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Digital Learning Platform

Internet of Things

IoT

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THE INTERNET OF THINGS

IoT- Lecture 2

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Topics Covered (Module II)

- Control Units
- Communication Modules
- IoT Protocols
- RFID and Wireless Sensor
- Networks Architecture Standardization for WoT

What are Control Units?

- Control units are like the brains of IoT devices. They process data, make decisions, and control actions.
- They're tiny computers that make decisions and control what the device does. Just like how your brain tells your body what to do, control units tell IoT devices how to work.
- The Control Unit oversees the transmission of data, ensuring that information is exchanged accurately and efficiently.
- Examples of control units include microcontrollers such as Arduino, Raspberry Pi, and ESP8266/ESP32 modules.

- Control units are essential components of IoT deployments, providing the computational power and intelligence necessary to transform raw data into actionable insights and meaningful outcomes. By understanding the functionalities and significance of control units, developers and engineers can design, deploy, and optimize IoT solutions that deliver tangible benefits and address real-world challenges effectively.

Source : https://store.arduino.cc/ products/ arduino-uno-rev3-smd

Source :https://www.raspberrypi.com/ products / raspberry-pi-4-model-b/

Communication Modules in IoT: Enabling Connectivity

- Communication modules serve as the backbone of IoT ecosystems, enabling devices to connect, communicate, and collaborate effectively. By fostering seamless data exchange and connectivity, communication modules drive innovation and transformative experiences across various industries.

- **Types of Communication Modules**
  - **Bluetooth**
  - **Zigbee**
  - **Wi-Fi**
  - **GPS**

Communication Modules in IoT: Enabling Connectivity

- **Functionalities and Features**
  - Data Transmission
  - Protocol Support
  - Security
  - Power Management
  - Range and Coverage

IoT Protocols
Simplifying Communication in the Connected World

- In the interconnected world of IoT, protocols serve as the backbone of communication, enabling devices to exchange data and collaborate effectively. By simplifying communication and ensuring interoperability, IoT protocols empower innovation and drive the advancement of smart, connected solutions that enhance our lives and transform industries.

- Common IoT Protocols:
  - MQTT (Message Queuing Telemetry Transport)
  - CoAP (Constrained Application Protocol)
  - HTTP (Hypertext Transfer Protocol)
  - IPv6 (Internet Protocol Version 6)

RFID (Radio-Frequency Identification)

RFID is like a magic wand that helps objects talk to each other without touching.

- Imagine each object has a tiny chip called an RFID tag.
- When an RFID reader sends out radio waves, these tags wake up and respond with information.
- This information could be anything—like the name of the object or its location.
- RFID is used in various applications, from tracking products in stores to managing inventory in warehouses.

Wireless Sensor Networks (WSNs):

WSNs are like a network of spies that gather information from the environment and send it back to a central hub.

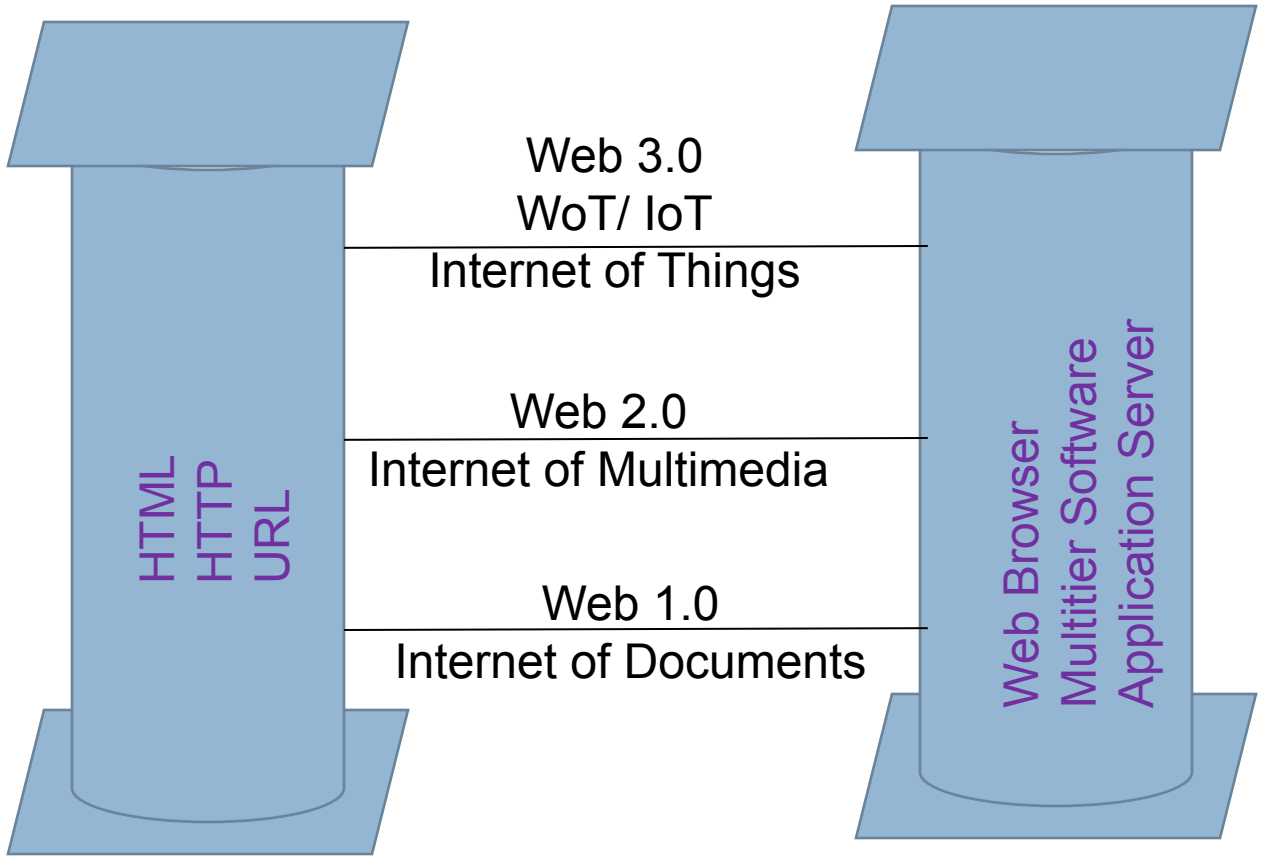
- Each sensor in the network acts like a spy, collecting data such as temperature, humidity, or movement.
- These sensors are wirelessly connected and communicate with each other to share information.
- The central hub, or base station, collects all the data from the sensors and sends it to a computer for analysis.
- WSNs are used in many areas, including environmental monitoring, smart agriculture, and building automation.

Web of Things (WoT)

Connecting Devices to the Web for Smarter Living

- In the era of smart technology, the Web of Things (WoT) is a concept that brings together the power of the internet with everyday devices, making them smarter and more interconnected.
- WoT works by enabling devices to connect to the internet and communicate using standard web technologies.

Two Pillars of Web



THANK YOU

Feel free to write:

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