

DATE: 22/2/2022

Event Coordinator(s)

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

Student Coordinator(s)

-

Time & Place:

22nd Feb,2022

10:45am to 12:30pm

**Platform: Online
(Google Meet)**

Department:

EXTC,IT,COMPS

No of participants:

120

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 22nd 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

Signing Authority
Name and Designation

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Name and Designation

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Name and Designation

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
The 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

Google form Link of the feedback taken -

https://docs.google.com/forms/d/1Cbodlwis31o2ouwSHt81S2WzrZ0tChStbEQkDSTh_Gc/edit?usp=sharing

EVOLUTION OF INTERNET OF THINGS (IOT)

Pre-Internet	Internet of content	Internet of services	Internet of people	Internet of things
"Human to human"	"WWW"	"Web 2.0"	"Social media"	"Machine to machine"
<ul style="list-style-type: none">Fixed and mobile telephonySMS	<ul style="list-style-type: none">e-mailInformationEntertainment	<ul style="list-style-type: none">e-productivitye-commerce	<ul style="list-style-type: none">SkypeFacebookYouTube	<ul style="list-style-type: none">Identification, tracking, monitoring, metering, ...Automation, actuation, payment, ...
+ smart networks	+ smart IT platforms and services	+ smart phones and applications	+ smart devices, objects, data	+ smart Data and ambient context

IOT CHARACTERISTICS

- 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.
- Connectivity**
 - Simple object-level interactions contribute towards collective intelligence in IoT networks.
 - enables **network accessibility and compatibility in the things.**

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IOT BENEFITS

Benefits of IoT

- Use of Smart Devices
- Reduction in Operational Cost
- Enhanced Security Measures
- Gathering Rich Data
- Achieve Customer-Centricity

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11:04 AM | udv-gjfs-sef

Dr. Mansi Subhedar (active)

Sayali Mane

Suvarna Bhoir

MERIN REJI

PRINCE GUPTA

Nancy Merciline

Kaushtubh 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 (active)

Suvarna Bhoir

Sayali Mane

MERIN REJI

PRINCE GUPTA

Elkana Chandra Re...

109 others

You

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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.**

11:19 AM | udv-gjfs-sef

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IOT ARCHITECTURE

Internet of Things Reference Model

Levels

- 7 Collaboration & Processes (Including AI/ML & Business Processes)
- 6 Application (Reporting, Analytics, Control)
- 5 Data Abstraction (Aggregation & Access)
- 4 Data Accumulation (Storage)
- 3 Edge Computing (Data Stream Analysis & Transformation)
- 2 Connectivity (Communication & Processing Units)
- 1 Physical Devices & Controllers (The "Things" in IoT)

Center

Edge

Application layer, Business layer, Network layer, Application layer, Processing layer, Transport layer, Perception layer, Perception layer

11:29 AM | udv-gjfs-sef

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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, Nimbits, 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

- 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

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SENSOR TO ACTUATOR FLOW

Sensor (Thingsquare Mist) ≠ **Actuator** (MIST)

Sensor: Soil moisture sensor detects unwanted water content. It sends the detected value signal to the control center.

Control center: The control center sends a command to the water pump.

Actuator: The water pump is switched-off and halts to deliver water.

Sensor: Temperature sensor detects heat. It sends this detected signal to the control center.

Control Center: The control center sends a command to the sprinkler.

Actuator: The sprinkler turns on and puts out flame.

Sensor to Actuator Flow

11:42 AM | udv-gjfs-sef

122

Dr. Mansi Subhedar

Suvarna Bhoir

Nancy Merciline

MERIN REJI

SANTHOSH NAMBI...

Elkana Chandra Re...

114 others

You

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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.

11:47 AM | udv-gjfs-sef

120

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Suvarna Bhoir

MERIN REJI

Elkana Chandra Re...

Nancy Merciline

SANTHOSH NAMBI...

112 others

You

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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**.

```

graph TD
    SD[Smart devices] -- data --> SG[Smart gateway  
Local real time analysis  
preprocessing  
filtering]
    SG -- data --> CDC[Cloud data center  
Global data analytics  
storage]
  
```

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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.

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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.

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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**.

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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.**

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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.**

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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.



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Invite for resource person x Meet - udv-gjfs-sef x Guest lec - Google Drive x Feedback for IoT and its x Guest Lecture_22-2-22 - x +

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Apps New Tab Gmail YouTube Maps Rec - tejal.d@xavier... Reading list

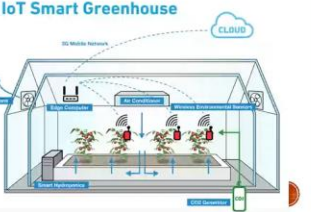
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APPLICATIONS OF IOT IN AGRICULTURE

- 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, pressure, and light levels required for the crop's growth.
- It makes a cloud server that provides remote access to the intelligent greenhouse along with control options.
- For example, a WiFi 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



12:12 PM | udv-gjfs-sef

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33°C Smoke ENG IN 12:12 22-02-2022

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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**
 - Attacks can originate 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.

12:20 PM | udv-gjfs-sef

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MEASURES TO PROTECT IOT ECOSYSTEM

- Integrating security at an initial phase of the design.
- Giving strong passwords or biometrics or cryptographic algorithms.
- Installing digital certificates and Public key infrastructure.
- Building a firewall between the connected devices.
- Improving Application Performance Indicator on back-end systems.
- Providing a user with unique identity management.
- Incorporating hardware security by tamper-proof devices.
- Providing strong network security by blocking unauthorized IP and ensuring all the systems are up to date.
- By patch management like continuous software updates.
- Well-skilled developers and programmers working as integrated teams.
- The Consumer must be educated to handle the IoT ecosystem efficiently.

12:33 PM | udv-gjfs-sef

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33°C Smoke | 12:33 22-02-2022

Attendance Link –

https://docs.google.com/forms/d/1_Od1Qglu6rMw9q5IUKEg01_VAL9BUCDn3w-APbGiqwg/edit?usp=sharing

First name	Last name	Email	Duration	Time joined	Time exited
Jenitan Nadar	{J10}	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.dhruvsm@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.allwynaam@student.xavier.ac.in	3 min	12:40 PM	12:44 PM
Monika	Anabathula	201901003.monikaagm@student.xavier.ac.in	26 sec	12:01 PM	12:02 PM
Yash	Anand	20180103.yashada@student.xavier.ac.in	31 min	10:48 AM	11:49 AM
Mohammed	Ansari	201903063.mohammedaha@student.xavier.ac.in	12 sec	10:56 AM	10:56 AM
WAQIUR	Ansari	202003019.waqiuramg@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.bhargavauv@student.xavier.ac.in	6 min	11:35 AM	12:29 PM
Sanika	Bangar	2020012002.sanikabmm@student.xavier.ac.in	2 hr 2 min	10:42 AM	12:44 PM
Shrutika	Bansode	2020022001.shrutikabrs@student.xavier.ac.in	2 hr 2 min	10:42 AM	12:44 PM
TANVI	Bhabal	202003020.tanvibnn@student.xavier.ac.in	1 hr 4 min	10:47 AM	11:51 AM
Vinod	Bhat	201903004.vinodbvv@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.pracheebps@student.xavier.ac.in	1 hr 45 min	10:59 AM	12:44 PM
Parth	Chande	2020022004.parthcra@student.xavier.ac.in	2 hr 9 min	10:33 AM	12:44 PM
Elkana	Chandra Rehimon	201901013.elkanacca@student.xavier.ac.in	1 hr 33 min	11:05 AM	12:38 PM
MAHENDRA	CHAURASIYA	202003003.mahendracrs@student.xavier.ac.in	1 hr 25 min	11:13 AM	12:39 PM
Sharayu	Chavan	201902005.sharayucrp@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

NAITIK	Churi	2020022005.naitikcbb@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.wesleydpm@student.xavier.ac.in	1 hr 44 min	10:52 AM	12:36 PM
HARSH	DALVI	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
Diogo	Dcosta	201901008.diogodas@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:45 PM
SOHAM	Desai	202003021.sohamdak@student.xavier.ac.in	1 hr 8 min	10:54 AM	12:02 PM
Sumit	Desai	2021032002.sumitdss@student.xavier.ac.in	1 hr 4 min	11:13 AM	12:17 PM
Kaushtubh	Desale	20180307.kaushtubhnn@student.xavier.ac.in	2 hr	10:45 AM	12:45 PM
Tejal	Deshpande	tejal.d@xavier.ac.in	2 hr 18 min	10:27 AM	12:45 PM
SHEKHAR	DHANGAR	202003042.shekhardgy@student.xavier.ac.in	1 hr 16 min	11:28 AM	12:45 PM
ANUSHA	Dhaundiyal	202003043.anushadaa@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
Joshua	Dias	2020022007.joshuadas@student.xavier.ac.in	1 hr 34 min	10:36 AM	12:10 PM
Steve	Dsouza	201903010.steveddp@student.xavier.ac.in	2 hr 8 min	10:36 AM	12:44 PM
Rushikesh	Durgade	20170312.rushikeshdsv@student.xavier.ac.in	1 hr	11:23 AM	12:23 PM
Russel	Fernandes	2020032001.russelfdk@student.xavier.ac.in	1 hr 43 min	10:52 AM	12:35 PM
Rahul	Gaikwad	201903011.rahulgkk@student.xavier.ac.in	39 sec	10:53 AM	10:54 AM
SEJAL	Gawde	202003023.sejalgss@student.xavier.ac.in	1 hr 46 min	10:49 AM	12:36 PM
Utkarsha	Gharat	201903012.utkarshagbg@student.xavier.ac.in	1 hr 55 min	10:39 AM	12:35 PM
Dipali	Gharate	2020032002.dipaligdv@student.xavier.ac.in	1 hr 58 min	10:46 AM	12:45 PM
Chris	Gonsalves	201903013.chrisgla@student.xavier.ac.in	1 hr 27 min	10:50 AM	12:16 PM
BHARAT	Gupta	202003024.bharatgrn@student.xavier.ac.in	1 hr 55 min	10:48 AM	12:44 PM
HARSHITA	Gupta	202003026.harshitagr@student.xavier.ac.in	2 hr	10:45 AM	12:45 PM
Sonam	Gupta	201903015.sonamgbu@student.xavier.ac.in	1 hr 45 min	10:54 AM	12:40 PM
MAHESH	GUPTA	202003025.maheshgmu@student.xavier.ac.in	1 hr 56 min	10:48 AM	12:44 PM
PRINCE	GUPTA	202003006.princegrr@student.xavier.ac.in	57 min	10:46 AM	11:48 AM

Sayed Ubaidur Rehman	HARIYAL	2020012006.sayedubaidurrehmanhst@student.xavier.ac.in	1 hr 45 min	10:42 AM	12:27 PM
Arfaat	Hashmi	2021032004.arfaathmm@student.xavier.ac.in	1 hr 58 min	10:46 AM	12:44 PM
Kunal	Jadhav	201901016.kunaljnm@student.xavier.ac.in	1 hr 30 min	10:39 AM	12:44 PM
Manish	Jaiswar	201903061.manishjjm@student.xavier.ac.in	2 hr 1 min	10:43 AM	12:45 PM
Prathamesh	Jawale	201903017.prathameshjlm@student.xavier.ac.in	1 hr 54 min	10:35 AM	12:45 PM
AJIT	JENA	2020032003.ajitjar@student.xavier.ac.in	39 min	10:52 AM	11:36 AM
Swaraj	Jinagouda	201903018.swarajtj@student.xavier.ac.in	1 hr 51 min	10:51 AM	12:44 PM
Adwait	Joshi	201902019.adwaitjms@student.xavier.ac.in	2 hr 7 min	10:35 AM	12:44 PM
FALGUNI	Joshi	202003027.falgunijss@student.xavier.ac.in	1 hr 24 min	10:43 AM	12:07 PM
Sahil	Kadam	2020022011.sahilkss@student.xavier.ac.in	2 hr 4 min	10:40 AM	12:44 PM
Rohan	Kaila	201902020.rohankjs@student.xavier.ac.in	2 hr 6 min	10:38 AM	12:44 PM
Frason	Kalapurackal	201903020.frasonkfs@student.xavier.ac.in	1 hr 40 min	11:04 AM	12:44 PM
Sapna	Kanojia	201902021.sapnakms@student.xavier.ac.in	2 hr 6 min	10:38 AM	12:44 PM
Chinmay	Kelkar	201901021.chinmaykba@student.xavier.ac.in	23 min	11:07 AM	11:52 AM
Aman	Khakhi	201903022.amankcs@student.xavier.ac.in	5 min	10:52 AM	10:57 AM
Maseeh	Khan	2020032004.maseehkst@student.xavier.ac.in	1 min	11:48 AM	11:49 AM
Saquib	Khan	2021032005.saquibkts@student.xavier.ac.in	43 min	10:46 AM	12:25 PM
Zaid	Khan	201903064.zaidkaa@student.xavier.ac.in	5 sec	12:07 PM	12:08 PM
Ankit	Koli	2020022012.ankitkrm@student.xavier.ac.in	1 hr 22 min	10:38 AM	12:00 PM
Divya	Kulkarni	201901023.divyakpr@student.xavier.ac.in	1 hr 54 min	10:51 AM	12:45 PM
Lekha	Ladhe	201903024.lekhalpp@student.xavier.ac.in	2 hr 13 min	10:26 AM	12:45 PM
SWASTIK	Lagad	202003045.swastiklrm@student.xavier.ac.in	23 sec	11:34 AM	11:34 AM
Melita	Lewis	201901024.melitaloh@student.xavier.ac.in	2 hr 1 min	10:43 AM	12:44 PM
Michelle	Macwan	201901026.michellemja@student.xavier.ac.in	1 hr 54 min	10:51 AM	12:44 PM
Dhruyash	Mahale	201903058.dhruyashmsa@student.xavier.ac.in	21 min	10:52 AM	11:13 AM

Sayali	Mane	sayali.m@xavier.ac.in	2 hr 12 min	10:33 AM	12:45 PM
JEEVAN	Manjaly	202003046.jeevanmvm@student.xavier.ac.in	1 hr 5 min	10:36 AM	12:14 PM
Siddhanth	Massey	201901029.siddhanthmds@student.xavier.ac.in	1 hr 15 min	11:22 AM	12:44 PM
Shailesh	Maurya	201901032.shaileshmbs@student.xavier.ac.in	2 hr	10:44 AM	12:44 PM
Nancy	Merciline	201903027.nancymnd@student.xavier.ac.in	2 hr 9 min	10:35 AM	12:44 PM
Shivam	Mishra	201903029.shivammvb@student.xavier.ac.in	1 hr 49 min	10:42 AM	12:31 PM
TUSHAR	Mishra	202003028.tusharmkn@student.xavier.ac.in	1 hr 41 min	10:45 AM	12:44 PM
ADITYA	MISHRA	202003047.adityamrm@student.xavier.ac.in	17 min	10:56 AM	11:57 AM
Boris	Misquitta	20150134.borismrv@student.xavier.ac.in	1 hr 38 min	10:38 AM	12:16 PM
Krishna	More	201903030.krishnamdv@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.castronst@student.xavier.ac.in	40 min	11:19 AM	11:59 AM
Sushree	Nadiminty	201901036.sushreenss@student.xavier.ac.in	1 hr 57 min	10:47 AM	12:44 PM
SANTHOSH	NAMBIRAJAN	202003013.santhoshnns@student.xavier.ac.in	1 hr 2 min	11:03 AM	12:04 PM
ADITYA	NARIAMPULLY	2020032005.adityanss@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.srushtinss@student.xavier.ac.in	1 hr 56 min	10:32 AM	12:28 PM
Sankalp	Panchal	2020012008.sankalppcc@student.xavier.ac.in	2 hr 5 min	10:39 AM	12:44 PM
VANRAJ	Pardeshi	202003030.vanrajpsm@student.xavier.ac.in	20 min	10:57 AM	11:17 AM
AYUSH	PARMAR	2020022016.ayushpnr@student.xavier.ac.in	2 hr 3 min	10:41 AM	12:44 PM
Chris	Patel	2020022017.chrisprc@student.xavier.ac.in	2 hr 2 min	10:41 AM	12:44 PM
Abhishek	Patil	201901043.abhishekpaa@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
SANKET	Patil	202003031.sanketpvm@student.xavier.ac.in	1 hr 36 min	10:49 AM	12:25 PM
ARYAN	PATIL	2020022018.aryanpuv@student.xavier.ac.in	1 hr 3 min	10:52 AM	11:55 AM

TRUPTI	Pawar	202003049.truptipcs@student.xavier.ac.in	1 hr 30 min	10:46 AM	12:16 PM
Berlius	Pereira	201903035.berliuspb@student.xavier.ac.in	2 hr 6 min	10:37 AM	12:44 PM
Sean	Pereira	201901044.seanpba@student.xavier.ac.in	24 min	10:44 AM	11:08 AM
Smit	Pereira	2020022019.smitpve@student.xavier.ac.in	1 hr 31 min	10:29 AM	12:00 PM
Johan	Pochampally	201903036.johanprp@student.xavier.ac.in	2 hr	10:44 AM	12:44 PM
ADITYA	POLE	202003011.adityapkl@student.xavier.ac.in	1 hr 52 min	10:51 AM	12:44 PM
SHUBHAM	POLE	202003012.shubhampkl@student.xavier.ac.in	36 min	10:45 AM	12:44 PM
SUDEEP	Poojary	202003050.sudeepps@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
ANISHA	Prabhu	202003032.anishapys@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
AVINASH	Prajapati	202003033.avinashprs@student.xavier.ac.in	1 hr 34 min	10:50 AM	12:25 PM
MAGHSINGH	Rajpurohit	202003051.maghsinghrdc@student.xavier.ac.in	1 hr 54 min	10:50 AM	12:44 PM
RUSHIKESH	Redij	202003052.rushikeshrrv@student.xavier.ac.in	10 min	11:06 AM	12:07 PM
Mitesh	Rege	201903038.miteshrpa@student.xavier.ac.in	1 hr 56 min	10:31 AM	12:44 PM
MERIN	REJI	202003008.merinrrs@student.xavier.ac.in	1 hr 19 min	10:48 AM	12:07 PM
Manoj	Rewanth Naidu	20180234.manojrsa@student.xavier.ac.in	56 sec	10:53 AM	10:54 AM
Justin	Rodrigues	201901047.justinrtn@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.krishnasrs@student.xavier.ac.in	1 hr 2 min	10:44 AM	12:11 PM
Sandeep	Sahani	201903040.sandeepsrr@student.xavier.ac.in	38 min	10:52 AM	11:32 AM
Yash	Sanaye	201903041.yashsgg@student.xavier.ac.in	2 hr 9 min	10:35 AM	12:44 PM
Angelica	Sebastian	201901002.angelicassr@student.xavier.ac.in	2 hr 4 min	10:36 AM	12:44 PM
ALLAN	SERRAO	2020022020.allansbc@student.xavier.ac.in	1 hr 24 min	10:51 AM	12:14 PM
Nihal	Shah	201903044.nihalsnb@student.xavier.ac.in	1 hr 49 min	10:55 AM	12:44 PM
OSAMA	Shaikh	202003035.osamasgm@student.xavier.ac.in	1 hr 57 min	10:47 AM	12:44 PM
Tanzila	Shaikh	201902028.tanzilasss@student.xavier.ac.in	2 hr 4 min	10:41 AM	12:45 PM
HAMZA	SHAIKH	202003014.hamzasas@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM

ANSHUMAN	Sharma	202003036.anshumanssd@student.xavier.ac.in	3 min	11:27 AM	11:31 AM
Nyuonika	Shetty	201902032.nyuonikasva@student.xavier.ac.in	1 hr 55 min	10:49 AM	12:44 PM
Pragathi	Shetty	201902031.pragathisks@student.xavier.ac.in	1 hr 58 min	10:46 AM	12:44 PM
Prajna	Shetty	201903046.prajnasrl@student.xavier.ac.in	1 hr 24 min	11:07 AM	12:38 PM
Dinesh	Shinde	201903047.dineshssv@student.xavier.ac.in	26 min	10:52 AM	12:02 PM
ISHIKA	SHINDE	202003037.ishikasss@student.xavier.ac.in	1 hr 33 min	10:43 AM	12:16 PM
IRSHAN	SIDDIQUE	2020022022.irshansas@student.xavier.ac.in	49 min	10:42 AM	11:33 AM
ARADHANA	Singh	202003056.aradhanassr@student.xavier.ac.in	1 hr 59 min	10:45 AM	12:44 PM
Vishal	Singh	201903049.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	Subhedar	mans*****@****.com	1 hr 59 min	10:45 AM	12:44 PM
Athisaya	Suresh Anthony	201901001.athisayasss@student.xavier.ac.in	58 min	11:25 AM	12:22 PM
Manjiri	Tare	201903050.manjiritmm@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	201903066.rupeshlv@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.raymunvbj@student.xavier.ac.in	1 hr 38 min	10:45 AM	12:27 PM
Rahul	Vijan	201902038.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	202003062.rohitvrr@student.xavier.ac.in	1 hr 57 min	10:47 AM	12:44 PM
Aditya	Waichol	201902039.adityawsp@student.xavier.ac.in	2 hr 6 min	10:37 AM	12:44 PM
Riddhi	Wakde	201903053.riddhiwvp@student.xavier.ac.in	1 hr 52 min	10:31 AM	12:22 PM
Mayur	Warang	201901058.mayurwmm@student.xavier.ac.in	1 hr 22 min	10:49 AM	12:12 PM

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

MCQ – Taken 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	1880	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 completely safe	IoT devices use wireless technology		Option3
What is the full form of IIOT?	Index Internet of Things	Incorporate Internet of Things	Industrial Internet of Things	Intense Internet of Things		Option3
Which of the following command is used to trigger the Amazon echo IOT device?	Alexa	Hi	Bye	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	An actuator	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 sensor in IoT?	BMP280	DHT11	Photoresistor	LED		Option4
Which of the following is used to capture data from the physical world in IoT devices?	Sensors	Actuators	Microprocessors	Micro controllers		Option1
Which of the following is not a fundamental component of an IoT system?	Sensors	Connectivity and data processing	User interface	Transformer		Option4