

14. A laptop computer supplements its primary memory by making use of virtual memory.

- (a) Outline the use of paging in relation to virtual memory. [2]

The laptop has 1GB of random access memory (RAM) and a single processor.
The laptop is using one of the latest operating systems to run multimedia gaming programs.

- (b) Explain the limitations and consequences of using the laptop for this purpose. [3]

One of the laptop's game applications stores the data relating to the different actions of one of its characters in a stack.

- (c) Suggest **one** reason why the character's actions might be stored in a stack. [2]

At specific moments during the game this data is read from the stack (S) into a queue (Q).

- (d) Using appropriate access methods for stacks and queues, construct an algorithm that reads the data from the stack and enters it into the queue. You should assume that the queue structure exists and that both structures are of a fixed size. [6]

- (e) Outline **one** advantage of making the queue dynamic. [2]