

11. The names of vegetables must be always held in **alphabetical** order in a list in the main memory.

The application program should allow insertion and deletion of the names of vegetables from this list.

- (a) Compare the use of a dynamic linked list for holding these names of vegetables with a static one-dimensional array. [3]

Given the following vegetables: potato, asparagus, lettuce, radish.

- (b) Sketch a single linked list holding these vegetables. [2]

- (c) (i) List the steps required to insert cabbage into the linked list. [4]

- (ii) Explain why deleting the first node in this list is different to deleting other nodes. [2]

- (d) State the dynamic data structure suitable for maintaining this list of vegetables which will allow faster searching for a given vegetable name. [1]

The vegetable names are input in the following order

potato, asparagus, lettuce, radish.

- (e) Sketch the data structure suggested in part (d) containing the vegetable names sorted in **alphabetical** order. [3]