SOFTWARE ENGINEERING CS 487
Homework #2

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Q1-Design a lecture enhancement system (LES) which:
– Keeps a student effectively engaged throughout by:
> filtering out extraneous noise,
> maintaining a comfortable temperature, and
> a prompting the student whenever their awareness drops
– Partners effectively with sensors and other systems

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Lecture Enhancement System(LES) Design: For better learning environment for students addressing common distractions.

1.Components -
- Noise Filtering - canceling disturbance
- Temperature Control - Maintain comfy room temperature
- Awareness Monitoring - Monitor student engagement
- Prompting System - Alert students when attention drops

2.Sensor Integration -
Using environment sensors for real-time noise and temperature data and sensors for awareness monitoring

3.Control Logic -
- Automatically control noice canceling according to the noise
- Adjust Temperature accordingly
- Activate prompts for student to involve in class

4.UI -
- User Friendly interface for users like students and Professors/Teachers
- Real time data update

5.Security and Privacy -
Strong Security measures to protect data

Q2-Deliverable requirements:
1. Draw a context model showing the system and its partners
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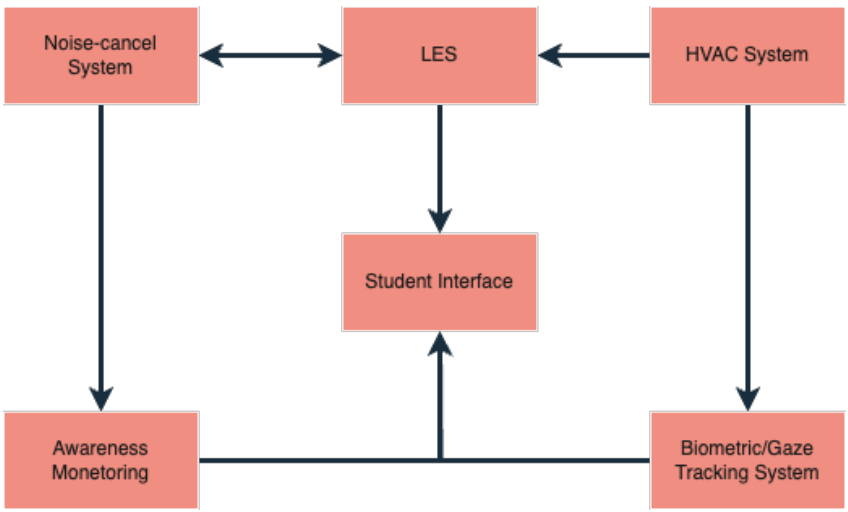

2. Specify a binary protocol for all C-C-I communication
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C-C-I communication should include standard structure structure to submit commands and data Between LES components.

Binary Protocol Structure:
Header (integer 4 bytes) - State if message.
Command (integer 4 bytes) - Action to be performed
Data Length (integer 4 bytes) - Length of Data section in Bytes
Data(Biinary) - Data payload
Checksum(integer 4 bytes) - Error handling

Example Message

Header	Command	Data Length	Data	Checksum
3333	1	10	59.5	2222

This allows different components os the system to communicate with each other.

3. Specify a LES-to-student protocol (C-H-I)
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Here we see Interaction of LES with the Student interface in a standardised manner.

LES to Students Protocol Structure:
Header (integer 4 bytes) - State if message.
Command (integer 4 bytes) - Action for student interface
Message - Human readable message to be displayed to the students.
Data(Biinary) - Data related to the command if any
Checksum(integer 4 bytes) - Error handling

Example Message

Header	Command	Message	Data	Checksum
4444	2	“Focus alart”	-	2444222

This protocol allows error free and smooth communication between the system and student interface.

4. Use flowcharts to explain the detection and handling of “noise”, “uncomfortable”, and “lack of awareness”, exceptions
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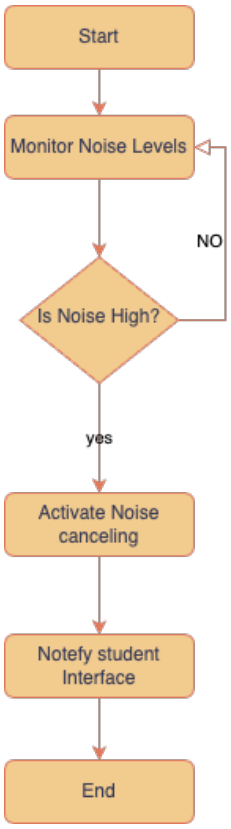
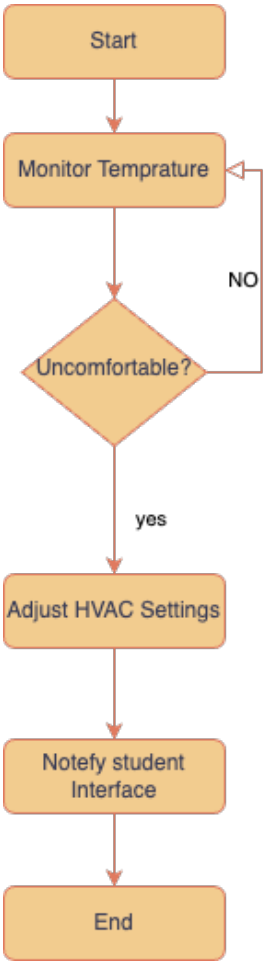
Next page

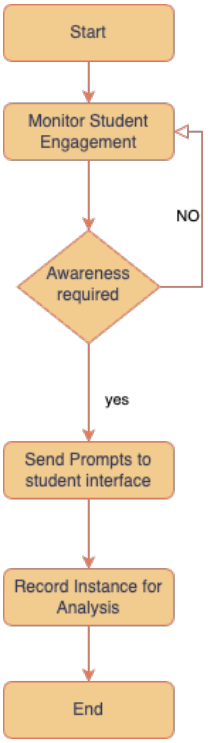
Handling of Noise



Uncomfortable



lack of awareness



Exceptions