UNITED STATES AIR FORCE ACADEMY

ECE 281

Lesson 6 Practice Problem

Example Problem: Your goal is to create a truth table and corresponding logic circuit for the Sunstroke Survival System (this was a joint project between the ECE and management department last year). The system you are to design has 3 sensor inputs (weight in the car seat, motion in the backseat and interior temperature). The system is primarily designed to monitor a child car seat in the backseat of a car to prevent mishaps associated with leaving a child (or pet) in a locked car. If the driver removes the key and fails to remove the child from the car seat, the system should send a warning to the driver's cell phone. The car seat monitoring system provides a two layer warning system. In addition to monitoring for weight in the car seat, it also monitors for motion. Either motion in the backseat or increased weight will trigger the system to send a warning to the driver's cell phone. If the temperature also increases above 80F, the system will trigger the car to start and turn on the A/C.

K – Key is in the ignition
W – There is weight in the car seat
M – There is motion inside the car
T – Temperature inside the car rises above 80F

a.) How many outputs will this system need to have?

b.) Create the truth table and corresponding logic circuit