Question 22 (20 marks) Use a SEPARATE writing booklet.

You have been offered a job to maintain inventory information for a warehouse of a bicycle company called Mike's Bikes.

You are required to develop a program for this bicycle company which is able to:

- update the inventory file with daily transactions from a transaction file;

- print an error message if the quantity on hand of an item is less than three.

The inventory file is a random access file with the following record format:

	Stock number	Item description	Quantity on hand	Unit price
Eg	999	xxxxxxxxxxxxxxx	9999	999.99

The transaction file contains the daily transactions of items shipped out of the warehouse, or items received by the warehouse. The order of transactions is the order in which they occurred. The transaction file record consists of a stock number and a quantity. If the quantity is positive, the transaction represents items received. If the quantity is negative, the transactions represent items shipped. The transaction file is a sequential file with the following record format:

Stock number	Quantity

The stock number is a three-digit integer and the quantity is a four-digit integer. Assume that '999', as a stock number entry in the transaction file, is an end-of-file indicator.

Here is a sample of the inventory file:

Stock number	Item description	Quantity on hand	Unit price
1	handle bars	10	186.92
2	pedals	5	85.00
3	wheels	3	99.50
4	tyres	12	24.95

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Question 22 (continued)

Here is a sample of a transaction file:

Stock number	Quantity
1	–2
3	–1
2	8
1	15
1	–2
2	–2
999	–2

After the update, the inventory file should contain the following information:

Stock number	Item description	Quantity on hand	Unit price
1	handle bars	21	186.92
2	pedals	11	85.00
3	wheels	2	99.50
4	tyres	12	24.95

(a) (i) Design the interface for entering items into the transaction file. **3**

(ii) Draw an IPO diagram that represents the inventory file update process. **4**

(iii) Using either a flowchart or pseudocode, write an algorithm that will: **7**

- update the inventory file (a random access file) using the transaction file;

- print a message on the terminal screen if a match cannot be found between the inventory stock number and the transaction stock number; and

- print an error message if the quantity on hand is less than three.

(b) Documentation is required throughout the development of this software solution. **6**

Identify TWO types of documentation used in different stages of the development cycle and justify the use of each type of documentation for its particular stage.

End of Question 22

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