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| Cairo University  Faculty of Engineering  Computer Engineering Department  Spring 2022 | Logo  Description automatically generated |

**Data Structures and Algorithms Project Phase 1 Report**

**Team Number**: 11

**Number of members**: 3

**Team Email**: yara.mahrous01@eng-st.cu.edu.eg

**Members’ Info:**

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**Project Data Structures:**

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| List Name | Chosen DS | Justification |
| Waiting normal cargos | Linked list | We wanted to access all the elements in this list  Insertion: O (n)  Deletion: O (n) |
| Waiting special cargos | Queue | We wanted to use the “First In First Out” concept to maintain the order of these cargos  Insertion: O (1)  Deletion: O (1) |
| Waiting VIP cargos | Priority queue | We wanted to order the cargos according to their priority which is determined by: the cargo preparation time, delivery distance and the cargo’s cost  Insertion: O (n)  Deletion: O (1) |
| Loading cargos  (List for each type) | Priority queue | We wanted to order the cargos according to their priority which is determined by: time of end the loading  Insertion: O (n)  Deletion: O (1) |
| Moving cargos  (List for each type) | Priority queue | We wanted to order the cargos according to their priority which is determined by: cargo’s delivery time  Insertion: O (n)  Deletion: O (1) |
| Delivered cargos  (List for each type) | Queue | We wanted to use the “First In First Out” concept to maintain the order of these cargos  Insertion: O (1)  Deletion: O (1) |
| Events | Queue | We wanted to use the “First In First Out” concept to maintain the order of the events  Insertion: O (1)  Deletion: O (1) |
| Available trucks  (List for each type) | Queue | We wanted to use the “First In First Out” concept to maintain the order of these trucks  Insertion: O (1)  Deletion: O (1) |
| In-Check trucks  (List for each type) | Queue | We wanted to use the “First In First Out” concept to maintain the order of these trucks  Insertion: O (1)  Deletion: O (1) |
| Moving trucks | Priority queue | We wanted to order the trucks according to their priority which is determined by: the longest delivery distance and load/unload time of each cargo  Insertion: O (n)  Deletion: O (1) |
| Loading trucks | Priority queue | We wanted to order the trucks according to their priority which is determined by: load/unload time of each cargo  Insertion: O (n)  Deletion: O (1) |