# Assignment 4 – Queues & Stacks

**A queue is a container data structure that acts like a pipeline. That is, data enters one end of the pipe and is removed from the other end (called FIFO: first in, first out). A stack is similar to a queue except the data is removed (pop) from the same end it is inserted into (push) (called LIFO: last in, first out). Data cannot be removed from an empty queue nor from an empty stack. Also links which are removed from the list should be deleted from memory.**

**Write a menu controlled program using classes and linked lists and integer data to**

**1) clear a queue of its contents**

**2) add data to the input end of the queue,**

**3) remove data from the output end of the queue (also print each value as it is removed),**

**4) print the contents of the queue,**

**5) reverse the data inside the queue (create a temporary linked stack, remove the data from the queue and place it into the stack, then removed it from the stack and place it back into the queue). (There are other ways to do this…this is for practice.)**

**6) exit from the application**

Marks will be attributed to the use of functions for each task that is encountered.

Deadline: Upload to Moodle on or before **5pm on November 27th 2015**. Sign off during your practical on the week beginning **November 23rd 2015**.

Please have the following available for collection during your practical session:

1. The working version of the above.
2. A verbal explanation of the programs outcome, if requested.
3. Take the appropriate steps to backup your work at all times. Remember, PCs and Servers do fail and lose data.
4. Deadline exceptions can only be made in special circumstances (e.g. provide sick cert).