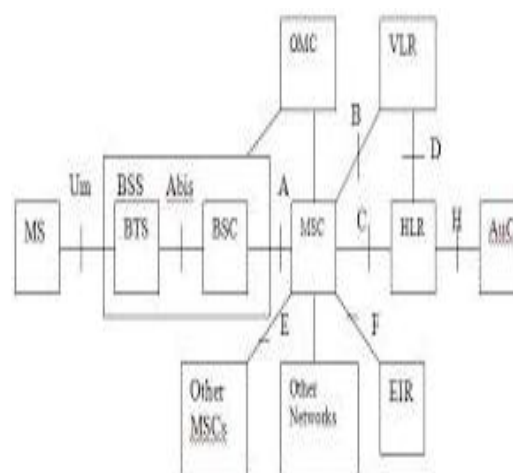


Fig. 2 GSM Architecture

Cellular Generations

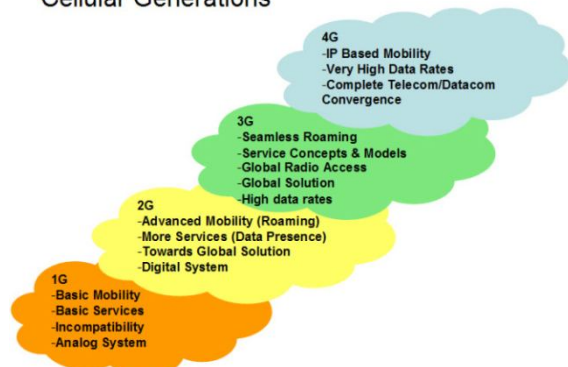


Fig.1 Cellular Generations

As mobile data usage is growing, operators are in need of sophisticated tool/Applications to assist data users to improve their experience[7]. Whenever any user complains about low coverage or speed issue, operator has to send engineer to his/her location to capture network status. Instead program can be designed which will automatically capture such information and send to centralized customer care server in real time. This will improve or reduce complaint resolution time for customer and better efficiency for Customer Service Department (CSD).

Plugged into a PC, Smart Dongle opens up all operator services and communicating applications to the subscriber. This new form factor allows the operator to enter the subscriber's PC environment to create promising services based on everyday customer devices.

- Strong authentication – maintaining the link with subscriber (and ensuring billing).
- Device personalization – deploying and configuring the operator environment on any device.
- Security - protecting the link between customer and operator and guarding against phishing and spoofing, for example.
- Connectivity - enabling any communication application and generating new revenues.

II. DONGLE (AT COMMANDS)

The AT command set is a specific command language that consists of a series of short text strings which combine together to produce complete commands for operations such as dialing, hanging up, and changing the parameters of the connection.



Fig.3 USB-MC1322X

Following are the AT commands used in our project:
 AT : ok
 ATI : relevant manufacture information of modem
 AT+CSQ : received signal strength indication
 AT+COPS : to force an attempt to select and register on a network

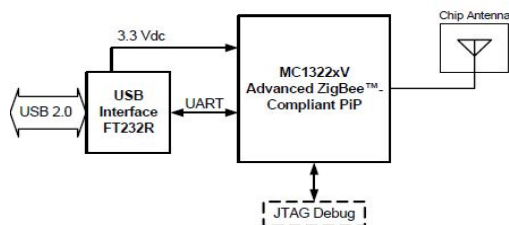


Fig.4 Block Diagram of Dongle

III. CLIENT-SERVER MANAGEMENT

A. Java SQL Linking

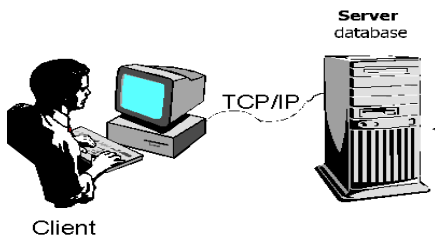


Fig.5 Client Server

Server side contains the database of all the subscribers. It contains all the details related to the dongle of every individual subscriber. The details comprises of manufacturer details, cell ID, IMEI number, IMSI number, signal strength etc.

Every client (subscriber) asks permission for accessing the main server of the service provider. After ensuring the password server grants access by the process as shown in Fig.5.

JDBC

- JDBC is a Java API for database connectivity[3]
- It is not the same as ODBC but implements a similar specification
- JDBC enables programmers to write java applications that

- Connect to a database[8]
- Send queries and update statements to the database
- Retrieve and process the results received from the database in answer to the query.

Processing SQL Statements with JDBC

In general, to process any SQL statement with JDBC, you follow these steps:

1. Establish a connection.
2. Create a statement.
3. Execute the query.
4. Process the Result Set object.
5. Close the connection.

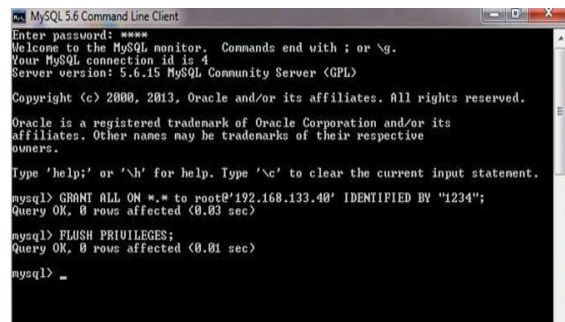


Fig.6 ACCESS GRANTING (SERVER SIDE)

B. Java and AT commands

1. START.
2. Define the CONSTRUCTOR with throwing Null Pointer Exception[2].
3. Check IF port Id is not equal to null.
 - >Use try statement to initialize the following:
 - . Add port ownership listener.
 - . Open serial port for that application.
 - . Set serial port parameters.
 - . Output stream.
 - . Input stream.
 - . Add event listener.
 - . Notify data on availability.
 - >Catch all these exceptions respectively.
 - >Using Try statement write to the port different AT commands using write method.
 - >Catch the Input output exception.
 - >Declare a new thread and start the thread.
4. If port Id is null then
 - >catch null pointer exception.
5. END.

IV. TEST

The first test was performed on two different laptops. One of the laptops was made the server and the other was made to behave like a client.

The server had the database containing necessary details regarding all clients associated with it.

After getting access to the main server, that particular client can communicate with the server and update the entries presently residing on the server side.

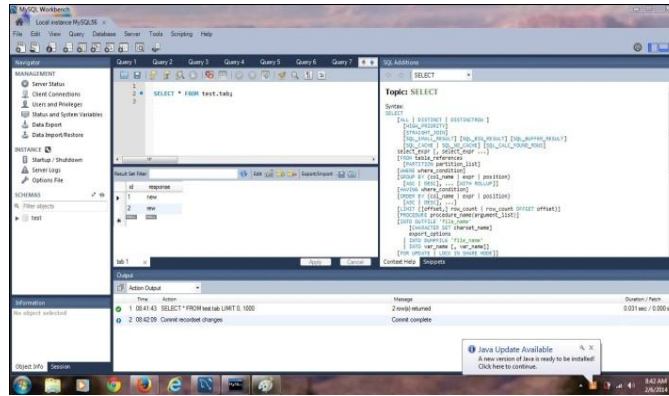


Fig.7 Database at server side before code execution

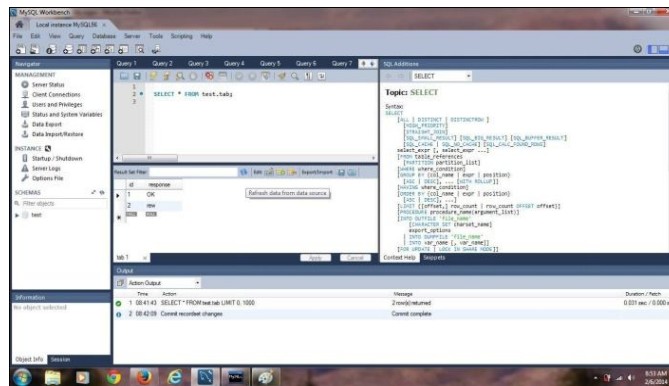


Fig.8 Database at server side after code execution

V. RESULTS

The following figure demonstrates the response of mobile broadband (dongle). The application needs to be run by the client. Just after one click of mouse all the real time parameters will be displayed on the output terminal at client side as shown in fig.9. Thus the client is able to read and understand the parameters related to his dongle at that particular moment.

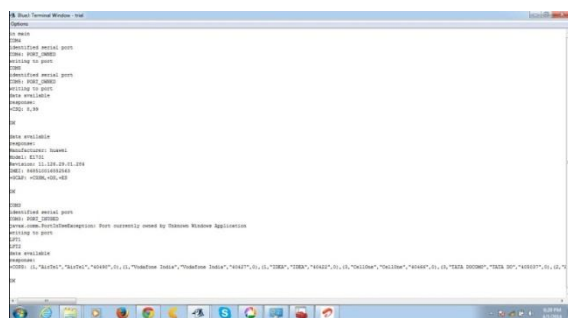


Fig.9 CAPTURED PARAMETERS

CONCLUSION

So this project aims at reducing the problem resolution time after a complaint is received by the customer care of any service provider. By making a java application

available on the user’s phones or PC’s that will read the data from the dongle and capture it. Then it can be sent to the server database present at the customer care end. This is a direct connection between all users to one server. Hence a star connection can be formed where server acts as the hub. With this the company can work on rectifying the problem faced by the user in real time with no costs for sending an engineer to the site. Like this any network provider can incur profit immensely.

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