8. JustDine is developing a smartphone app to allow a user to identify restaurants based on the type of food. Restaurants register with JustDine. The app will store the name, city, type of food and rating for each restaurant.

Features of the app:

- users can enter the type of food and city
- displays the number of matching restaurants
- displays the name and rating of the highest rated matching restaurant.

The user interface for the app is shown below.

(a) During analysis the inputs, processes and outputs were identified.

Describe two processes. **2**

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[Turn over

8. (continued)

(b) Details for registered restaurants are stored in four parallel 1-D arrays:

- `restaurantName`
- `foodType`
- `city`
- `rating`

Using a recognised design technique, design an algorithm that would count the number of restaurants that match the user's food type and city.

4

(c) The following function is to be used to find the highest rating for a restaurant.

During testing it is found that this code contains an error.

```
...
Line 26  FUNCTION findMax (ARRAY OF REAL list) RETURNS REAL
Line 27    DECLARE upper INITIALLY length(list) -1
Line 28    DECLARE highest INITIALLY list[0]
Line 29      FOR index FROM 1 TO upper DO
Line 30        IF highest > list[index] THEN
Line 31          SET highest TO list[index]
Line 32        END IF
Line 33      END FOR
Line 34    RETURN highest
Line 35  END FUNCTION
...
```

A trace table is used when the function is tested with the following values [4.51, 4.12, 4.99].

Line Number	index	list [index]	highest	highest > list [index]
...				
28			4.51	
29	1			
30		4.12	4.51	true
31			**A**	
29	2			
30		**B**	4.12	**C**
34			4.12	

(i) Identify the missing values A, B and C.   **3**

A _____

B _____

C _____

(ii) Describe how a breakpoint could be used to check the values in the trace table.   **2**

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8. (c) (continued)

   (iii) Describe how the error in this code can be corrected.   **1**

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(d) The function `findMax` in part (c) is used to assign the highest rating from the array `rating` to the variable `myHighest`.

Using a programming language of your choice, write the line of code that assigns the highest rating to `myHighest`.   **2**