The main objective of this project is to design and build a bus stop architecture using Arduino. This bus stop is completely smart. Time, date and day will be displayed on the lcd screen for the people. To manage a good amount of air flow, the roof of the bus stop will be open in normal weather conditions. If there is rain or heavy sunlight, the bus stop detects the weather change and closes the roof automatically. In other words, this bus stop is more concerned about the comfort of the people who use it!!

We build the project on 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.
* **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.
* **Liquid Crystal Display (LCD):** The JHD162A 16×2 LCD module used here is based on the HD44780 driver from Hitachi. It can display 2 lines of 16 characters each. The JHD162A has 16 pins and can be operated in 4-bit mode or 8-bit mode.
* **DS3231 RTC module** is an extremely accurate I²C real-time clock (RTC). It incorporates a battery input and maintains accurate timekeeping when the main power to the device is interrupted.