

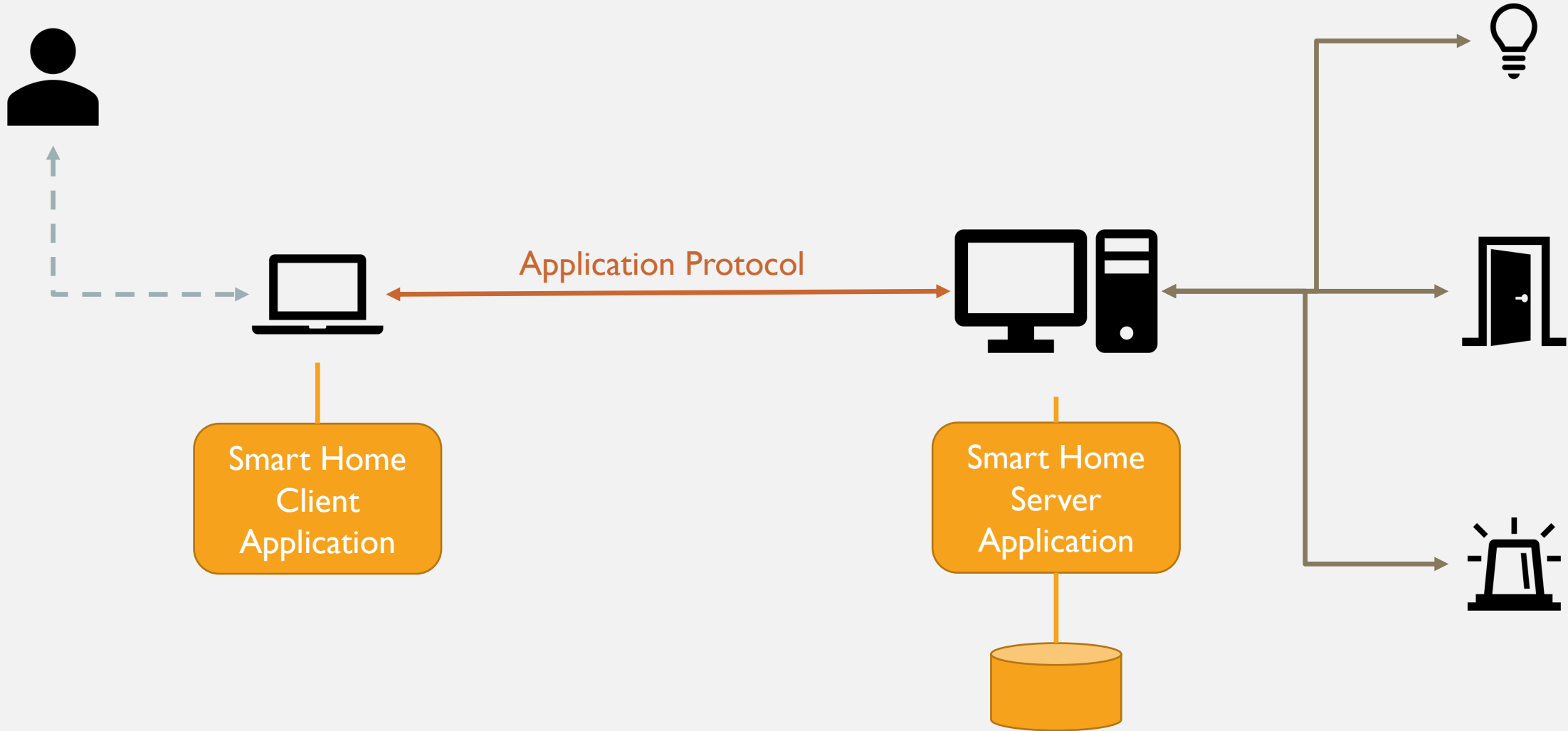


# PROJECT I

ECE 470

# SMART HOME REMOTE ACCESS SYSTEM

- Design and implement a Client/Server solution to allow the user to control their smart home devices from a remote location



# MINIMUM SUPPORTED DEVICES

- Support for following smart devices
  - Lights
    - On/Off, Dimmable, Color
    - Organized into groups by room
  - Alarm
    - Arm/Disarm
    - At least one alarm (single 4-digit pin code)
  - Electronic Locks
    - Lock/Open
    - At least 4 locks
    - Each lock has at least 5 pin codes (4 digit)

# EXPANDABLE

- You design should be easily expandable to support additional devices such as:
  - Thermostat
    - Heat/Cold, On/Off, Temperature
  - Security Cameras
    - Doorbell Camera
  - Automatic Blinds/Drapes
    - Open/Close

# ASSUMPTIONS

- You only need to support one home
  - Must have a login (username, password)
- The home has any number of rooms
  - Lights are grouped into rooms
- The home has one alarm
- The home has at least 4 electronic locks
- Only one user at a time can connect
- There is a server machine in the home that already knows how to communicate with the devices
- Server is accessible from both inside and outside the home
- Want to be able to check and alter status of devices
- Will use TCP for transport protocol

# BASIC OPERATIONS

- Login / Logout
  - User must login to system before they can issue any command including status checks
  - Must logout when done
  - Only one user at a time
- List devices
  - Can list devices/groups of devices
- Check Status
  - Can check the status of all, a group of, or a specific device
- Change Status
  - Can change the status of all, a group of or a specific device
  - Each status change is dependent on the type of device
    - Example:
      - Alarm can be armed/disarmed only when correct pin code entered
      - Light can be switched on/off

# PART I

- Decide on a Data Model to represent your devices and home
- Decide on the separation of Business Logic and the operational flow
  - Storyboards
- Design an application protocol to support your design
- Create Client and Server state charts
- Submit:
  - Data model design
  - Business Logic
  - Server state chart
  - Client state chart
  - Application protocol design
  - Clearly describe your designs and charts and justify your proposed solutions
  - Include an example session showing messages exchanged