1. A company producing high end external hard drives has asked for your help to design and build an electronic system to maintain constant temperature inside the case. The system should indicate the optimal temperature or turn on a cooling fan whenever the temperature rises above acceptable levels.

2. Some small restaurants need to cater for guests on a number of floors. They find it very time consuming to go up and down stairs with food and beverages. Design and build an electronic system for a small lift (dumbwaiter) that carries food and beverages up and down one floor by means of one switch on each floor. The lift must stop automatically when it reaches its destination. The system must also include a safety feature so that the lift cannot be operated if the lift’s door is kept open. You do not need to construct a fully mechanical structure for the lift.

3. A toy company would like to introduce a new indoor electronic game that uses approximately 40mm diameter balls (ex. ping pong, squash balls). Design and make this electronic toy that challenges the user to trigger multiple sensors independently with the chosen ball. A suitable audible and light output should operate for a set time to reward the user’s achievement.