Earlier Work

In Master's thesis, I have performed a software implementation to integrate Wireless Sensor Network (WSN) and Cloud. For this purpose, WSN was deployed and an application was developed to fetch the sensor's data and store it into a database. This software application is a Graphical User Interface (GUI) and developed using Java swing library. The sensor's information was fetched utilizing the Java Native Interface (JNI) and this information then stored into a database using Java Database Connectivity (JDBC) API. The software application is presented as:

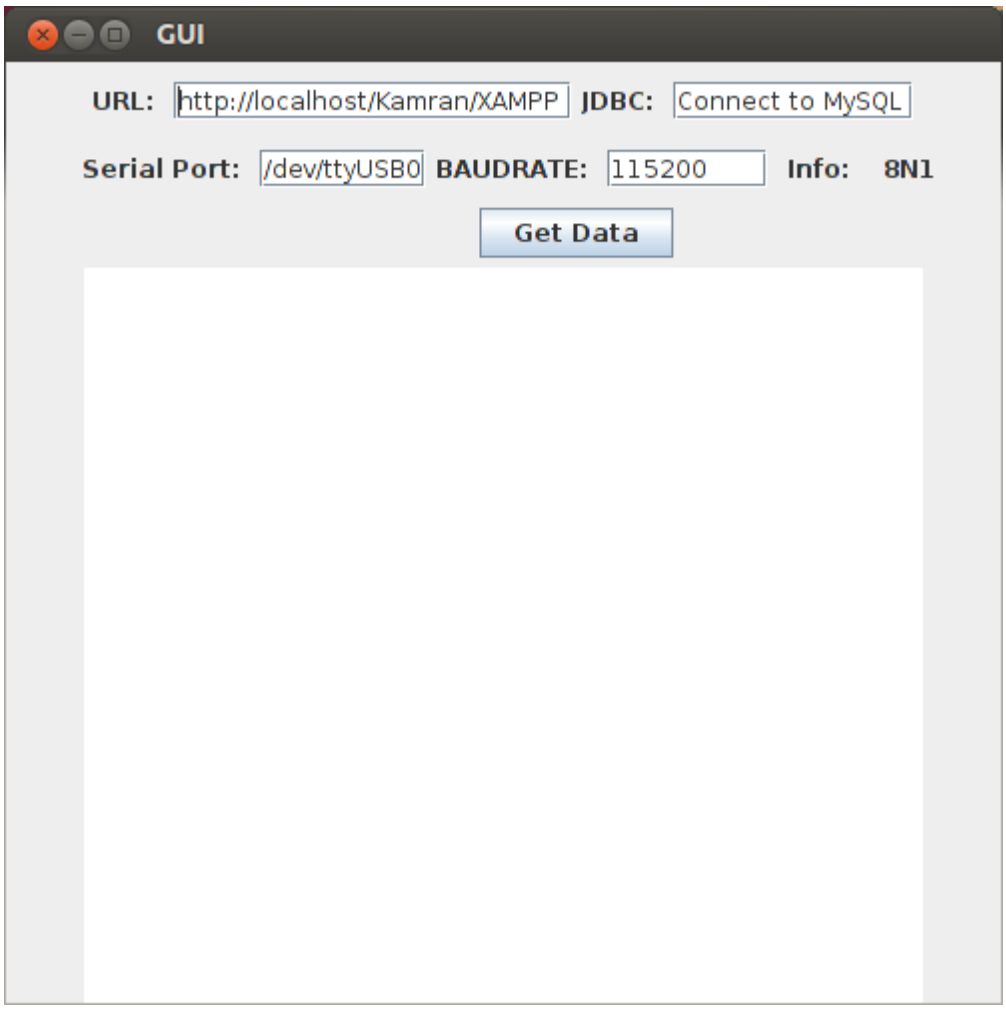

Figure 1 Graphical User Interface (GUI)

Work Flow of the Application

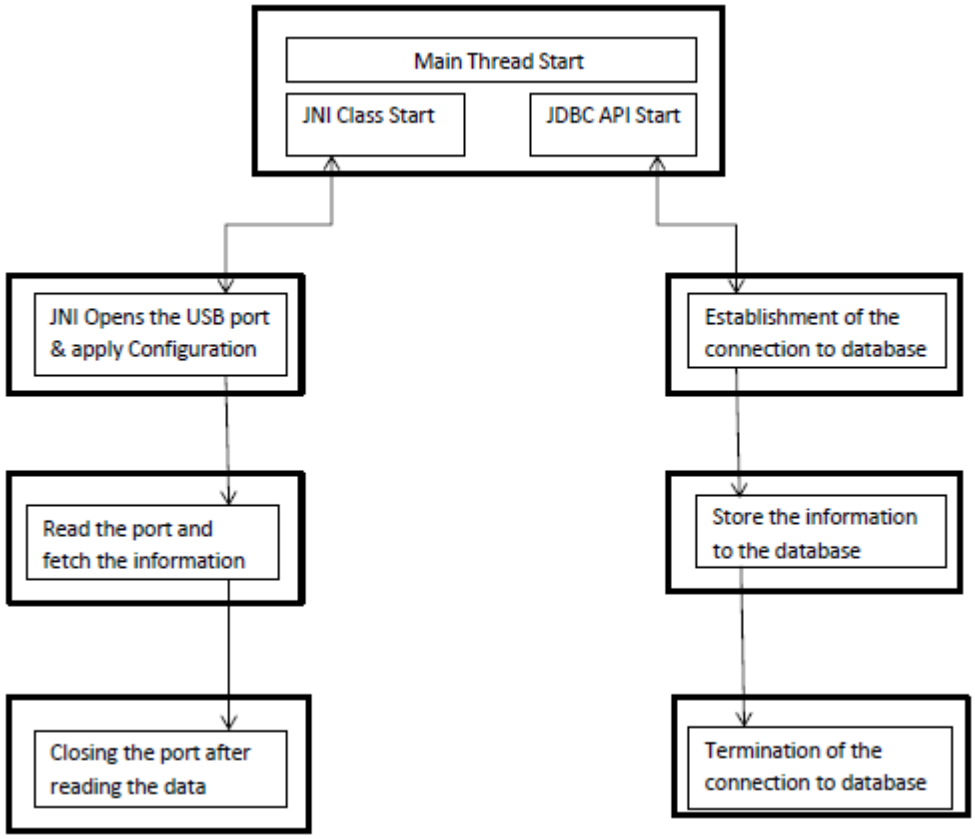

Figure 2 Flow Diagram

The Native Code has been written in the C-Language using a separated Java Class. SQL coding has been utilized to establish the connection with the database (MySQL). LAMPP web server was used for the development of the database. The software application was developed on the Eclipse platform using OpenJDK. More details and coding of Java and SQL of this project are available at (page 59-61):

https://www.tritonia.fi/fi/e-opinnaytteet/tiivistelma/5439/Cloud+Computing

I have also performed Ubuntu server configuration 13.10 in order to make it a dedicated server for this project. The Java codes of mentioned Graphical User Interface application can be viewed at:

https://github.com/hmk88/Java/blob/master/Gui

The C-codes that are written in the same platform to enable Java Native Interface which can be seen at:

https://github.com/hmk88/Java/blob/master/C-codes

For My Master's thesis, I also deployed a Wireless Sensor Network which included two sensor nodes and an access point. I used Contiki OS to program these sensor nodes. The sensor nodes were programmed to collect the data from surrounding such as (Temperature & Light Intensity) and broadcast them to the access point. The access point is connected with a laptop where the above mentioned GUI application is running, these data can be seen on the GUI text area and at the same time it stored this sensor information to the database. The embedded codes can be viewed at:

https://github.com/hmk88/WSN/blob/master/node1

https://github.com/hmk88/WSN/blob/master/node2

https://github.com/hmk88/WSN/blob/master/access_point

I also performed a website development for my Master's thesis project. It is a basic structure of a website which was made in order to access the information collected from the Sensor nodes. This website has been developed using PHP and CSS in which the information saved in the database through JDBC can be retrieved and present them on the website. The structure of this website is given as:

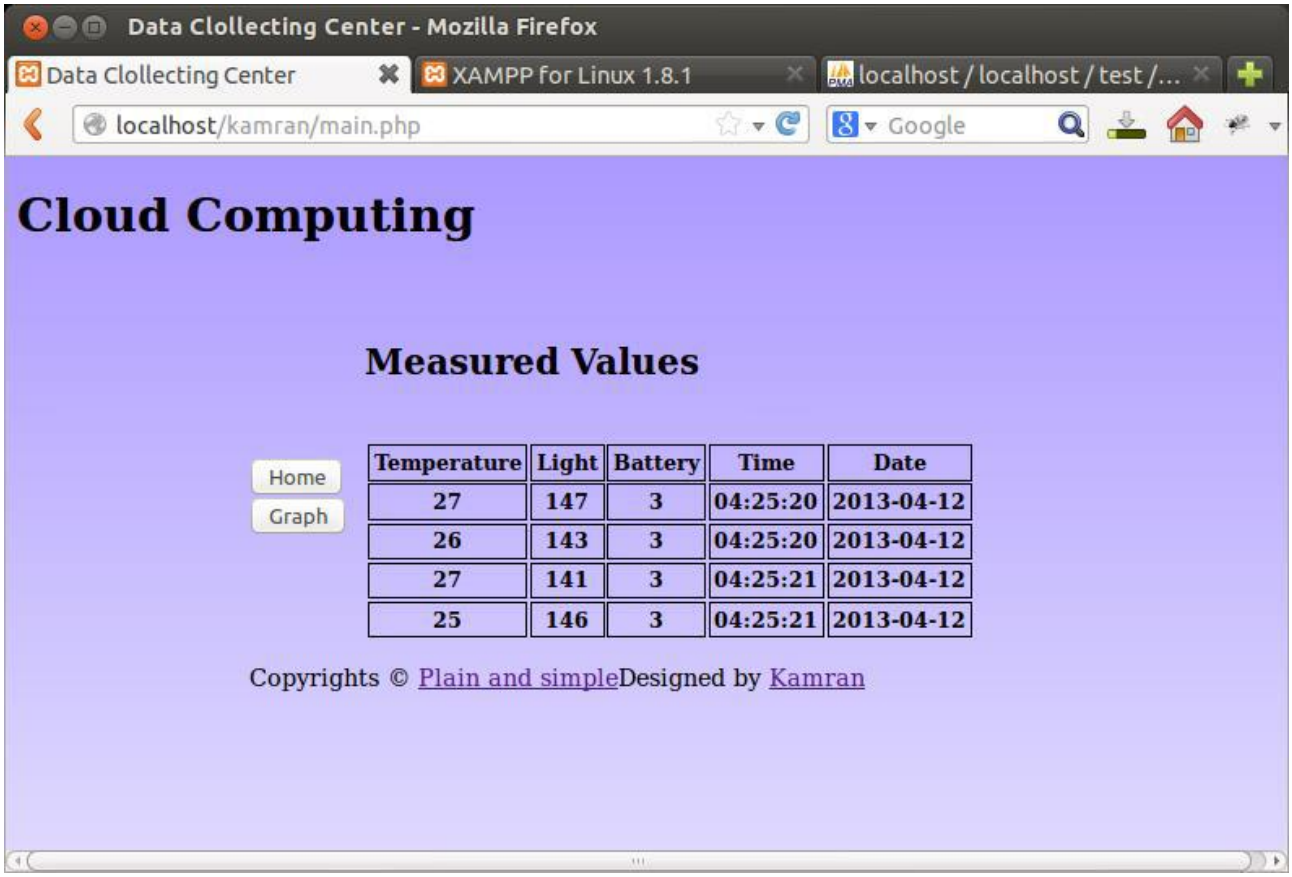

Figure 3 website (PHP)

The related codes for this website can be seen at:

https://github.com/hmk88/PHP-SQL/blob/master/PHP%26HTML

https://github.com/hmk88/PHP-SQL/blob/master/PHP_SQL_codes

I have also developed a game project during a course in my Master's degree using Java. This game project was simple and interesting including two classes: GameMidlet and GameCanvas. In the GameCanvas class, I set the attributes of the game including graphics, shapes and color while GameMidlet class includes the logic of the designing such as instructions and command listeners.

There are three objects in this game: a tank, an airplane and a bullet. The player has the control to the tank and as the plane flies on the screen, the user is supposed to shoot it. The codes to this project are available at:

https://github.com/hmk88/Java/blob/master/GameMidlet

https://github.com/hmk88/Java/blob/master/GameCanvas

In my Bachelor's Degree, I worked on a project (thesis) called unmanned sea surface vehicle. It was a remote controlled ship which was capable of environmental monitoring. The idea behind the making of this ship was to monitor the environment where the natural calamity has been held and for the navy (military) purposes. This project included various devices attached to the ship, hardware and software implementation. There were two components in the project: a ship, and a remote (base station).

The devices attached to the ship included two motors (for rudder and for propeller), two IR sensors placed on the right and left side of the ship to detect any object, an ultrasonic sensor in the front side of the ship which was also used to detect the objects in front of the ship, GPS module to get the exact location of the ship in terms of latitude and longitude, a camera for the monitoring purpose, a circuitry to control and provide signal conditioning to all the devices. The circuit itself included ATMEL 8052 microcontroller and a transceiver module which sends the data to the base station. Ship also contained a 12 volt battery for the power supply to all the equipment. A 5 watt solar panel was attached for the battery charging.

The remote (base station) included a circuitry which contained switches to control the movement of the ship and start or stop the motor of the ship. RF module was used to communicate with the ship and a microcontroller ATMEL 8052 which controlled all the actions. A TV set also used for the reception of the real time video on UHF and an LCD attached to see warning messages.

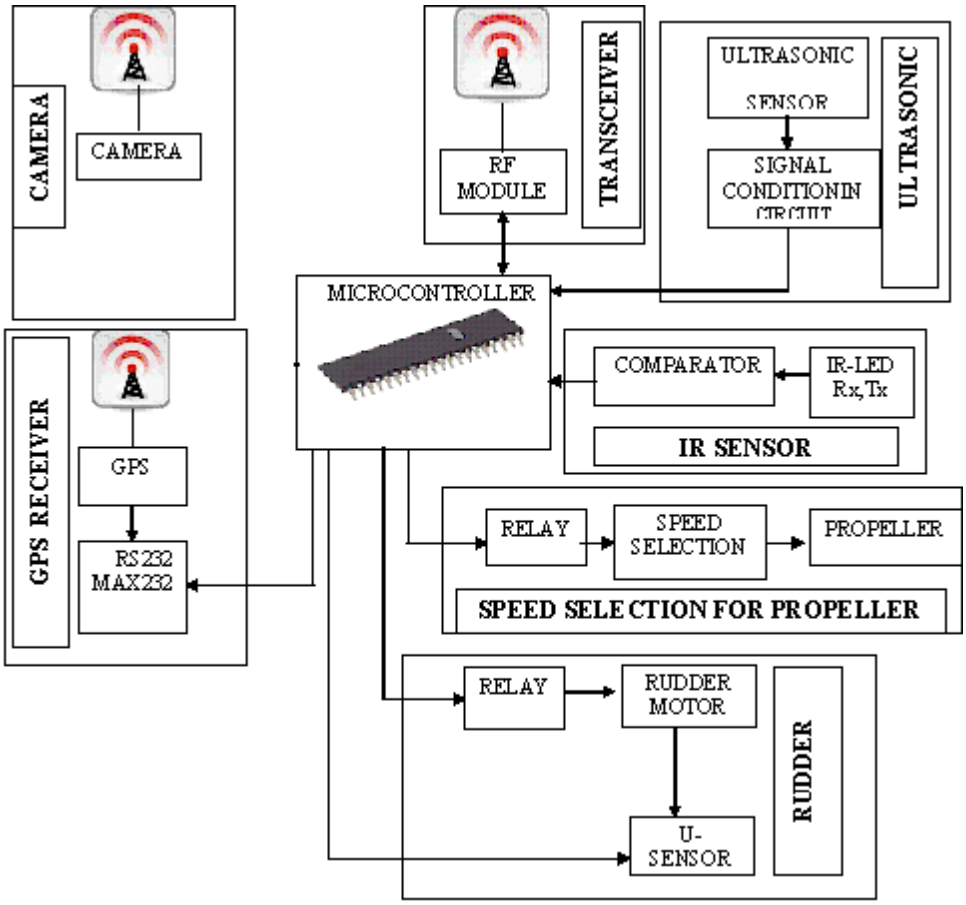

Figure 4 Block diagram of the devices attached to the ship

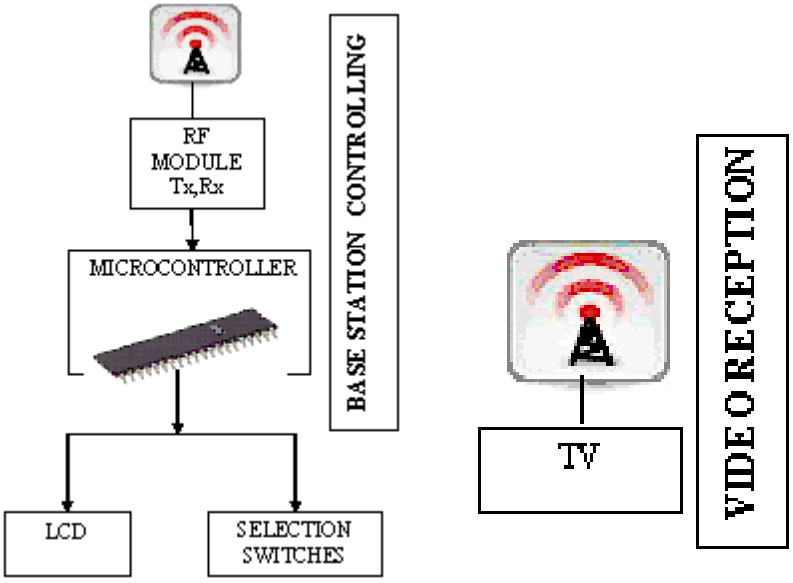

Figure 5 Block diagram of the base station

I tested the ship in a swimming pool which provided all the results that were expected. After attaching all the devices in the ship, it looked like this:

Figure 6 Actual ship

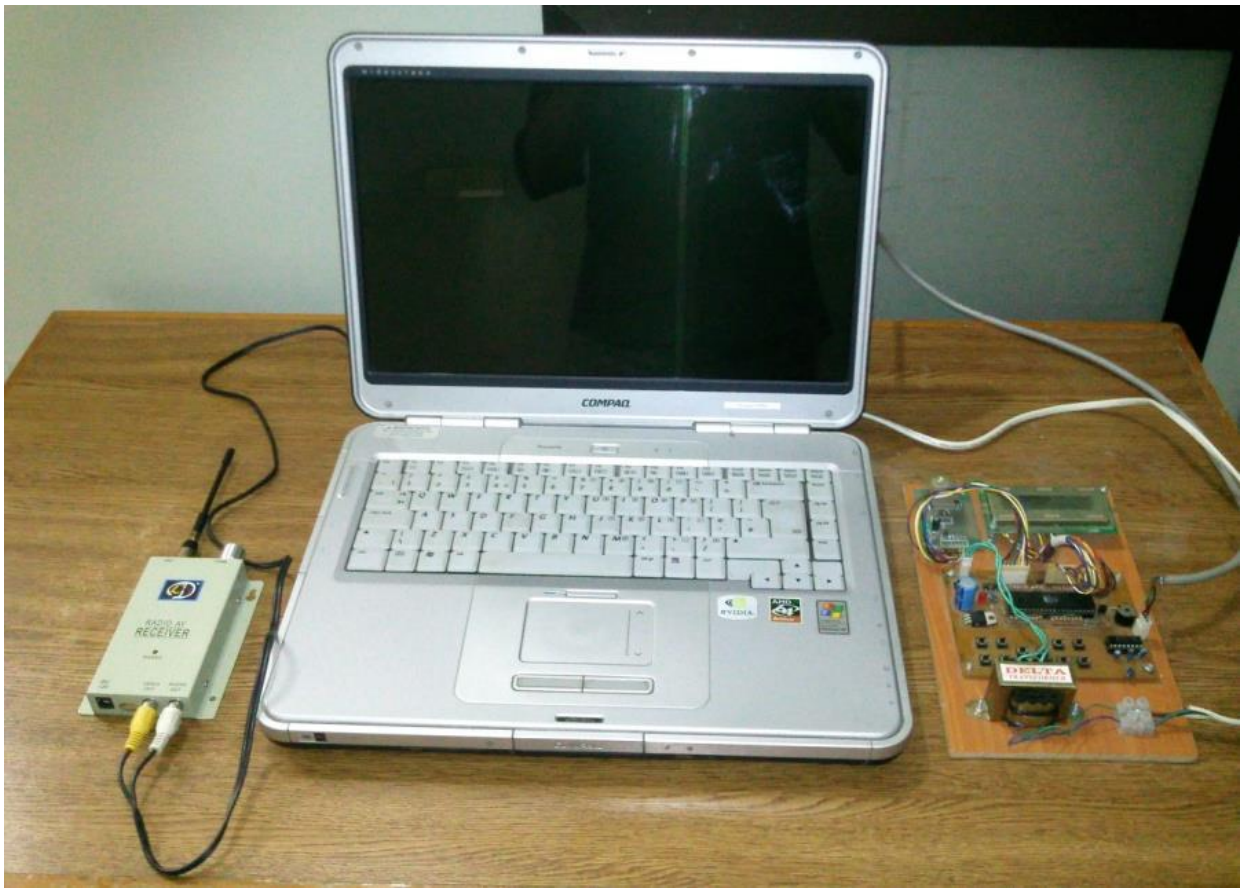

Figure 7 Actual base station