Problem statement – lack of means to share things between company laoptops in training environment.

solution-

a safe class sharing app that lets students send files only after both sides agree to connect. it uses bluetooth and local network together for quick offline, encrypted sharing without internet

when the application starts:

- initialize bluetooth adapter
- initialize local network interfaces
- generate temporary device id
- generate session encryption keys
- set device status to available

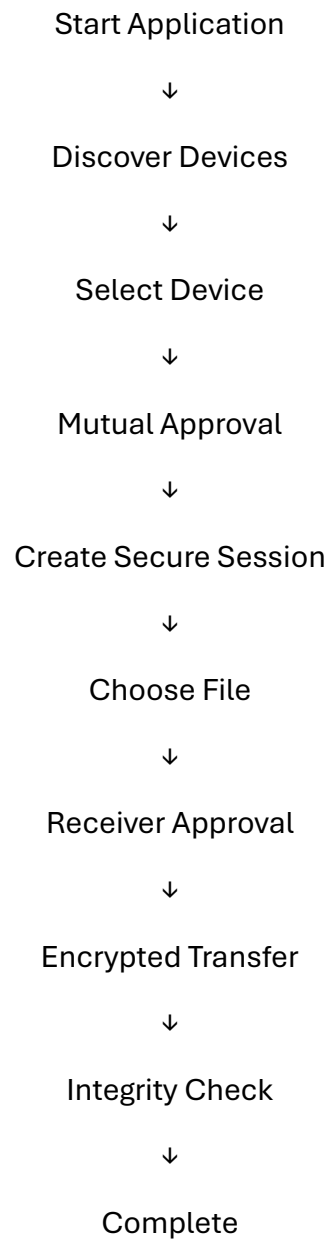user sees:: -

[Available Devices-

Laptop-A

Laptop-B

Lab-System-01]

Enhancements::

- Drag & Drop UI-
  Add a simple drag and drop interface to allow users to quickly share files without manual browsing. This improves usability and speeds up the transfer process.
- Group Sharing -
  Enable one to many transfers so a single sender can share files with multiple nearby devices simultaneously. This reduces time and improves efficiency in classroom or training sessions.

Flowchart:

Start Application

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Discover Devices

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Select Device

↓

Mutual Approval

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Create Secure Session

↓

Choose File

↓

Receiver Approval

↓

Encrypted Transfer

↓

Integrity Check

↓

Complete

Pseudocode:

```
START

INIT bluetooth, network
SET device = AVAILABLE

LOOP
   devices = DISCOVER()
   SELECT target_device

   IF MUTUAL_ACCEPT() THEN
      key = CREATE_SECURE_SESSION()

      files = SELECT_FILES()     #drag-drop
      receivers = SELECT_ONE_OR_MANY()

      FOR each receiver
         IF ACCEPT_FILE() THEN
            SEND_ENCRYPTED(files, key)
            VERIFY_INTEGRITY()
         ENDIF
      ENDFOR

      CLOSE_SESSION()
   ENDIF
ENDLOOP
STOP
```