### DASALGO Machine Project; Tag Sorting Algorithm

### A Program Specification Document

### for the course on

### Introduction to Data Structures and Algorithms

### (DASALGO)

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### Introduction

### This program serves as a visual representation for tag sorting algorithm. Users may input multiple entries, thereafter called as ‘mails’ and will be sorted either according to distance or time it was inputted, while being on the same area of response, or ‘post offices.’ While the program is being used, the user may change how fast the application would do so, even after it was executed. It is also possible to completely halt the system and later be resumed to its labor. If the user wishes to choose a new set of ‘mails’, they may do so by clicking the ‘reset’ button.

### The program provides a comprehensible representation of each criteria, whereas the locations will be represented as red circles, the ‘post offices’ as slightly bigger blue circles, white lines that serve as paths, and a light blue arrow that represents the ‘mailman.’

### To begin, the user must select at least 1 mail. These mails must have a recipient and will beforehand be provided with random names stored in the application. The user may choose a different name if they wish to do so. Clicking the ‘confirm’ button will show a ‘map-like’ structure of which locations will be involved with the mails. In order to begin, the user must select where the mailman must begin. The blue circles, or the ‘post offices’ are the only locations where the mailman can go to – clicking on them will set the starting location to it. Pressing the ‘play’ button, or the arrow pointing towards the right direction located at the bottom-left corner, will execute the application’s procedure until it is done.

### The procedure of which is as followed: message sorting, where the mailman will arrange its mails before delivering; mail delivery, where the mailman will attempt to locate the designated location and deliver the mail.

### The mailman will always go to the location’s ‘post office’ and will go back to its starting location after finishing.

### Data Structures

### In this chapter, the different data structures that you applied in your program are presented, along with the description of the purpose of each data structure.

### Arrays

|  |  |
| --- | --- |
| Name | Purpose |
| Selected Mails | Mails that the user has selected. These serve as reference and will not be tampered during the program’s execution. |

### Stacks

|  |  |
| --- | --- |
| Name | Purpose |
| Mails by Post Office | Mails sorted via post office. Mails contained must be from the same post office. These are used to arrange the mails by post office, then re-added to the ‘Mailman’s Mails.’ |

### Queues

|  |  |
| --- | --- |
| Name | Purpose |
| Mailman’s Mails | Mails that the mailman currently has. |

### Algorithms

### In this chapter the different searching and/or sorting algorithms that you used in your program are presented.

### Searching Algorithms

|  |  |
| --- | --- |
| Name | Purpose |
| Linear | Used to search which post office is the mailman starting from. |

### Sorting Algorithms

|  |  |
| --- | --- |
| Name | Purpose |
| Bubble | Used for sorting the mails by distance or time created. |

### Program Flowchart

### Insert the flowchart of your program here. Using Microsoft Word, you will find various flowcharting shapes under Insert > Shapes.

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### Figure 1. Sample Flowchart

### Program Features

### Read Map File

### The user can input the Map file in CSV (Comma-Separated Values) format. The first line must be the category names, while the rest of the lines must be the data. The program would not be able to read the file if it contains commas that are not separators, if there are extra separators, and if there are missing separators. The user may drop a .csv file directly on the screen or paste the .csv file’s contents into the screen via clipboard (CTRL + C and CTRL + V).

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### Figure 2. Read Map File Screenshot

### Create Mail

### The user can create mails to a designated location with the recipient’s name. This also accounts the date and time it was created.

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### Figure 3. Read Map File Screenshot

### Select Post Office

### The user can select the initial post office from the 4 post offices: Manila City Post Office, Quezon City Post Office, Pasay City Post Office, Makati City Post Office. These are done by clicking the blue circles.

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### Figure 4. Select Post Office Screenshot

### References

### GeeksforGeeks (N.D.). *Tag Sort (To get both sorted and original)*. Retrieved July 7, 2018 from https://www.geeksforgeeks.org/tag-sort/