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Initially I used only global variables and two clock variables to control the major and minor lights. However, when attempting to add timing constraints, deadlocks occurred. The two lights were synchronized properly.

I achieved the best results when using synchronizations instead. The major light emits on the channels when it transitions between colors. The minor light received on these channels and transitions based on the synchronizations. This allows both lights to be perfectly insync and prevents the lights from showing green simultaneously. Initially, one of the same channels was used to synchronize the sensor with the transition to red of the minor light. However, I learned that when there is more than one receiver the emitter will choose one at random to sync with. It will not sync with both receivers. The solution for this was to use the same clock the lights were using in order to time the sensor enabling properly. The clock was used to time the transitions of the lights.

Adding the pedestrian light required the addition of another channel. When the minor light transitions from green it sends on the walk channel. The pedestrian light has a receiver waiting for a button press. Upon arrival the light goes to a wait state. At this state the light waits for the walk channel to change the light for the crosswalk. The crossing lights do not indicate to the pedestrians when to walk. The lights indicate to the cars when to stop at the crosswalk allowing the pedestrians to cross. The verifier in UPPAAL was used to verify the safety of the pedestrians. The crossing lights will never stop the cars allowing the pedestrians to cross when the minor lights are still green. Only when the minor lights are red will the crossing lights allow the pedestrians to cross.