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| **Week-07: Demonstration of communication protocol Bluetooth**  **Prelab questions-07:**   1. What are the applications of Bluetooth protocol?   Ans: Bluetooth protocol finds applications in various domains such as wireless audio streaming, hands-free calling, wireless keyboards and mice, file transfer, wearable devices, home automation, IoT connectivity, location-based services, gaming, medical devices, and industrial automation.   1. What are Bluetooth profiles?   Ans: Bluetooth profiles define communication standards for specific use cases, such as hands-free calling (HFP), stereo audio streaming (A2DP), input devices (HID), file transfer (OPP), and health monitoring (HDP). They ensure compatibility and interoperability between Bluetooth-enabled devices.   1. How is Bluetooth security implemented?   Ans: Bluetooth security is implemented through authentication, encryption, pairing modes, authorization, Bluetooth Secure Connections, BLE security features, device visibility control, firmware updates, and user awareness of best practices. These measures ensure data privacy and integrity, as well as protection against unauthorized access and interception.   1. Can we use Bluetooth products on airlines? Justify your answer.   Ans: Yes, Bluetooth products can generally be used on airlines. However, the use of Bluetooth devices during flights may be subject to specific regulations set by individual airlines or aviation authorities. Generally, Bluetooth devices such as headphones, keyboards, and mice are allowed for use during flights, especially in airplane mode, as they do not emit electromagnetic interference significant enough to interfere with aircraft systems. However, larger electronic devices like laptops or tablets may have restrictions on their use during certain phases of flight. It's always advisable to check with the airline's policies before using Bluetooth devices onboard.   1. What are the improvements of BLE 4.0?   Ans: Bluetooth Low Energy (BLE) 4.0 brought improvements in lower power consumption, increased range, faster data transfer rates, enhanced security features, backward compatibility, and adaptive frequency hopping, making it ideal for various applications including wearables, IoT devices, and industrial deployments.  **Lab programs:**  1)Program to connect 2 devices using Bluetooth:Code:  server.py:  import time  import sys  server\_sock bluetooth.BluetoothSocket(bluetooth.RFCOMM)  port = 1  server\_sock.bind(("", port))  server\_sock.listen(1)  client\_sock, address server\_sock.accept()  print "Accepted connection from", address  while True:  data client sock.recv(1024)  print "received [%s]" % data  client sock.close()  server\_sock.close()  client.py:  import bluetooth  import sys  "08:27:EB:33:60:A2 #server MAC address  bd\_addr  port1  sock bluetooth, BluetoothSocket(bluetooth, RECOMM)  sock.connect((bd addr, port))  wnale True:  text raw input("Enter Message) sock.send(text)  sock.close()  **Output:**  D:\VCE\VCE documents\6th sem\IOT\Lab\IMG-20240315-WA0009.jpg D:\VCE\VCE documents\6th sem\IOT\Lab\IMG-20240315-WA0008.jpg  D:\VCE\VCE documents\6th sem\IOT\Lab\IMG-20240315-WA0024.jpg |