

DATE: 22/2/2022

**Event Coordinator(s)**

1. Prof. Tejal Deshpande
2. Prof. Sayali Mane
3. Prof. Suvarna Bhoir

**Student Coordinator(s)**

**Time & Place:**

22<sup>nd</sup> Feb, 2022

10:45am to 12:30pm

**Platform: Online  
(Google Meet)**

**Department:**

**EXTC, IT, COMPS**

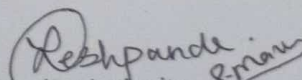
**No of participants:**


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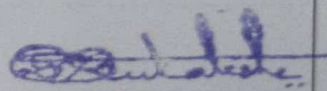
**Dr. Mansi Subhedar**, IQAC Coordinator and Head, at the Department of E&TC Engineering at Pillai HOC College of Engineering and Technology, Rasayani, Maharashtra delivered a Guest lecture on "IoT and it's applications" on Tuesday 22<sup>nd</sup> February, 2022 for Third Year students of the Department of Electronics & Telecommunication, Information Technology and SE Computers. Because of COVID-19 pandemic situation the guest lecture was conducted on Google Meet online platform.

120 participants attended the session. Some of the important topics covered were Benefits of IoT, Characteristics of IoT, IoT cloud platforms, IoT Architecture, Technology behind IoT, Major Components of IoT, IoT applications, Security threats etc

The participants found it very informative and well organized. They look forward for more sessions on IoT

  
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Signing Authority  
Name and Designation

**Head of the Department**

Department of Electronics and Telecommunication  
Xavier Institute of Engineering  
Mahim Causeway, Mahim (W), Mumbai - 400 016

**PRINCIPAL**

Xavier Institute of Engineering  
Mahim, Mumbai - 400 016

**Feedback from Participants:**

Conduct more sessions like this as it gives us good knowledge

Thank you Mam, for this informative session .

Have such webinars

It's very useful

Learned a lot from the session and Thank you for organizing such a good event.

Would want more of these lectures so that i can expand my knowledge further in IOT

Good Session

Useful lecture, learned lot of new ideas and information about IOT

Very detailed session

It was a great session thank you ma'am

Please organise more seminars in future

session was very useful for us getting the information about IOT

Need More

Very informative lecture

It was wonderful session

Good

Very informative session

The session was very helpful and knowledgeable

Session was good. Looking forward for such informative sessions.

Offline would be better

Its a good session for the iot subject. Got to know more application of iot in real time.Hope for more of this kind of sessions.

Very good session for us and it will us for our final year project.

Very good session . Got to learn many things.

More such interesting sessions would be great!

Great Session

We look forward for more sessions related to IOT its protocols applications and many more domains

very informative

No comments....but the session was helpful... Thankyou

Very good session gave clear idea about IOT

plz do such kind of webinar in future.

It was a very informative session about IOT



...e form Link of the feedback taken -  
[https://docs.google.com/forms/d/1Cbodlwis31o2ouwSHt81S2WzrZ0tChStbEQkDStH\\_Gc/edit?usp=sharing](https://docs.google.com/forms/d/1Cbodlwis31o2ouwSHt81S2WzrZ0tChStbEQkDStH_Gc/edit?usp=sharing)

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## EVOLUTION OF INTERNET OF THINGS (IOT)

The diagram illustrates the evolution of IoT through five stages:

- Pre-Internet:** "Human to human" with features like Fixed and mobile telephony and SMS. It leads to "Smart networks".
- Internet of Content:** "WWW" with features like e-Mail, Information, and Entertainment. It leads to "Smart IT platforms and services".
- Internet of Services:** "Web 2.0" with features like e productivity and e-commerce. It leads to "Smart phones and applications".
- Internet of People:** "Social media" with features like Skype, Facebook, and YouTube. It leads to "Smart devices, cloud to data".
- Internet of Things:** "Machines to machine" with features like Identification, tracking, monitoring, tracking, and Automatic account opening. It leads to "Smart Grid and wireless control".

10:53 AM | udv-gjfe-sef

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## IOT CHARACTERISTICS

- 1. Intelligence**
  - combination of algorithms and computation, software & hardware makes it smart.
  - Ambient intelligence in IoT enhances its capabilities & facilitates things to respond in an intelligent way to a particular situation and supports them in carrying out specific tasks.
  - intelligence in IoT is only concerned as means of interaction between devices, while user and device interaction is achieved by standard input methods and graphical user interface.
- 2. Connectivity**
  - Simple object-level interactions contribute towards collective intelligence in IoT networks.
  - enables network accessibility and compatibility in the things.

10:59 AM | udv-gjfe-sef

Dr. Mansi Subhedar is presenting

# IOT BENEFITS

## Benefits of IoT

The diagram features a central circle labeled 'IoT' surrounded by five benefit boxes: 'Use of Smart Devices', 'Reduction in Operational Cost', 'Enhanced Security Measures', 'Achieve Customer-Centricity', and 'Gathering Rich Data'. A small URL 'www.4sube.com' is visible at the bottom right of the diagram.

11:04 AM | udv-gjfs-sef

Dr. Mansi Subhedar, Sayali Mane, Suvarna Bhoir, MERIN REJI, PRINCE GUPTA, Nancy Merciline, Kaushubh Desale, yes maam

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# DRAWBACKS OF IOT

## Privacy Issue

- With the advancement in technology and social media, user's data is always available on the internet
- With the things being connected with the internet, hackers are provided with yet another tool to be able to break into the network and steal the information.
- Data being all time available, there is every possibility that your data can be misused.
- The information they are given access to could also be misused by companies to exploit the users.

11:16 AM | udv-gjfs-sef

Dr. Mansi Subhedar, Suvarna Bhoir, Sayali Mane, MERIN REJI, PRINCE GUPTA, Elkana Chandra Re..., 109 others, You



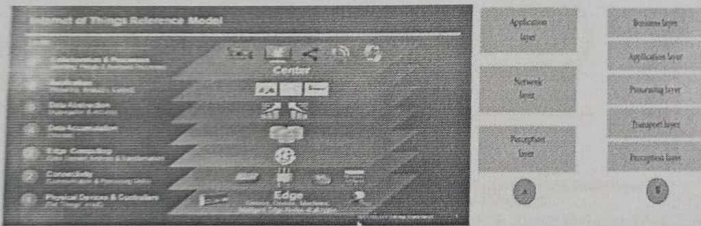
# IOT CLOUD PLATFORMS

- IoT cloud platforms do the task of bringing together the capabilities of IoT devices and cloud platforms to perform end-to-end service.
- IoT device has multiple sensors and it is connected to the cloud via gateways.
- Various devices are connected to the internet and big data is processed through IoT devices and gets connected to multiple applications.
- IoT cloud is deployed in three different ways such as SaaS (software as a service), PaaS (platform as a service), and IaaS (infrastructure as a service).
- It is built on top of the other generic clouds such as Microsoft, Amazon, Google, etc.
- IoT cloud platforms do the task of stretching and analyzing data and process it through the cloud and devices.

Participant grid showing Dr. Mansi Subhedar, Suvarna Bhoir, Nancy Marcellino, MERIN REJI, PRINCE GUPTA, Elkana Chandra Ro..., 111 others, and You.



# IOT ARCHITECTURE



Participant grid showing Dr. Mansi Subhedar, Suvarna Bhoir, Nancy Marcellino, MERIN REJI, ANSHUMAN Sharma, Elkana Chandra Ro..., 118 others, and You.



Dr. Mansi Subhedar is presenting

## TECHNOLOGY BEHIND IOT

- Hardware (Arduino Raspberry Pi, Intel Galileo, Intel Edison, ARM mBed, Bosch XDK110, Beagle Bone Black and Wireless SoC)
- Integrated Development Environment (IDE) for developing device software, firmware, and APIs
- Protocols [RPL, CoAP, RESTful HTTP, MQTT, XMPP (Extensible Messaging and Presence Protocol)]
- Communication (Powerline Ethernet, RFID, NFC, 6LowPAN, UWB, ZigBee, Bluetooth, WiFi, WiMax, 2G/3G/4G)
- Network backbone (IPv4, IPv6, UDP and 6LowPAN)
- Software (RIOT OS, Contiki OS, Thingsquare Mist firmware, Eclipse IoT)
- Internetwork Cloud Platforms/Data Centre (Sense, ThingWorx, Nimbita, Xively, openHAB, AWS IoT, IBM BlueMix, CISCO IoT, IOx and Fog, EvryThing, Azure, TCS CUP)
- Machine learning algorithms and software.

11:34 AM | udv-gjfs-sef

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## MAJOR COMPONENTS OF IOT DEVICES

1

2

3

4

**Sensors**  
Collecting data

**Connectivity**  
Sending data to cloud

**Data Processing**  
Making data useful

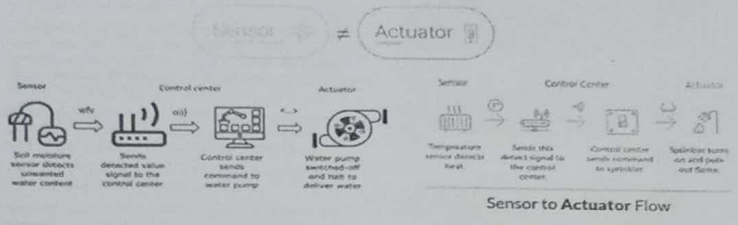
**User Interface**  
Delivering information to user

- Physical object with embedded software into hardware.
- microcontroller, firmware, sensors, control unit, actuators
- Communication module: Software consisting of device APIs and device interface for communication over the network and communication circuit/port(s).
- middleware for creating communication stacks using 6LowPAN, CoAP, LWM2M, IPv4, IPv6, and other protocols.

11:36 AM | udv-gjfs-sef



# SENSOR TO ACTUATOR FLOW



Participant list:

- Dr. Mansi Subhedar
- Suvarna Bhoir
- Nancy Mercline
- MERIN REJI
- SANTHOSH NAMBI
- Eikana Chandra Re...
- 114 others
- You

# FIRMWARE

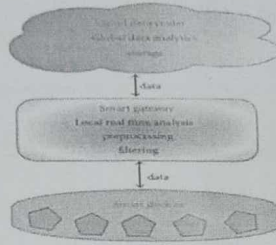
- Firmware is a specific class of computer software that provides low-level control for a device's specific hardware
- Firmware is the low-level software operating the hardware of a microprocessor- or microcontroller-based device.
- It enables components to interact with each other and implements communications protocols
- Thingsquare Mist is an open-source firmware (software embedded in hardware) for true Internet connectivity to the IoT.
- It enables resilient wireless mesh networking.
- Several microcontrollers with a range of wireless radios support Things MIST.

Participant list:

- Dr. Mansi Subhedar
- Suvarna Bhoir
- MERIN REJI
- Eikana Chandra Re...
- Nancy Mercline
- SANTHOSH NAMBI
- 112 others
- You

## IOT GATEWAY

- Gateways are part of the technology of IoT that can be used to help connect IoT devices to the cloud.
- Though not all IoT devices require a gateway, they can be used to establish device-to-device communication or connect devices that are not IP-based and cannot connect to the cloud directly.
- Data collected from IoT devices moves through a gateway, gets pre-processed at the edge, and then gets sent to the cloud.
- Using IoT gateways can lower latency and reduce transmission sizes.
- Having gateways as part of your IoT protocols provide an additional layer of security by protecting data moving in both directions.



Participant list for the meeting:

- Dr. Mansi Subhedar (Speaker)
- Suvarna Bhoir
- MERIN REJI
- Elkana Chandra Re...
- Nancy Merciline
- SANTHOSH NAMBI...
- 106 others
- You

## LOW-POWER, SHORT-RANGE NETWORKS

### Bluetooth

- Good for high-speed data transfer, Bluetooth sends both voice and data signals up to 10 meters.

### NFC

- A set of communication protocols for communication between two electronic devices over a distance of 4 cm (1.2 in) or less. NFC offers a low-speed connection with a simple setup that can be used to bootstrap more capable wireless connections.

### Wi-Fi/802.11

- The low cost of operating Wi-Fi makes it a standard across homes and offices. However, it may not be the right choice for all scenarios because of its limited range and 24/7 energy consumption.

### Z-Wave

- A mesh network using low-energy radio waves to communicate from appliance to appliance.

### Zigbee

- An IEEE 802.15.4-based specification for a suite of high-level communication protocols used to create personal area networks with small, low-power digital radios.

Participant list for the meeting:

- Dr. Mansi Subhedar (Speaker)
- Suvarna Bhoir
- MERIN REJI
- Elkana Chandra Re...
- Nancy Merciline
- SANTHOSH NAMBI...
- 106 others
- You



## LOW-POWER, WIDE-AREA NETWORKS (LPWAN)

LPWANs enable communication across a minimum of 500 meters, require minimal power, and are used for a majority of IoT devices. Common examples of LPWANs are:

### 4G LTE IoT

- High capacity and low latency, these networks are a great choice for IoT scenarios that require real-time information or updates.

### 5G IoT

- Although not yet available, 5G IoT networks are expected to enable further innovations in IoT by providing much faster download speeds and connectivity to many more devices in a given area.

### LoRaWAN

- Long-range wide-area networks (LoRaWANs) connect mobile, secure, bi-directional battery-operated devices.

Zoom meeting interface showing participants: Dr. Mansi Subhedar, Suvarna Bhoir, Eikana Chandra Re..., SANTHOSH NAMBI..., and You.

## APPLICATION LAYER

The application layer serves as the interface between the user and the device within a given IoT protocol.

### Advanced Message Queuing Protocol (AMQP)

- A software layer creates interoperability between messaging middleware. It helps a range of systems and applications work together, creating standardized messaging on an industrial scale.

### Constrained Application Protocol (CoAP)

- A constrained-bandwidth and constrained-network protocol designed for devices with limited capacity to connect in machine-to-machine communication. CoAP is also a document-transfer protocol that runs over User Datagram Protocol (UDP).

### Data Distribution Service (DDS)

- A versatile peer-to-peer communication protocol that does everything from running tiny devices to connecting high-performance networks. DDS streamlines deployment increases reliability and reduces complexity.

### Message Queue Telemetry Transport (MQTT)

- A messaging protocol designed for lightweight machine-to-machine communication and primarily used for low-bandwidth connections to remote locations.
- MQTT uses a publisher-subscriber pattern and is ideal for small devices that require efficient bandwidth and battery use.

Zoom meeting interface showing participants: Dr. Mansi Subhedar, Suvarna Bhoir, Eikana Chandra Re..., SANTHOSH NAMBI..., and You.

## TRANSPORT LAYER

- In any IoT protocol, the transport layer enables and safeguards the communication of the data as it travels between layers.
- **Transmission Control Protocol (TCP)**
- The dominant protocol for a majority of internet connectivity.
- It offers **host-to-host communication, breaking large sets of data into individual packets and resending and reassembling packets as needed.**
- **User Datagram Protocol (UDP)**
- A communications protocol that enables process-to-process communication and runs on top of IP.
- UDP improves data transfer rates over TCP and best suits applications that require lossless data transmissions.



Participant list:

- Suvarna Bhoir
- Elkana Chandra Re...
- Aditya Walchol
- You

## NETWORK LAYER

- The network layer of an IoT protocol helps individual devices communicate with the router.
- IP**
- Many IoT protocols utilize IPv4, while more recent executions use IPv6.
- LoWPAN**
- This IoT protocol works best with low-power devices that have limited processing capabilities.



Participant list:

- Suvarna Bhoir
- Elkana Chandra Re...
- Aditya Walchol
- You



Dr. Manal Subhadar is presenting

## APPLICATIONS OF IOT IN HEALTHCARE

- Implantable Glucose Monitoring Systems
- Patients who suffer from diabetes can have devices with sensors implanted in them, just below their skin.
- The sensors in the devices will send information to a patient's mobile phone when his or her glucose levels get too low and will record historical data for them too.
- This way, patients will also be able to tell when they are most likely to be at risk

for low glucose levels in the future, as well as in the present.



11:59 AM | udv-gjfs-sef



Suvarna Bhoir

Elkana Chandra Re...

Aditya Walchol

You



chrome for resource pers... Meet - udv-gjfs-sef Guest Lec - Google Drive Feedback for IOT and its... Great Lec...

Reading list

REC Dr. Manal Subhadar is presenting

## APPLICATIONS OF IOT IN AGRICULTURE

- IOT Smart Greenhouse
- Manual intervention to manage greenhouses is not effective since it leads to high labor costs and energy loss.
- A smart greenhouse is capable of monitoring and automatically controlling the environmental parameters like humidity, temperature, potassium, and light levels required by the crops and plants.
- It makes a smart system that provides remote access to the intelligent greenhouse along with control options.
- For example, a Wi-Fi signal can direct the sensors to switch on the lights, turn on a heater or open the window. It also provides

access to automatic irrigation facilities. Hence, smart greenhouses are an effective solution for farmers to increase crop yield without manual intervention.

### IoT Smart Greenhouse



D  
Dr. Manal Subhadar

N  
Nancy Meritline

J  
JEEVAN Manjula

Elkana Chandra Re...

R  
Rohan Kalia

You

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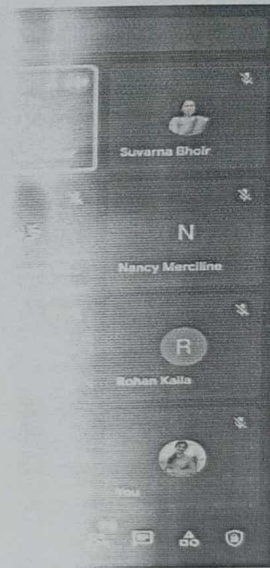


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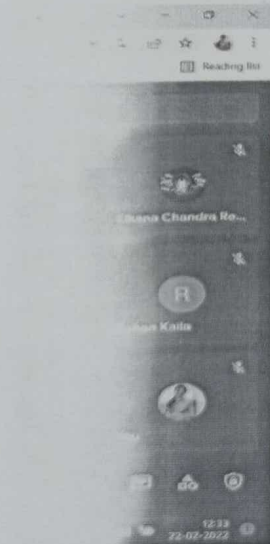
## IOT ATTACK SURFACE AREAS

- **Devices**
  - Parts of a device where vulnerabilities can come from are its memory, firmware, physical interface, web interface, and network services.
  - Attackers can also take advantage of insecure default settings, outdated components, and insecure update mechanisms, among others.
- **Communication channels**
  - Attackers can compromise from the channels that connect IoT components with one another.
  - Protocols used in IoT systems can have security issues that can affect the entire system.
  - IoT systems are also susceptible to known network attacks such as denial of service (DoS) and spoofing.
- **Applications and software**
  - Vulnerabilities in web applications and related software for IoT devices can lead to compromised systems.
  - Web applications can, for example, be exploited to steal user credentials or push malicious firmware updates.



## MEASURES TO PROTECT IOT ECOSYSTEM

- Integrating security in the early phase of the design.
- Using strong encryption algorithms or cryptographic algorithms.
- Increasing the level of security with secure protocols.
- Building resilient and secure IoT devices.
- Integrating security into the back-end systems.
- Providing a secure update mechanism.
- Implementing secure boot for IoT devices.
- Providing secure communication by blocking unauthorized IP and ensuring all the systems are up to date.
- By patching vulnerabilities, security updates.
- Well-defined security protocols working as integrated teams.
- The Consumer Protection Act for the IoT ecosystem efficiency.





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First name	Last name	Email	Duration	Time joined	Time exited
Jenitan Nad	(110)	jeni*****@***.com	2 hr 5 min	10:38 AM	12:44 PM
Dhruv	Agrawal	agra*****@***.com	50 sec	11:30 AM	11:31 AM
DHRUV	Agrawal	202003018.dhruvasm@student.xavier.ac.in	44 min	10:51 AM	12:17 PM
Alisha	Alappatt	201903002.alishaajm@student.xavier.ac.in	9 min	11:18 AM	11:27 AM
ALLWYN	ALEX	2020012001.allwynam@student.xavier.ac.in	3 min	12:40 PM	12:44 PM
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Mohammed	Ansari	201903063.mohammad5@student.xavier.ac.in	12 sec	10:56 AM	10:56 AM
WAQUIUR	Ansari	202003019.waqiurame@student.xavier.ac.in	5 min	10:41 AM	10:56 AM
Kevin	Anthony	20180125.kevinass@student.xavier.ac.in	1 hr 13 min	10:53 AM	12:06 PM
BHARGAV	AYARE	202003002.bhargava@student.xavier.ac.in	6 min	11:35 AM	12:29 PM
Sanika	Bangar	2020012002.sanikab@student.xavier.ac.in	2 hr 2 min	10:42 AM	12:44 PM
Shrutika	Bansode	2020022001.shrutika@student.xavier.ac.in	2 hr 2 min	10:42 AM	12:44 PM
TANVI	Bhabal	202003020.tanvibr@student.xavier.ac.in	1 hr 4 min	10:47 AM	11:51 AM
Vinod	Bhat	201903004.vinodbv@student.xavier.ac.in	1 hr 43 min	10:56 AM	12:39 PM
Suvarna	Bhoir	suvarna.b@xavier.ac.in	2 hr 18 min	10:26 AM	12:44 PM
Prachee	Bhowmick	201902004.prachee@student.xavier.ac.in	1 hr 45 min	10:59 AM	12:44 PM
Parth	Chande	2020022004.parthc@student.xavier.ac.in	2 hr 9 min	10:33 AM	12:44 PM
Elkana	Chandra Rehimon	201901013.elkanacc@student.xavier.ac.in	1 hr 33 min	11:05 AM	12:38 PM
MAHENDR	CHAURASIYA	202003003.mahend@student.xavier.ac.in	1 hr 25 min	11:13 AM	12:39 PM
Sharayu	Chavan	201902005.sharayuc@student.xavier.ac.in	2 hr 1 min	10:43 AM	12:44 PM
Yash	Chitroda	201903009.yashckd@student.xavier.ac.in	1 hr 9 min	10:54 AM	12:17 PM

	Churi	2020022005.naitikcbh@student.xavier.ac.in	2 hr 6 min	10:37 AM	12:44 PM
Craig	Conceicao	2020022006.craigclm@student.xavier.ac.in	2 hr 4 min	10:40 AM	12:44 PM
Wesley	D'Souza	201901012.wesleyd...@student.xavier.ac.in	1 hr 44 min	10:52 AM	12:36 PM
HARSH	DAIVI	202003004.harshdbb@student.xavier.ac.in	1 hr 53 min	10:44 AM	12:40 PM
Ryan	Dass	201901006.ryandam...@student.xavier.ac.in	57 min	11:25 AM	12:22 PM
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Tejal	Deshpande	tejal.d@xavier.ac.in	2 hr 18 min	10:27 AM	12:45 PM
Shekhar	DHANGAR	202003042.shekhard...@student.xavier.ac.in	1 hr 16 min	11:28 AM	12:45 PM
ANUSHIA	Dhaundiyal	202003043.anushad...@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
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Utkarsha	Ghat	201903012.utkarsha...@student.xavier.ac.in	1 hr 55 min	10:39 AM	12:35 PM
Lipali	Ghate	2020032002.dipalig...@student.xavier.ac.in	1 hr 58 min	10:46 AM	12:45 PM
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Sonam	Goita	201903015.sonamg...@student.xavier.ac.in	1 hr 45 min	10:54 AM	12:40 PM
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PRINCE	GOITA	202003006.princeg...@student.xavier.ac.in	57 min	10:46 AM	11:48 AM



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Hashmi	2021032004.arfaathmm@stud... avier.ac.in	1 hr 58 min	10:46 AM	12:44 PM
Kunal	201901016.kunaljnme@stud... avier.ac.in	1 hr 30 min	10:39 AM	12:44 PM
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Prathamesh	201903017.prathameshjm@stud... avier.ac.in	1 hr 54 min	10:35 AM	12:45 PM
AJIT	JENA	39 min	10:52 AM	11:36 AM
Swaraj	lingouda	1 hr 51 min	10:51 AM	12:44 PM
Adwait	Joshi	2 hr 7 min	10:35 AM	12:44 PM
FALGUNI	Joshi	1 hr 24 min	10:43 AM	12:07 PM
Sahil	Kadam	2 hr 4 min	10:40 AM	12:44 PM
Rohan	Kaila	2 hr 6 min	10:38 AM	12:44 PM
Frasen	Kapurackal	1 hr 40 min	11:04 AM	12:44 PM
Sapna	Kanjia	2 hr 6 min	10:38 AM	12:44 PM
Chinmay	Kelkar	23 min	11:07 AM	11:52 AM
Aman	Kulkarni	5 min	10:52 AM	10:57 AM
Maseeh	Kumar	1 min	11:48 AM	11:49 AM
Saqib	Kumar	43 min	10:46 AM	12:25 PM
Zaid	Kumar	5 sec	12:07 PM	12:08 PM
Ankit	Kulkarni	1 hr 22 min	10:38 AM	12:00 PM
Divya	Kulkarni	1 hr 54 min	10:51 AM	12:45 PM
Lekha	Kulkarni	2 hr 13 min	10:26 AM	12:45 PM
SWASTIK	Lagal	23 sec	11:34 AM	11:34 AM
Melita	Lewis	2 hr 1 min	10:43 AM	12:44 PM
Michelle	Macwan	1 hr 54 min	10:51 AM	12:44 PM
Dhruvsh	Mahale	21 min	10:52 AM	11:13 AM

	Mane	sayali.m@xavier.ac.in	2 hr 12 min	10:33 AM	12:45 PM
	Manjaly	202003046.jeevanmm@student.xavier.ac.in	1 hr 5 min	10:36 AM	12:14 PM
JEEVAN	Massey	201901029.siddhantheds@student.xavier.ac.in	1 hr 15 min	11:22 AM	12:44 PM
Siddhanth Shailesh	Maurya	201901032.shaileshrbs@student.xavier.ac.in	2 hr	10:44 AM	12:44 PM
Nancy	Merciline	201903027.nancymad@student.xavier.ac.in	2 hr 9 min	10:35 AM	12:44 PM
Shivam	Mishra	201903029.shivammh@student.xavier.ac.in	1 hr 49 min	10:42 AM	12:31 PM
TUSHAR	Mishra	202003028.tusharmk@student.xavier.ac.in	1 hr 41 min	10:45 AM	12:44 PM
ADITYA	MISHRA	202003047.adityanmm@student.xavier.ac.in	17 min	10:56 AM	11:57 AM
Boris	Misquitta	20150134.borismv@student.xavier.ac.in	1 hr 38 min	10:38 AM	12:16 PM
Krishna	More	201903030.krishnamw@student.xavier.ac.in	30 min	11:12 AM	12:12 PM
Rahul	Nadar	201903031.rahulnmk@student.xavier.ac.in	1 hr 25 min	11:19 AM	12:45 PM
SELVA	Nadar	202003029.selvanar@student.xavier.ac.in	1 hr 43 min	10:47 AM	12:31 PM
CASTRO	NADAR	202003009.castrenst@student.xavier.ac.in	40 min	11:19 AM	11:59 AM
Sushree	Nadiminty	201901036.sushreens@student.xavier.ac.in	1 hr 57 min	10:47 AM	12:44 PM
SANTHOSH	NAMBIRAJAN	202003013.santhoshms@student.xavier.ac.in	1 hr 2 min	11:03 AM	12:04 PM
ADITYA	NARIAMPULLY	202003005.adityans@student.xavier.ac.in	1 hr 16 min	11:28 AM	12:45 PM
ANNE	NELSON	202003001.annenam@student.xavier.ac.in	1 hr 57 min	10:48 AM	12:45 PM
SRUSHTI	NERKAR	2020022014.srushtinr@student.xavier.ac.in	1 hr 56 min	10:32 AM	12:28 PM
Sankalp	Panchal	2020012008.sankalpsc@student.xavier.ac.in	2 hr 5 min	10:39 AM	12:44 PM
VANRAJ	Pardeshi	202003020.vanrajps@student.xavier.ac.in	20 min	10:57 AM	11:17 AM
AYUSH	PARMAR	2020022016.ayushpr@student.xavier.ac.in	2 hr 3 min	10:41 AM	12:44 PM
Chris	Patel	2020022017.chrispr@student.xavier.ac.in	2 hr 2 min	10:41 AM	12:44 PM
Abhishek	Patil	201901043.abhishekp@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
SANKET	Patil	202003031.sanketpv@student.xavier.ac.in	1 hr 36 min	10:49 AM	12:25 PM
ARYAN	PATIL	2020072018.aryanpv@student.xavier.ac.in	1 hr 3 min	10:52 AM	11:55 AM



	Pawar	202003049.truptipcs@student.xavier.ac.in	1 hr 30 min	10:46 AM	12:16 PM
	Pereira	201903035.berliuspi@student.xavier.ac.in	2 hr 6 min	10:37 AM	12:44 PM
	Pereira	201901044.seanpb@student.xavier.ac.in	24 min	10:44 AM	11:08 AM
	Pereira	2020022019.smitpv@student.xavier.ac.in	1 hr 31 min	10:29 AM	12:00 PM
	Pochampally	201903036.johanpr@student.xavier.ac.in	2 hr	10:44 AM	12:44 PM
	POLE	202003011.adityapk@student.xavier.ac.in	1 hr 52 min	10:51 AM	12:44 PM
ADITYA SHUBHAM	POLE	202003012.shubham@student.xavier.ac.in	36 min	10:45 AM	12:44 PM
SUDEEP	Poojary	202003050.sudeep@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
ANISHA	Prabhu	202003032.anichapv@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
AVINASH	Prajapati	202002033.avinash@student.xavier.ac.in	1 hr 34 min	10:50 AM	12:25 PM
MAGHSINGH RUSHIKESH	Rajpurohit	202003051.mahsingh@student.xavier.ac.in	1 hr 54 min	10:50 AM	12:44 PM
	Redij	202003057.rushikes@student.xavier.ac.in	10 min	11:06 AM	12:07 PM
Mitesh	Rege	201903038.miteshr@student.xavier.ac.in	1 hr 56 min	10:31 AM	12:44 PM
MERIN	REJI	202003009.merinrs@student.xavier.ac.in	1 hr 19 min	10:48 AM	12:07 PM
Manoj	Rewanth Naidu	202003034.manojrsa@student.xavier.ac.in	56 sec	10:53 AM	10:54 AM
Justin	Rodrigues	201901047.justinrt@student.xavier.ac.in	1 hr 33 min	10:58 AM	12:44 PM
Odrin	Rodrigues	201903039.odrinrav@student.xavier.ac.in	1 hr 52 min	10:52 AM	12:44 PM
KRISHNA	Sabat	202003053.krishnas@student.xavier.ac.in	1 hr 2 min	10:44 AM	12:11 PM
Sandeep	Sahani	201903040.sandeep@student.xavier.ac.in	38 min	10:52 AM	11:32 AM
	Sanaye	201903041.sanaysg@student.xavier.ac.in	2 hr 9 min	10:35 AM	12:44 PM
Angelica	Sebastian	201903002.angelicas@student.xavier.ac.in	2 hr 4 min	10:36 AM	12:44 PM
ALLAN	SERRAO	202003030.allansb@student.xavier.ac.in	1 hr 24 min	10:51 AM	12:14 PM
Nihal	Shah	201903048.nihalsnb@student.xavier.ac.in	1 hr 49 min	10:55 AM	12:44 PM
OSAMA	Shaikh	202003031.osamasg@student.xavier.ac.in	1 hr 57 min	10:47 AM	12:44 PM
Tanzila	Shaikh	201903029.tanzilass@student.xavier.ac.in	2 hr 4 min	10:41 AM	12:45 PM
HAMZA	SHAIKH	202003018.hamzasa@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM

	Sharma	202003036 anshumansd@student.xavier.ac.in	3 min	11:27 AM	11:31 AM
	Shetty	201902032 evuonikaaya@student.xavier.ac.in	1 hr 55 min	10:49 AM	12:44 PM
	Shetty	201902031 pragathishk@student.xavier.ac.in	1 hr 58 min	10:46 AM	12:44 PM
	Shetty	201903156 prajinasrl@student.xavier.ac.in	1 hr 24 min	11:07 AM	12:38 PM
	Shinde	201903041 dineshssv@student.xavier.ac.in	26 min	10:52 AM	12:02 PM
ISHIKA	SHINDE	202002037 shikass@student.xavier.ac.in	1 hr 33 min	10:43 AM	12:16 PM
IRSHAN	SIDDIQUE	202002202 irshansar@student.xavier.ac.in	49 min	10:42 AM	11:33 AM
ARADHANA	Singh	202003051 aradhanassr@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
Vishal	Singh	201903041 vishalsln@student.xavier.ac.in	43 min	11:11 AM	12:44 PM
Aashutosh	Sinha	201901052 aashutoshsar@student.xavier.ac.in	47 min	10:47 AM	11:55 AM
Dr. Mansi	Subheddar	mans*****@***.com	1 hr 59 min	10:45 AM	12:44 PM
Athisaya	Suresh Anthony	201901001 athisayasr@student.xavier.ac.in	58 min	11:25 AM	12:22 PM
Manjiri	Tare	201903050 manjiritmr@student.xavier.ac.in	1 hr 25 min	11:18 AM	12:44 PM
Aman	Tiwari	201901054 amantap@student.xavier.ac.in	33 min	10:52 AM	11:37 AM
OM	Tiwari	202003059 omtrv@student.xavier.ac.in	1 hr 52 min	10:53 AM	12:45 PM
MRUNAL	Vaidya	202003060 mrunalvrk@student.xavier.ac.in	30 min	10:44 AM	11:14 AM
Rupesh	Vanneldas	201903060 rupeshvlv@student.xavier.ac.in	1 hr 25 min	11:06 AM	12:45 PM
Binil	Varghese	20180162 binilvam@student.xavier.ac.in	1 hr 25 min	11:20 AM	12:44 PM
Raymun	Victor	201901061 raymunvri@student.xavier.ac.in	1 hr 38 min	10:45 AM	12:27 PM
Rahul	Vijan	201902031 rahulvrm@student.xavier.ac.in	1 hr 44 min	11:00 AM	12:44 PM
Nihar	Vira	201903052 niharvkm@student.xavier.ac.in	20 min	10:52 AM	11:12 AM
ROHIT	Vishwakarma	202003067 rohitvrr@student.xavier.ac.in	1 hr 57 min	10:47 AM	12:44 PM
Aditya	Waichol	201902032 adityawsr@student.xavier.ac.in	2 hr 6 min	10:37 AM	12:44 PM
Riddhi	Wakde	201903053 riddhiwpy@student.xavier.ac.in	1 hr 52 min	10:31 AM	12:22 PM
Mayur	Warang	201901054 mayurwrr@student.xavier.ac.in	1 hr 22 min	10:49 AM	12:12 PM



Yadav	201903055.anuragydr@student.xavier.ac.in	1 hr 1 min	10:46 AM	11:46 AM
Yadav	201901062.chhayays@student.xavier.ac.in	47 min	10:43 AM	11:47 AM
Yadav	201903054.shivamyvc@student.xavier.ac.in	50 min	10:36 AM	11:26 AM
Yennuwar	201903056.siddharthyva@student.xavier.ac.in	1 hr 32 min	10:49 AM	12:22 PM

shivam  
siddharth

ken on ERP

### MCQ Questions

Question *	Option1 *	Option2 *	Option3	Option4	Option5	Correct Option No. (Choose only from given values) *
IoT stands for?	Introduction of Things	Internet of Things	Internet of Tracking	Interaction of Things		Option2
_____ are the characteristics of IOT	Intelligence, scalable	Security	Heterogeneity	All of the above		Option4
_____ are the types of actuators	Hydraulic, pneumatic actuators	Electrical, thermal actuators	Mechanical actuators	All of the above		Option4
What is the standard form of MQTT?	Message Queue Telemetry Transport	Message Queue Transport Telemetry	Message Queue Time Transport	None of the above		Option1
When was the actual term "Internet of Things" coined?	2000	1896	1987	1999		Option4
Which of the following is not an IoT device?	Tablet	Laptop	Arduino	Tablet		Option1
Which of the following is false about IoT devices?	IoT devices use the internet for collecting and sharing data	IoT devices need microcontrollers	IoT devices are wireless	IoT devices use wireless technology		Option3
What is the full form of IIOT?	Index Internet of Things	Industrial Internet of Things	Industrial Internet of Data	Intense Internet of Things		Option3
Which of the following command is used to trigger the Amazon echo IOT device?	Alexa	Hi	Hey	Hey		Option1
What IoT collects?	Device data	Machine generated data	Sensor data	Human generated data		Option2
What is the component of an IoT system that executes a program?	A sensor	A microcontroller	A processor	A digital to analog converter		Option2
What is the full form of IDE in Arduino IDE IoT software?	Intra Defence Environment	Intra Development Environment	Integrated Development Environment	Integrated Deployed Environment		Option3



Which of the following is not a component of the physical world in IoT devices?

Which of the following is used to capture data from the physical world in IoT devices?

Which of the following is not a fundamental component of an IoT system?

BMP280	Diodes	Resistor	LED	Option4
Sensors	Actuators	Micro process	Micro controllers	Option1
Sensors	Connectivity and data processing	Micro process	Transformer	Option4