**Department of Public Works for Chicago’s**

**Pot-Hole Tracking and Repair Systems (PHTRS) Research Paper**

The Department of Public Works for Chicago (DPWC) aims to streamline the identification, tracking, and repair of potholes within the city by developing a pot-hole tracking system named the “Pot-Hole Tracking and Repair System (PHTRS)”. The system will be a web-based application that will allow citizens to report portholes, afterwards, the system wll assign work orders, manage the repair crews, repair status, amount of material used, and the final cost of repair. Finally, a file is created to record any damage to property caused by potholes, which would include the credentials of the citizens.

In the PHTRS, a citizen can access a dedicated website, where they’ll provide details, such as the street address, pothole size (rated on a scale between 1 and 10), location of the pothole (middle of the road, curb, etc). This information will then be stored using doubly linked lists inside a node per pot-hole. Additionally, in each node, the PHTRS will also store the work order data (info about repair crew, repair status, materials used, costs) and information regarding damage done by the specific pothole, which would include the citizen’s personal information. Each node will have pointers to the previous and next potholes, which will allow for easy insertion and removal of other nodes. This system with doubly linked lists will allow us to quickly access past pot-holes, update, and add new ones when compared to a singly linked list.