

## Programming and Data Structures Laboratory, 2018-19 Spring semester, Section 6

### April 16, 2019: Tutorial 10 (Linked lists, Queues and Files)

Toys are to be distributed amongst kids on a first-come-first-serve basis. Each kid has a name (which is a sequence of English letters and spaces) and a kid-id (which is a sequence of alphanumeric character). Toys are of two types: (1) doll, (2) car.

Define a structure type containing name and kid id. Create a queue of structures of the above type, and initialize it. Use the linked-list implementation of queue.

Ask the user for the names and kid-id's of the kids. Enqueue them in your queue in the order in which the user enters the details. The queue of kids is now ready.

Now ask the user for the total number of dolls and cars available. Store them in two integer variables. Assume that the total number of toys available (of both types combined) is at least the number of kids.

Create a text file 'toy-alloc.txt'.

Now do the following until the queue becomes empty:

- Dequeue the queue head.
- If both type of toys are still available, ask the user whether this kid prefers a doll or a car. The user responds by typing 'd' or 'c'. Report 'incorrect input' if anything else is entered. As indicated by the entered preference, a doll or a car is allotted to this kid. If only one type of toy is available, then do not ask for preference; just allot the available type of toy.
- Write in toy-alloc.txt on a different line the name, kid id, and the type of toy allotted to him/her in the last step, all separated by the tab character.

Finally close the file toy-alloc.txt.