**4.*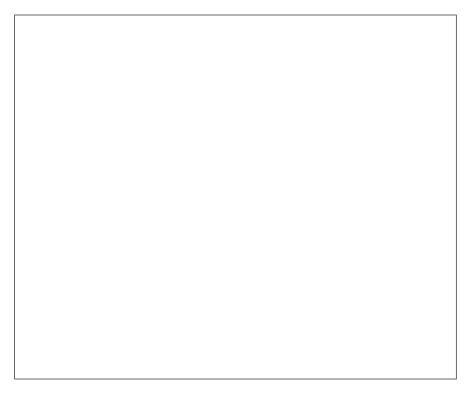* Dawid Mahyne is studying Advanced Higher Computing Science. His teacher has asked him to compare the computational constructs provided by a procedural programming language with those provided by a database.

Dawid starts by creating a database file called "pupils.db". The file contains one table called "pupildata" which stores the pupil data shown.

PupilID	FirstName	LastName	DateOfBirth	RegClass
112211	Joan	Simpson	23/02/1999	6A
112212	John	Adam	12/04/1998	6B
112213	Alison	Brown	30/10/1998	6A
112214	Brian	Morgan	18/11/1998	6C
112215	Bilal	Ali	12/09/1998	6C
112216	Lian	Wong	27/05/1998	6A
112217	Charles	West	23/06/1998	6B
112218	Janet	Smith	18/02/1999	6B
112219	Raymond	Thomas	07/12/1998	6B
112220	Theresa	Cameron	29/01/1999	6A

Dawid writes a program to import the pupil data from the database file and store it in an array of records called "details". His program then applies a binary search to the array of records to display the details of the pupil with PupilID 112213.

(a)   (i)   Use pseudocode to create the top level design for the program. Your top level design should define the required data structure and call all necessary modules.   **3**

4. (a) (continued)

(ii) Use pseudocode to refine the binary search used to display the details of the pupil with PupilID 112213.

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