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FOUNDATION

**Sandip Foundation's**  
**Sandip Institute of Technology & Research Centre,**  
**Mahiravani, Trimbak Road, Nashik - 422 213**

**Department of Electronics & Telecommunication**  
**Engineering**



## **A Report**

**on**

**"A Five Days Workshop on Introduction to IoT- Smart Cities Solutions"**



**Under the Guidance of**

**Prof. Dr. Gayatri M. Phade**

**Professor and HoD, E&Tc Department, SITRC.**

**Mentor**

**Mr. Rohan Shinde and Team.**

**Organized & Managed By:**

**Sandip Foundation's**  
**Sandip Institute of Technology & Research Centre,**  
**Mahiravani, Trimbak Road, Nashik**

**Date: 21/11/2022 To 25/11/2022**

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## **Introduction:**

"If you think that the internet has changed your life, think again. The IOT is about to change it all over again!"

Internet of Things is a new revolution of the Internet. A world where the real, digital and the virtual are converging to create smart environments that make energy, transport, cities and many other areas more intelligent. A device become a smart device is called IOT. Now a days there are many android and server based application. All the faculty and students from E&Tc department had actively participated in the event to make it a grand success.

The Electronics and Telecommunication Department has successfully conducted the workshop for second year students of Sandip Institute of Technology and Research Center on Introduction to IoT- Smart Cities Solutions.

## **What is Internet of Things?:**

It's a global network infrastructure, linking physical and virtual objects using cloud computing, data capture, and network communications. It allows devices to communicate with each other, access information on the Internet, store and retrieve data, and interact with users, creating smart, pervasive and always-connected environments. The Internet of Things (IoT), sometimes referred to as the Internet of Objects, will change everything— including ourselves. This may seem like a bold statement, but consider the impact the Internet already has had on education, communication, business, science, government, and humanity. Clearly, the Internet is one of the most important and powerful creations in all of human history. Now consider that Internet of Things represents the next evolution of the Internet, taking a huge leap in its ability to gather, analyse, and distribute data that we can turn into information, knowledge, and, ultimately, wisdom. In this context, Internet of Things becomes immensely important.



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## *DAY-1 INTRODUCTION TO IoT*

The first day was a very fresh start to a new domain of information to us. At beginning of the workshop Dr. Gayatri Phademam has motivated towards being open to learn new thing and keep exceling forward with hope of learning new lesson in our life.



After her words motivated us for what is coming forward, we came to introduction with our mentor Rohan Shinde and he taught us about some very beautiful facts of being an engineer and its importance in this 21<sup>st</sup> Century. At last, we came to understanding what can be said a little about what is IoT and Its application in Everyday life. As I remember what he was the words as The Internet of things describes physical objects with sensors, processing ability, software and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks. After learning about the IoT we all came to conclusion that this topic could be fascinating to learn.

This was a very mysterious end to day one of IoT workshop and we were dispersed to find out more about this Subject



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## *DAY-2 The Debate on IoT Application*

The second day was energetic and full of enthusiasm of learning practically rather than everyday learning. We started with the learning about IoT and various aspects of them in every sector and field and how to implement them with very fresh and new approach of implementing it. With discussion various conflicts raised as we dispersed for break, we were split into 6 different groups each of 8 students.



After noon we came to know about, we can present our opinion in form of argument via debate. As we knew about this, we were very excited to do so and a very strange feeling of competition has taken place within us. There were two sides of this debate positive and negative each bunch of 3 group to be alternately given, we were given 2 min time for discussion of our argument to be done. Now there was a board with names of each of our group written on them and it make us eager to win this competition. This excitation has led to very competitive felling among us. As the debate proceed forward, we each have scored points and this discussion was very productive and helped to clear our misconception and doubt in short this learning through our own ideas and our mentor was mediator among every group and has cleared our mistakes if we made any this was a very awesome day to interact about various new ideas among us. This was end of our second day of our workshop.



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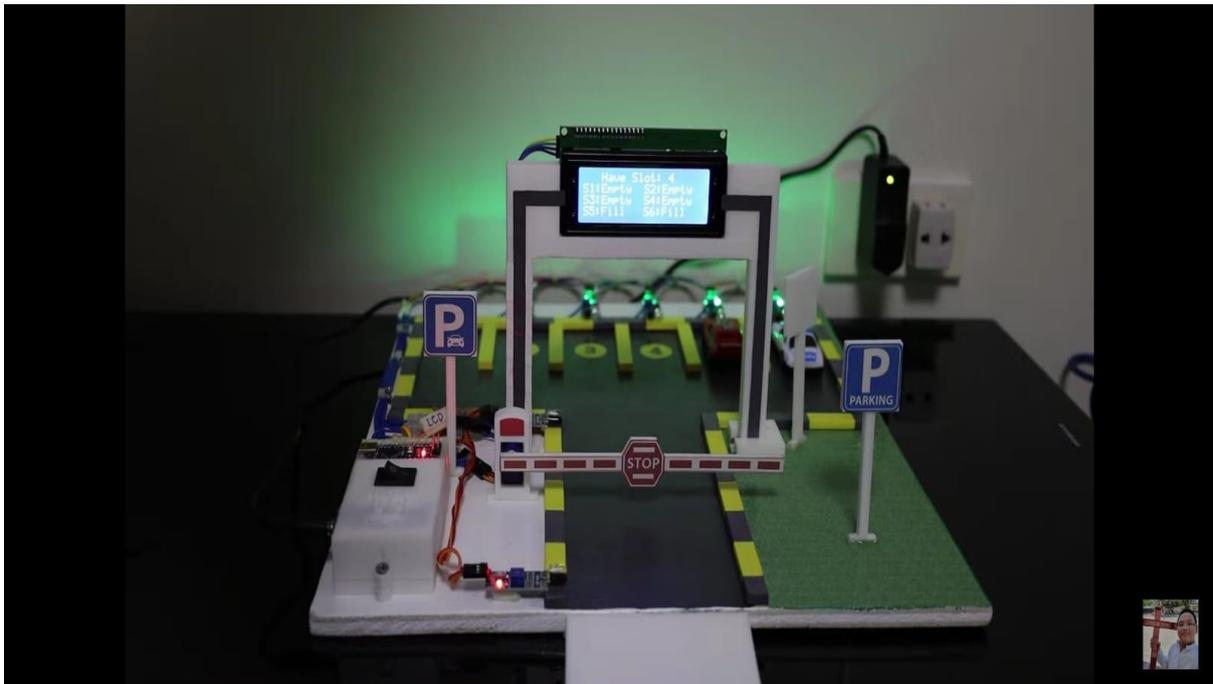
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## DAY-3 The Project Based on Smart Cities

As we gathered in our workshop hall, we all 6 groups to be seated accordingly as the session proceed toward, we chapter in this workshop. After learning about the all about the Arduino board new types we were eager to implement it. Then as of requesting to learn more about it we were assigning to make a collective project this was mini model for smart city application. This was an idea of creating a smart solution for a parking system which seems interesting and we each team was given an specific task tom perform some were assign to design hardware connection and sensors others were programming team of Arduino remaining were given task of designing the project and decoration.



The above project is demonstration of our collective work and guidance this made us very happy to implement to work on the knowledge we learnt so far about IoT, This was end for the Day-3.



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## DAY-4 All About Sensors

As a start of day four we gather in seminar hall there was new feeling for starting something fresh it was going great until now we have learnt so much as for practical knowledge there was so much good vibes in the environment in the air we were taught about the virtual ecosystem of technology.



Then we were taught about the dependency of both software and Hardware in the world of technology with the help of presentation it was not that hard to understand as it was virtually and practically shown to us during this course of workshop. As a part of learning the codependence of hardware and software we were able to connect the lead to main motive of our mentor that was the sensing element of every project as we were very resourceful we had every sensory element in our arsenal to demonstrate to learn about then after learning the basic concept of working of the every sensors we had we were give the task of finding some interesting fact about as it was crucial we were so interested in session that we never came to know about the fact that it was way past we were allowed. This was the end of day 4 with a promise of learning to implement it tomorrow.



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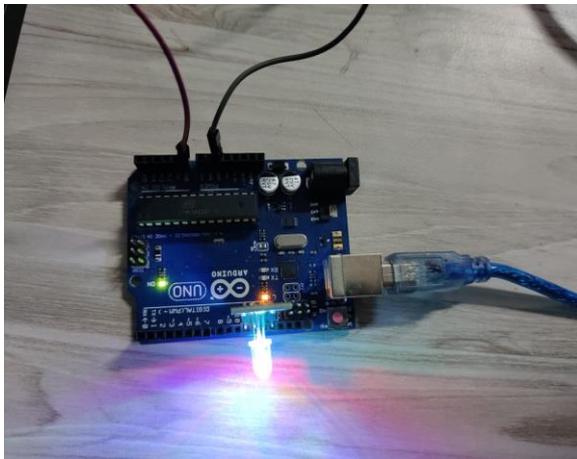
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## DAY-5 THE CONCLUSION

As this day started, we were excited as we came to know about the fact of learning some hands-on experience of Arduino Uno board again we were divided in group of 6 and assign with Arduino Uno, a connecting wire, some jumper wires, and sensors to created rather to play with them. we were so excited then we taught how install the application for programming the Arduino board using the software called Arduino IDE we were taught to program the boards as per the rules and requirement of projects and as we completed this we started to work on them as soon as possible. At first, we made mistakes but our mentor was with always teaching us and supporting us to every problem we faced during making our project.



There were many projects but my group made the basic smart street light turn on/off project. The above pictures are demonstration of our project to be a success and we ran an instant happiness as our project ran smoothly as if we learn so much in this five days period but as it was it way an end to our Workshop and we have no regrets what's so ever about learning it we thanked our teachers and mentors for the knowledge they shared with us in short period of time. our mentor motivates us to move forward in our life as we came to an end of our workshop, I rather say a very beautiful journey.



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### **Skills Gained:**

- Current scenario/job opportunities of embedded and IoT industries.
- Understanding the skill set required in a new employee in embedded industry.
- Understanding the IoT future and scope.
- Understanding the different IoT microcontroller available in the industry & their use.

### **Outcomes of attending the workshop:**

- What “the Internet of Things” means and how it relates to Cloud computing concepts
- How open platforms allow you to store your sensor data in the Cloud
- The basic usage of the Arduino environment for creating your own embedded projects at low cost
- How to connect your Arduino with your Android phone.
- How to send data to the Internet and talk to the Cloud.

### **Conclusion:**

In this Workshop, how machine to machine connectivity is rapidly growing everywhere was discussed. Also the business benefits for connected devices and assets for remote location connectivity are instantly cleared.

