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# 1.0 Product Description

*The SRU Trash Routing program generates a 6 day pickup schedule of 62 pickup points taking into account delay times for the university's maintenance facility. Using a greedy search technique the program first generates every possible combination of days that could be used in a schedule, each one of them being as time friendly as possible. Next it picks the 6 best of these combinations that fulfill the following needs: the shortest time, not using two combinations in a row, and making sure every day is visited the correct amount of times.*

## 1.1 Purpose

* + - * 1. *Saves money by giving efficient routes*
        2. *Saves money by showing inefficiencies in current system*

# 2.0 Terms Used in Document

* + 1. **TSP** - travelling salesmen problem
    2. **VRP** - vehicle routing problem
    3. **JRE** - java runtime environment
    4. **JXL -** java excel library, used to manipulate excel data programmatically

# 3.0 Platform Usage

*The program is written in JAVA, so it can run across many platforms including Windows, Mac OS, and Linux. Any system that has the capability to have JRE installed on it can run the program. This is advantageous as the type of system someone is running will not disallow them to use the program.*

# 4.0 Code Design

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Image 1.0: UML Diagram of the SRU Trash Routing Program

*As you can see above the program was designed in a very orderly and layered fashion. The highest level is the Scheduler class. This class uses combinations generated from the Text File Routing class to put together a schedule. To generate these combinations the Text File Routing class must use data from an Excel spreadsheet, which is parsed and obtained using the Linked Lists class. It also must get the distances used in the routing from text files, which are obtained through use of the Text File Loader class. To assess penalties and travel times the Timing class is used by the Text File Routing class. The getPenalty() method in the Timing class returns a double value time that the entire trip will take. In the calculation of this time, the average bin timing must be obtained, and this is through the use of Bin Timing, which also uses data from excel spreadsheets.*