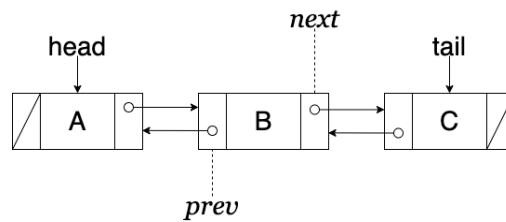
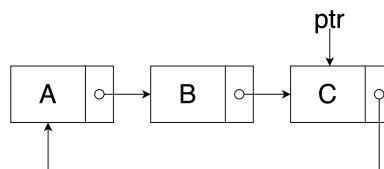


Assignment 3 (Given: Nov 29, Due: Dec 13)

1. Implement a sorted doubly linked list ADT, where each node has pointers to its next and previous nodes.
 - a) Implement all the standard functions of the list ADT (constructor, copy constructor, operator=, destructor, insert, find, remove, update, back, front, empty, size).
 - b) Implement the forward iterator functions to traverse the list in the forward direction.
 - c) Implement the reverse iterator functions to traverse the list in the reverse direction.



2. Implement a sorted circular linked list, where the last node is linked to the first node.
 - a) Implement all the standard functions of the list ADT (constructor, copy constructor, operator=, destructor, insert, find, remove, update, back, front, empty, size).
 - b) Implement the iterator functions for traversing the list in forward direction.



3. Implement an information system for library book records (like you did in A1). For storing the records use the list ADT available in the STL (#include <list>).
 - a) Provide the CRUD functionality with advanced search features (based on multiple criteria).
 - b) Provide filter functionality on top of search functionality (to get an idea, have a look at the filter options available on <https://www.torontopubliclibrary.ca/search.jsp?Ntt=nature> when you search for the books on nature).
 - c) All the book records should be saved in a file. When the program starts, the data about the books should be loaded from the file into the list. If the file does not exist, it should be created. When the user adds information about a new book or updates or deletes an existing one, the record should be updated in the file as well. You do not need to manage the file record by record, you can store the whole list in the file, whenever there's a change in the list.

Instructions:

Following these instructions carries marks.

- Start early.
- Before submission, remove all the debugging and temporary files (in visual studio select menu *Build* → *Clean Solution*). Only submit the .cpp and .h files (no visual studio or other files). Select .cpp and .h files and compress them using your full registration number and name, (e.g., 04071512007-Ali-Ahmad.zip). Submit via email (rabbasi@qau.edu.pk) within due time (no extensions).
- The source code should be properly commented and indented.
- Try to avoid using conio.h, as it is not part of standard C++. Don't use clear screen function. Don't use getch function, instead use the standard getchar function (if required).
- Any genuine efforts in each part, would result in at least 50% marks (in that part). Make sure you put your best efforts to solve every part. Each part carries its own marks. Different parts are highlighted in the assignment description (see the bold words). You are getting 50% marks for any genuine efforts in all the parts to encourage you to learn, even if your program does not compile and is full of bugs). Therefore, please do not plagiarize! Plagiarism includes taking help in any form including but not limited to code, concept or idea for the solution, algorithm, and pseudocode. Taking help from any source including but not limited to classmates, seniors, or internet is prohibited. In case your code is plagiarized, you'll get -50% absolute marks of the whole assignment. For example, if the assignment is of 50 marks, you will get -25 marks. **Even a single plagiarized statement will count as plagiarism for the whole assignment.** Plagiarism in two assignments would result in getting failed in the course.