The main objective of this project is to design and build a flood detection and rescue system using Arduino. The system is consisting of a water level sensor that measures the water level inside the river. If the water level is low, the green LED will be turned on to indicate the status. If the water level is increased, the buzzer will produce the alert sound and the red LED will be turned on to indicate the status. Also, to control the water level of the river, there will be a drainage system where the excess water will run off. The drainage system will be closed by a shutter and only the authentic person can open the shutter by entering the shutter password.

We use Arduino - an open-source electronics platform based on easy-to-use hardware and software. Arduino board senses the environment by receiving inputs from many sensors, and affects its surroundings by controlling various actuators. The Arduino board is programmed by writing code in the Arduino programming language and by using the Arduino Integrated Development Environment. Unlike most other programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board - you can simply use a USB cable.

The main components used in this project are:

* **Arduino Uno Microcontroller board** based on the Microchip ATmega328P microcontroller is used in this project. This board also consists of other components such as crystal oscillator, serial communication, voltage regulator, etc. to support the microcontroller. Arduino Uno has 14 digital input/output pins (out of which 6 can be used as PWM outputs), 6 analog input pins, a USB connection, a Power barrel jack, an ICSP header and a reset button.
* **Water level sensors** are used to detect the level of substances that can flow. Such substances include liquids, slurries, granular material and powders. Such measurements can be used to determine the number of materials within a closed container or the flow of water in open channels.
* **Servo Motor** is low speed and high torque motor. It has four main components - a DC motor, a gearbox, a potentiometer and a control circuit. It is controlled by sending a series of pulses through the signal line.
* **4x4 Matrix Keypad**, that are commonly used where a number of input switches are required. It consists of 16 buttons or switches arranged in the form of an array containing four rows and four columns. One end of the pushbutton is connected to one row, and the other end is connected to one column. When the button got pressed, the button will be conducting and thereby we can locate the pressed button/switch.