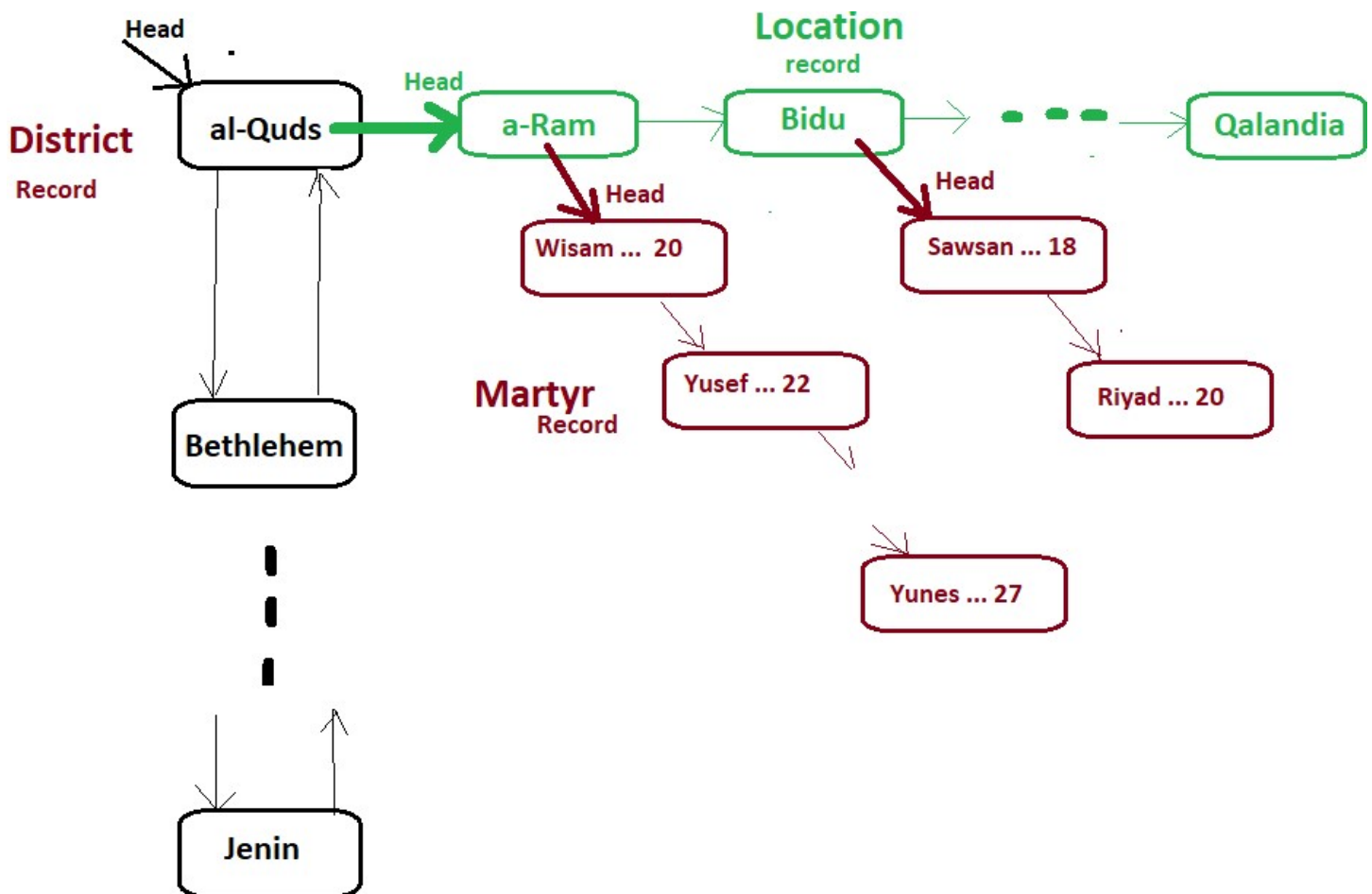


COMP242ProjectI

In this project, you will implement a martyrs' data structure using sorted doubly and single linked lists. The following figure shows the overall data structure:



Note the following in this data structure:

- **District doubly linked list:** this list holds unique districts and sorted alphabetically ignoring the case. The data record in this list contains a **district name** and a **Location linked list**.
- **Location single linked list:** this list holds unique locations and sorted alphabetically ignoring the case. The data record in this list contains a **location name** and a **Martyr linked list**.
- **Martyr single linked list:** this list holds martyrs data and sorted by **age**. The data record in this list is martyr record (**Name, Date, Age, location, District, and Gender**).

The data input for this project will be a martyrs csv file (**data.csv** attached)(note: this file is a normal text file; you can open it using notepad and read it as a text file). Each line in this file contains a martyr record separated by comma (,).

YOU MAY NOT USE ARRAYS or ARRAYLIST IN THIS PROJECT.

For a good user experience, you will need to implement a graphical user interface (GUI) using javafx.

YOU MAY NOT USE SCENE BUILDER IN THIS PROJECT.

When running your project, at first, the user has to load the martyrs file using a **file chooser**. Then the user will get a list of functions to choose from as follow:

District Screen: in this screen we need the following:

1. An option to insert new district record to the doubly linked list.
2. An option to update a district record.
3. An option to delete a district record.
4. Navigate throw districts (go next district, go previous district).
5. While navigate throw districts show the following statistics:
 - a. Total number of martyrs
 - b. Total number of male and female martyrs
 - c. Average martyrs ages.
 - d. The date that has the maximum number of martyrs
6. An option to get the total number of martyrs for a given date.
7. An option to load the first location in this district to location screen.

Location Screen: in this screen we need the following:

1. An option to insert new location record to the single linked list.
2. An option to update a location record.
3. An option to delete a location record.
4. Navigate throw locations (go next location) [when you reach the last location go back to the 1st location].
5. Search and show specific location statistics:
 - a. Total number of martyrs
 - b. Total number of male and female martyrs
 - c. Average martyrs ages.
 - d. The youngest and oldest martyrs.
6. An option to insert a new martyr record.
7. An option to update/delete a martyr record.
8. An option to search for martyr record by part of his name.

You have to study the time complexity of each function (above) and be ready to explain it during the discussion.

Good Luck!