

Corner Cases:

Concurrency: Considering that there are 4 different buttons for the manual intervention (pedestrian crossing) we should take into account that there may come a situation when multiple buttons maybe pressed on the intersection. In this particular scenario care must be taken from which intersection the buttons have been pressed and also if they've been pressed multiple times.

Power Outages: In the event of a power outage, the traffic light system should have a backup power source to ensure that the signal continues to function. This may involve using battery backups or generators.

Unresponsive Pedestrian Button: In the event that the pedestrian button is not working or unresponsive, the traffic light system should be designed to give pedestrians enough time to cross the street safely. Additionally, there should be a process in place to identify and address any issues with the pedestrian button as quickly as possible.

Emergency Vehicles: In the case of an emergency vehicle approaching the intersection, the traffic light system should be able to detect and respond accordingly. This could include changing the signal to green for the emergency vehicle's direction or flashing yellow for all directions to clear the intersection.