

A Report
On
Nano Satellite-Design and Development

Submitted by
Student of B.E.EXTC

Branch: EXTC

Under Guidance of

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Shirgaon, Virar (East)

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WORKSHOP REPORT

Nano Satellite-Design and Development

Electronics And Telecommunication Engineering Department organized a workshop on Nano Satellite-Design and Development on 19th September 2019 and 20th September 2019, for the students of T.E and B.E. (EXTC Engineering – Semester V and Semester VII).

Following faculty Member accompanied the students.

1. Prof. Meena Perla

The workshop started at 9 am at the seminar hall of Viva Institute of Technology. All the students and the faculty members reached the seminar hall on time and the session took place with a brief introduction about satellites. Mr. Anshul Verma gave a brief knowledge about the introduction to satellites through power point presentation along with its technical specifications. Students got to learn various information and details such as:

- **Orbits:** LEO(Low Earth Orbit)
MEO(Medium Earth Orbit)
GEO(Geostationary Earth Orbit)
- **Constituents of satellite:** Frame/Body(BUS)
Power Source
Antenna
Computer

He further gave an idea of the steps which were to be done for the designing of Nano Satellites. He taught the students about the prototypes of the satellite, how satellites work, how they receive input from the sensor, how they send information back to the ground station by making a small Satellite. He also briefed the students about Geostationary Satellites.

This Nano Satellite was designed using ARDUINO, ATmega8 and was named as CANSAT. As the name CANSAT suggests the satellite is packed inside a 300ml CAN.

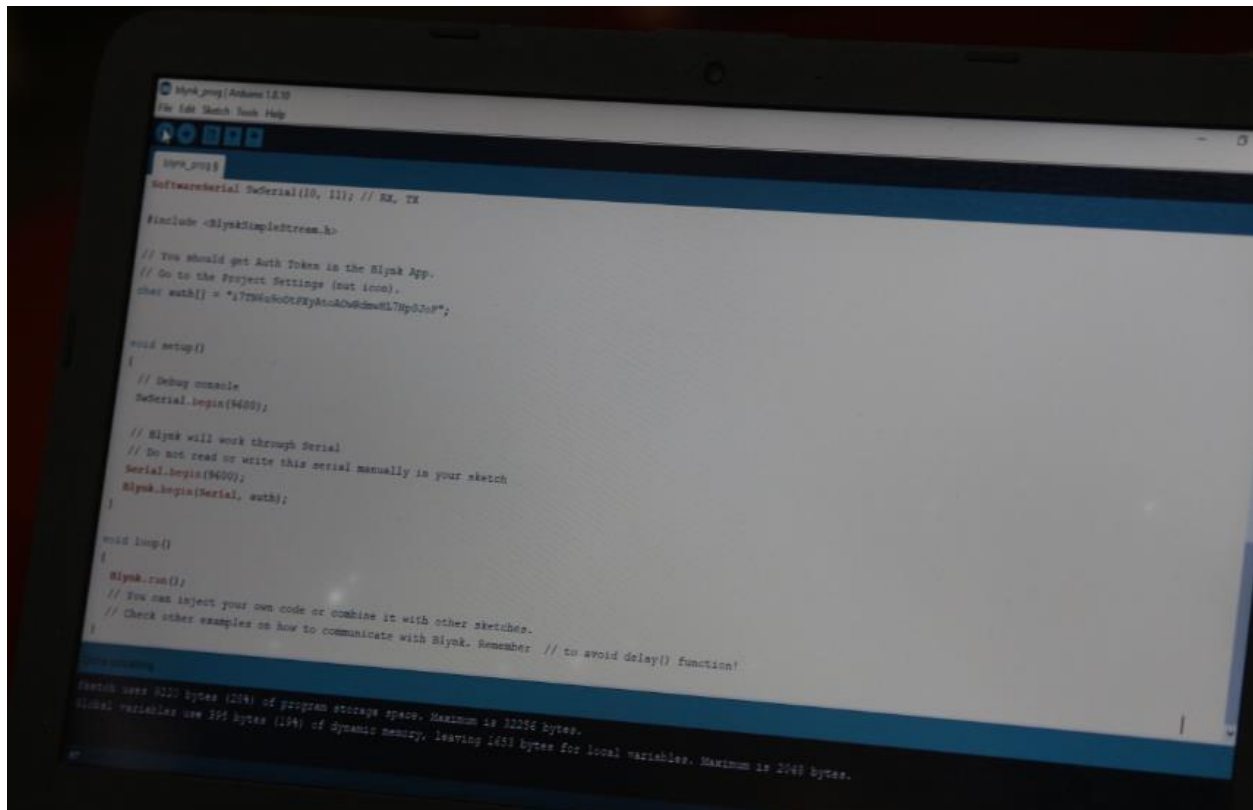
The CAN was the frame or the bus of the satellite and batteries were used as the power source. RF modules or Bluetooth were also used in the making of CANSAT. Transceivers which works on the radiowaves but the whole module works as the transmitter and a radio receiver were used. Transceivers were used in designing of CANSAT as it is cost-effective. Internet/WiFi modules were used for the communication of the satellites. ATmega8 was simply programmed and connected with WIFI modules. The IC used for WiFi module was ESP8266. SMD microcontroller was used which works as computer which will receive values through radiowaves or through ESP devices. ATmega8 consists of 28 pins.

The software used was Arduino IDE. Arduino IDE is an open-source software program that allows users to write and upload code within a real-time work environment. This code will thereafter be stored within the cloud. The system is fully compatible with any Arduino software board. ESP was connected while working on ThingSpeak but no ESP was used while working on Blynk. He taught the students to provide internet to the gateway by not using ESP but through the laptop.

At the end of the session, students learnt how to provide gateway to Arduino UNO, how to provide internet connection to Arduino, getting the values from the sensor and combine them and by using the internet connection students have learnt to transmit the values from various ground stations to the earth.

All the components which were used in designing of satellite can be fitted into the can as it is named CANSAT.

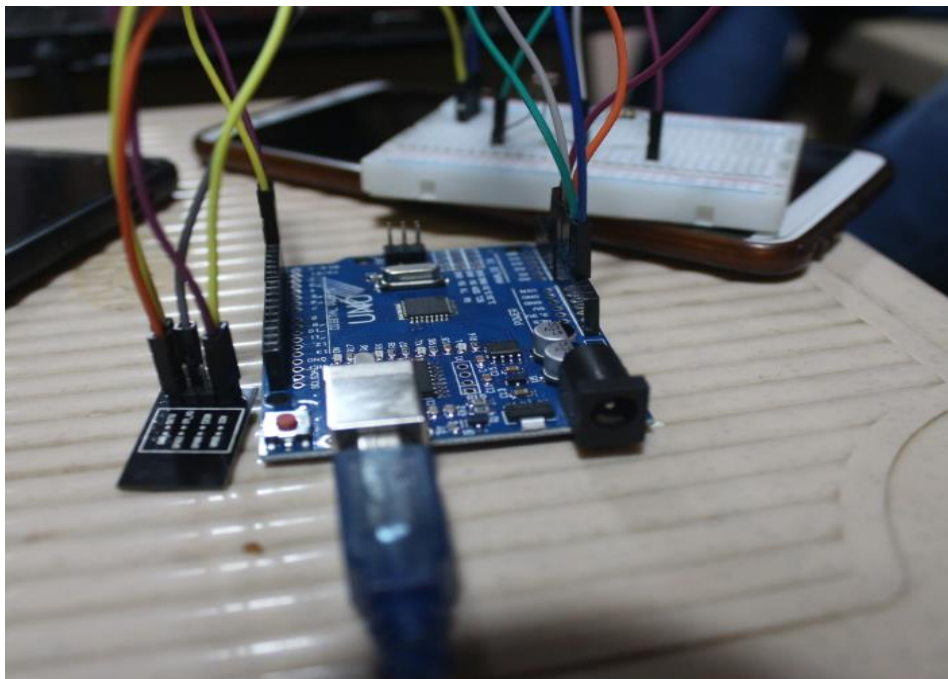
Successful Completion of the workshop:



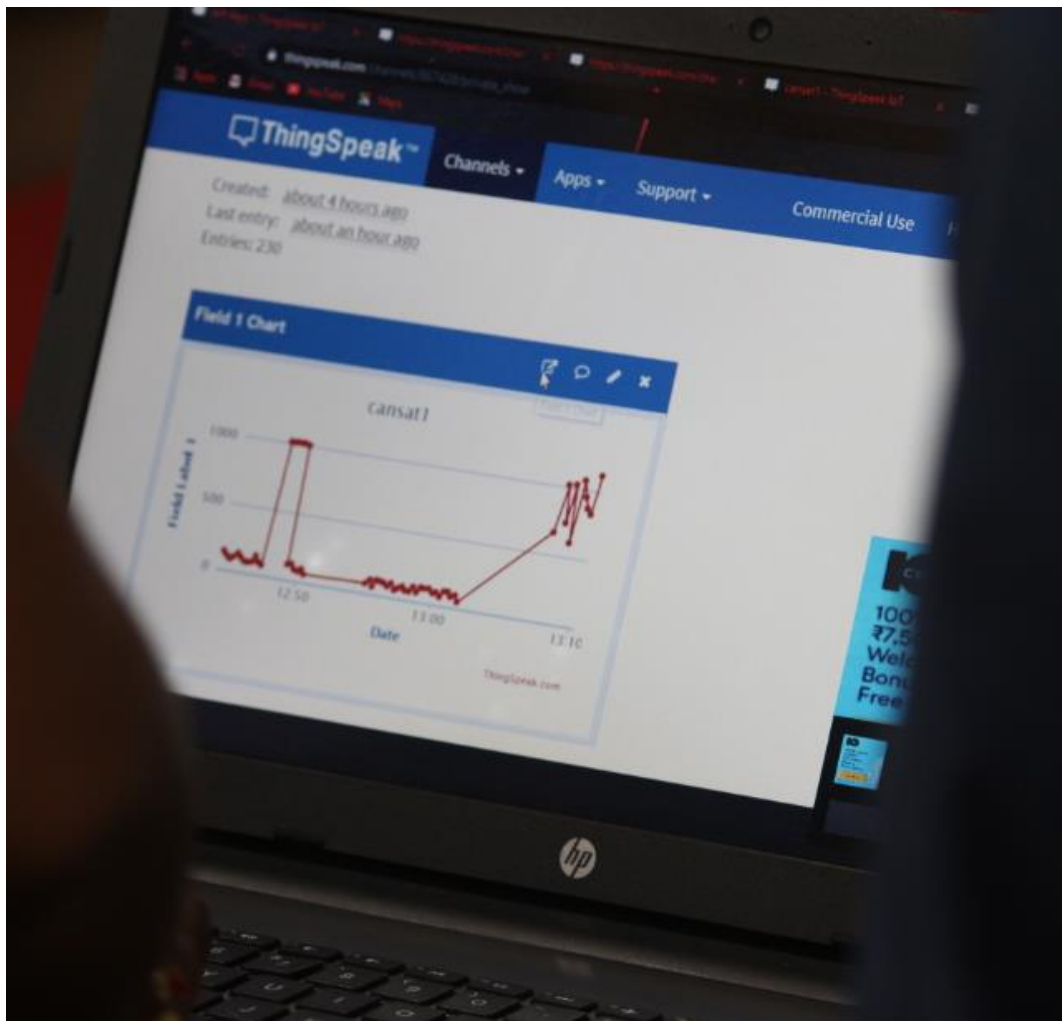
Blynk to create a project dashboard.



Mr. Anshul briefing the students about the satellites.



Designing CANSAT.



ThingSpeak to store and retrieve data.

The workshop ended with a vote of thanks from faculty members and students to Mr. Anshul Verma for giving his valuable time to the students. At the end, students were given the certificates for the same and the workshop ended successfully.