# DEVICES AND COMMUNICATION BUSES FOR DEVICES NETWORK–

# Lesson-12: WIRELESS DEVICES

# Wireless devices

- Based on infrared (IR) or radio frequencies after suitable modulation of data bits
- Network using innovative FHSS or DSSS transmitters and receivers
- Popular protocols ─ IrDA, Bluetooth, 802.11 and ZigBee

# IR communication

- Handheld TV remote controller or robotic systems.
- IR devices use IrDA (Infrared Data Association) protocols

# Wireless Devices

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|---|
| **IrDA** |
| **WiFi** |
| **802.11 WLAN** |
| **Bluetooth** |
| **ZigBee** |

# Frequency Band Limitation

- Space division Multiplexing
- Time division multiplexing and frequency division multiplexing
- Innovative method spread spectrum and CDMA

# Radio frequencies communication over long distances

- Transmitter and receiver antennae to transmit and receive the signals
- Modulator and demodulators to carry the data bits using RF frequencies.
- Mobile GSM wireless devices use 890 MHz- 915 MHz or 1710-1785 MHz or 1850-1910 MHz bands.
- Mobile CDMA wireless devices use 2 GHz carrier frequencies.

# Radio frequencies communication over short distances

- Bluetooth 2.4 GHz
- ZigBee wireless devices 900 MHz frequencies.

# Bluetooth Devices

- Radio frequency hopping over a wider spectrum, Example ─Bluetooth devices.
- Transmitted carrier frequencies hop among different channels at a given hopping rate. Transmitter modulates the data bits as per protocol specifications.
- Receiver tunes to these hopped carrier frequencies at a given hopping rate and in same hopping sequence as the ones used by the transmitter.
- Receiver demodulates and detects the data bits as per the physical layer protocol used at the transmitter

# Summary

We learnt

- Wireless devices– Radio frequencies communication over short and long distances
- FHSS or DSSS transmitters and receivers
- Popular protocols ─ IrDA, Bluetooth, 802.11 and ZigBee

# End of Lesson 12 of Chapter 3