

FLOOD DETECTION AND EARLY WARNING SYSTEM:

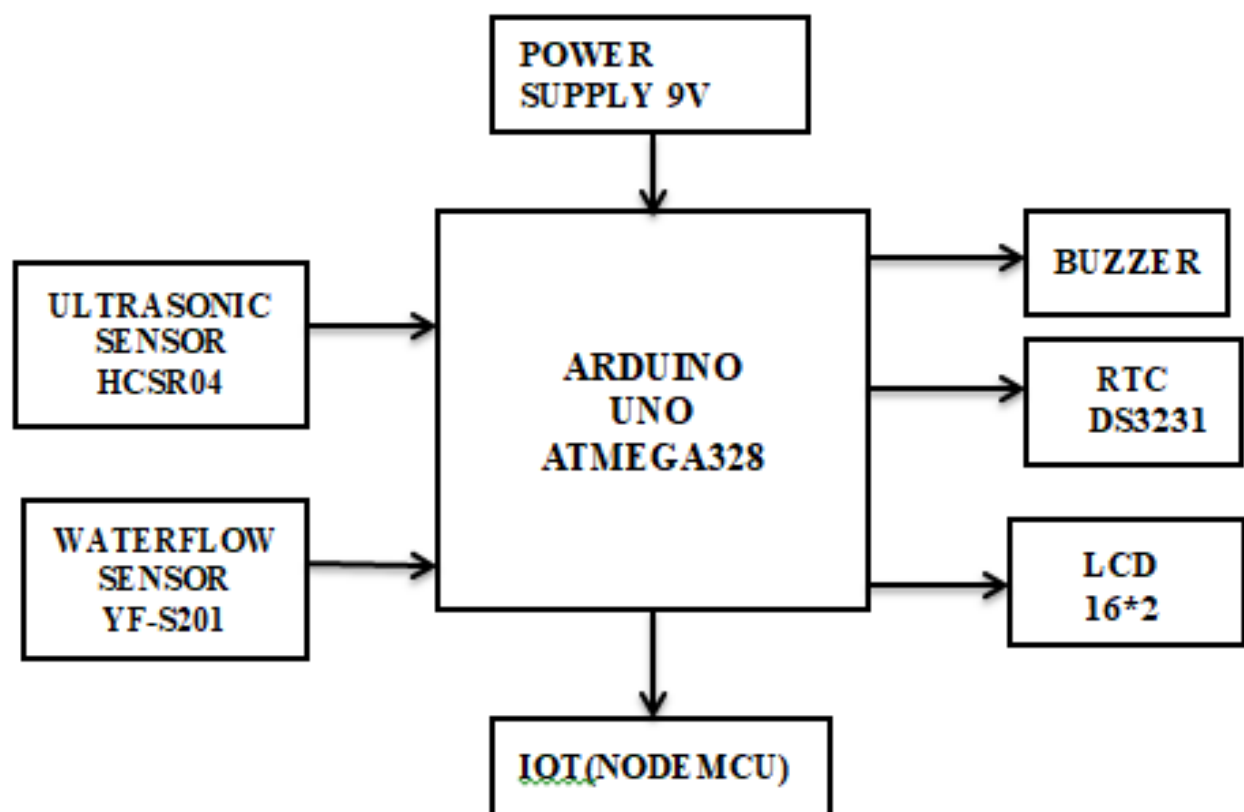
ABSTRACT:

— Water flood is the severe and dangerous issue in public. Water flood occurs due to many factors such as heavy rain which causes critical situations. Hence, it is important to investigate water flood in different water bodies like river, sea, ocean etc. This paper proposes water flood detection algorithm in the river with the help of Internet of Things (IoT) technology. At first, a Water Level Detection Sensor, Temperature Sensor and Humidity Sensor are placed near the river to detect the flood in water bodies. The water level detection sensor acts a transmitting unit which is used to detect the water level at the time of the floods. Temperature Sensor and Humidity Sensor are used for measure the live temperature and humidity of the water bodies. Finally the collected information (data) from the water body is transmitted to LCD in order to display on the screen for the end user. When the water level increases certain level in the water body, the sensor detects and sends an alert message (SMS) to the peoples who are nearby the water body. The collected information (data) from the water level sensor and temperature and humidity sensor passed to Thingview Android application in order to find the flow graph level of the water level in the river and temperature, humidity values and sends SMS to the registered contact mobile numbers:

KEY WORDS:

flood detection, flood alert system, flood intimation application, water level measurement in dam.

BLOCK DIAGRAM:



ARDUINO (ATMEGA):

An open source hardware device used for interfacing the all sensors and electronic devices used to perform a specific task. Any unique task can be completed by loading a set of instructions(program code) via a serial connection from the computer to arduino board . Arduino has 2 parts one is physical programmable circuit board and another one is a piece of software or IDE.This arduino software works on the computer, which is used to write and upload computer code to the physical board The Arduino boards which we are using is programmed via Universal Serial Bus (USB)which can be implemented using USB-to-serial adapter chips such as the FTDI FT232. Some boards, which are manufactured before such as later-model Uno boards, replace the FTDI chip with a separate AVR chip that holds the USB-to-serial firmware.

Power(Usb/Barrel Jack):

Every Arduino board requires a device that to be connected to a power source. Usually Arduino will use a power from computer or a wall to work, through USB cable

Ultra sonic sensor (HC-SR04):

It is an instrument used for measuring the distance form object using sound waves. An ultrasonic sensor which is a transducer that sends and receives the ultrasonic pulses that relay back information about an object's proximity. This device is mainly suitable for moisture content area .

Water flow sensor:

A sensor that fixed in line with water line and contains a rotatingwheel sensor , measure how much water has moved through it. an integrated magnetic hall effect sensor that outputs an electrical pulse with respect to each revolution. The hall effect sensor is fixed in the water pipe and allows the sensor to stay safe and dry. on counting the pulses from the sensor output, we can easily calculate water flow environmental friendly material is used which doesn't produce any hazard when it used in water.

Liquid crystal display(LCD):

Usually LCD is a combination of two states of matter, one is solid and another is liquid. LCD uses a liquid crystal to produce a visible image LCD modules will have a seven segments and other multi segment LEDs. The reasons for selecting LCD's are more economical, have no limitation for displaying special and even custom characters, easily programmable, usage is simpler usually 16x2 LCD is preferred,which will be used which will display 16 characters per line and displays in 2 lines. In this LCD, each character can be displayed in 5x7 matrix pixel. Basically LCD consists of two registers, one is Command and another is Data. the command register is mainly used for storing the command instructions given to the LCD. The data register is basically used for storing the data which will be displayed on the LCD.

Buzzer:

Buzzer or beeper ,a device which is used for audio alerting, it may be electromechanical, mechanical, or piezoelectric (piezo for short). Usage of buzzers in alarm devices, confirmation of user input such as a keystroke, timers and mouse click

Real Time Clock(RTC):

A device is preferred to update the obtained sensor values periodically with the accurate time. It runs with a dedicated battery.

Node MCU:

It is a hardware module which transmits the updated value to the cloud with the measured time continuously. This value is the input of the software section. It gets automatically updated when a new value is being obtained by the sensors. Internet connection is required for a faster data rate transmission.

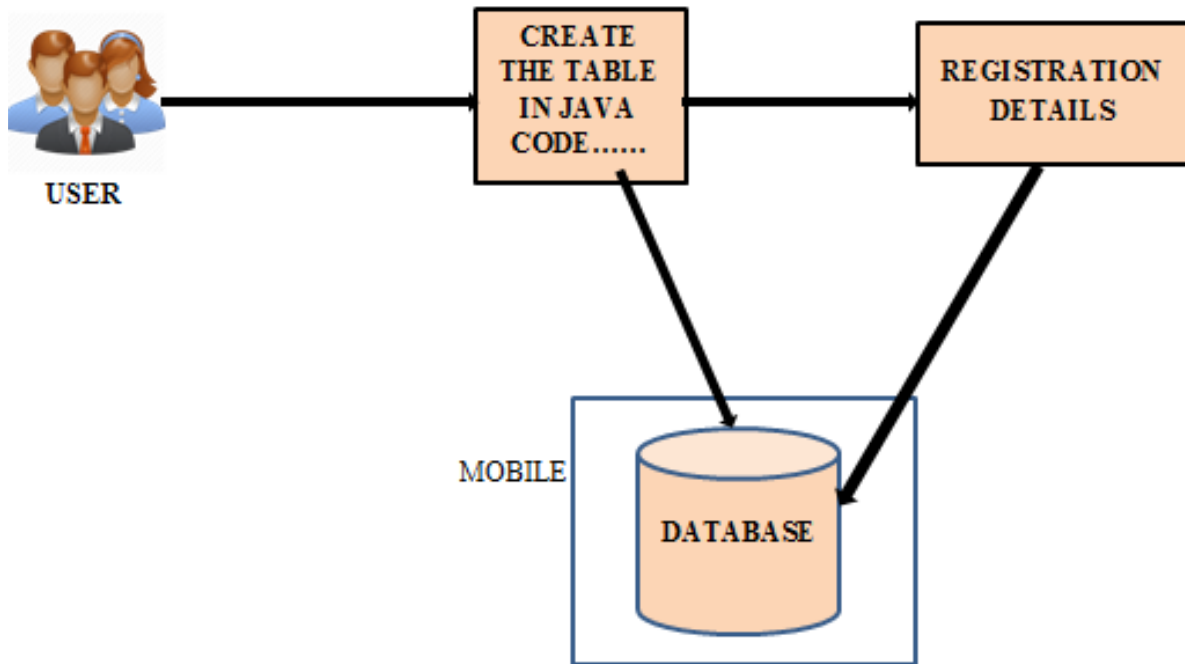
MODULES:

- Login / Registration.
- Database Creation
- Monitoring
- Exit

Login& registration:

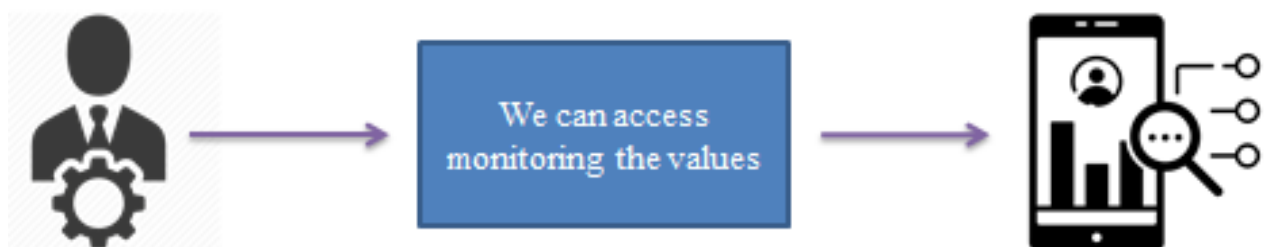
In our module we design to develop login and signup page. Android used xml to develop classical screen in our application. The modules will have signup page contains email id as user name, password and confirm password those kind of details should be stored in database. When the user wants to enter the app .he/she must enter the user name and password .the entered data should match the already stored data. If it is same the user can go through it otherwise alert the user and show a message to the user.

Database creation:



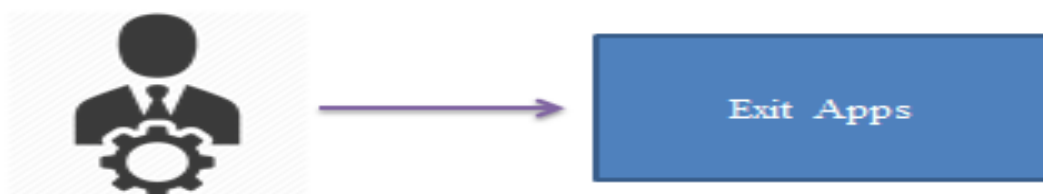
User-id (Registered Number), username, password, mobile number, address have been stored in MySQL database using php function and JSON. Generally android should has its own inbuilt database named as Cloud Database. But it cannot store the value in cloud.so only we use php and json for storing and retrieving the data in cloud using our Android application.

Monitoring:



In this module we have to develop an input value from embedded output for android input value we can be monitor the mobile apps so we are using android application.

Exit:



When you decided to quit our application simply click "Home" button and it will go directly to the home page where you click "Exit" button to exit our application.

RESULT:

The alert notifications are sent to the public before the occurrence of the flood so that they can locate to another area at a safe time.

FUTURE SCOPE :

A Laser Range Finder can be implemented instead of Ultra Sonic Sensor which is more precise and costly. All the hardware connections can be made wireless with the help of certain frequency (IR). Information can be uploaded without the usage of internet by connecting two wifi routers which is more reliable. The overall size can be reduced and can be implemented in a small chip using future technologies. Any loss of data during transmission can be reduced using advanced CSMA/CA techniques. The bit rate can be improved for certain level.

CONCLUSION:

In this project automation is implemented in the field of dam without any human intervention. The process is fast and can alert the people prior to the occurrence of the flood. Because of this, we can save numerous lives and the process