**Problem 1.** Communicating with I/O devices is achieved using combinations of polling, interrupt handling, memory mapping, and special I/O commands. Answer the question about communicating with I/O subsystems for the following applications using combinations of these techniques.

1) Auto Pilot  
2) Automated Thermostat

Describe device polling and interrupt driven communication. Would each application be appropriate for communication using polling techniques? Explain. For each application, if polling is inappropriate, explain how interrupt driven techniques could be used.

Device polling is when the cpu periodically checks or “polls” the status of an I/O device to see if it requires any resources or attention and interrupt driven communication is the opposite where the device sends an interrupt signal to the cpu when it needs attention.

Polling techniques would not be suitable for an auto pilot application since the system would need to have real-time responsiveness to any issues or inputs. With polling techniques, the cpu would waste time checking other devices rather than dealing immediately with a problem on a device that needs it. How an interrupt driven technique could be used in an auto pilot application is to respond to subsystems in the plane like sensors that detects altitude changes and automatically adjust accordingly to ensure a smoother ride.

Polling techniques would not be suitable for an automated thermostat since even though it would technically work, a thermostat would waste resources constantly polling its devices rather than wait until a signal occurs from a device. A way that a interrupt driven technique could be applied to an automated thermostat is by having a sensor detect a significant change of temperature to turn on or off either the heat or air conditioning.