**16BCB0056**

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**Introduction to Technology - Evolution, Need, Domain and Applications:**

In our project we used 1) Wi-Fi technology and 2) sensor technology.

(i)**Wi-Fi technology: -**

Wireless fidelity famously known as Wi-Fi is proficiently used by mobiles, workplaces, home and computer systems all around the world. It is a spectrum radio technology and OFDM radio technology therefore it is an alternate of wireless LAN’. Wi-Fi Technology is the trademark of Wi-Fi Technology Alliance which is speedily achieved the recognition in the world by means of the access point. These devices tested by the “Wi-Fi Technology alliance” are used around the world. **Wi-Fi is already connecting the Internet of everything applications that consumers want today, it is enabled to the thermostats, the light bulbs, home security, monitoring and control systems, the appliances, and the automotive products. Wi-Fi is a single technology can help make all connections seamless, Wi-Fi applications with practical uses will have success, it has industry-standard security protections, and the consumers can rely on.**

(ii)**sensor technology: -**

**The other technology used in this project is sensor technology.** There are many significant innovations and inventions begin made daily. Micro- and nanotechnology, novel materials, and smaller, smarter, and more effective electronic systems will play an important role in the future of sensors.

To fulfill the promise of sensor systems providing situational awareness at low cost, there must be a demonstrated benefit that is only gained through further miniaturization. For example, new nanowire-based materials that have unique sensing properties can provide higher sensitivity, greater selectivity, and possibly improved stability at a lower cost. Such improvements are necessary to the sensor future. Sensors can improve the world through diagnostics in medical applications; improved performance of energy sources like fuel cells and batteries and solar power; improved health and safety and security for people; sensors for exploring space and the known university; and improved environmental monitoring.

**Development Environment:**

Development environment that we used in our project is **Arduino software IDE**. In that software we can test our coding and learn Arduino example codes and how they work. They also provide tools like serial monitor for checking if the code is working fine or not. Using the compile option, we can know the errors of the code and coding mistakes before running the actual code. We can test our modules and sensors using the basic example codes given in the software. We can upload the code directly to our microcontroller by connecting with the Usb port and by selecting the port and choosing the right board then we can click the upload option and the code will be booted to the Arduino board directly. And the code for the Arduino is basic C-programming which is easier to code and develop with the software. The software is the official version from the Arduino itself who make the hardware. It is very simple and powerful environment for developing solutions for our project and to test the parts and our code

**Algorithm - case study:**

# For this I am going to analyze the algorithm which is used in the paper named “Internet of things based smart irrigation using regression algorithm”. In our case the paper creators are using soil moisture and temperature sensors. Initially the data number is set and for the current temperature, the corresponding quantities of water absorbed by the plants are taken into consideration. The mathematical expression for plotting the regression line is expressed in equation (1), while yꞌ gives the forecasted amount of water that is required for the next day expressed in equation (2).

1. - y = mx + c
2. - yꞌ = b0 + b1x

where, b1 is the slope of the regression line and b0 is the intercept of the regression line. For the actual data, the computations are being carried out for the predicted values of water absorbed and the deviations are being taken for the next iteration. The error gives the difference between the actual amount of water absorbed by the plants and the predicted value being calculated which are taken for the further computations. temperature and the amount of water irrigated are plotted in graph as presented. By taking the amount of water flow and temperature as inputs, the final resultant graph will give the prediction of how the water is going to be consumed the next day. We can form a fuzzy logic like this and develop this into ultimate Water irrigation system for the farmers using other different factors

**Simulation Tool - a simulation exercise:**

**Fritzing** is an open source hardware initiative that makes electronics accessible as a creative material. I connected my parts in fritzing before connecting the original hardware. With Fritzing, you can inexpensively and quickly turn your circuit into a real custom-made PCB. The connections will be clear and we can view which wire is connected to which. It also has a developer community in GitHub. We can also edit the hardware of the parts and we can find some parts in GitHub which are not available here. From Bread board to Arduino and Raspberry pi. Every sensor and module are available. You just have to explore and get creative.

