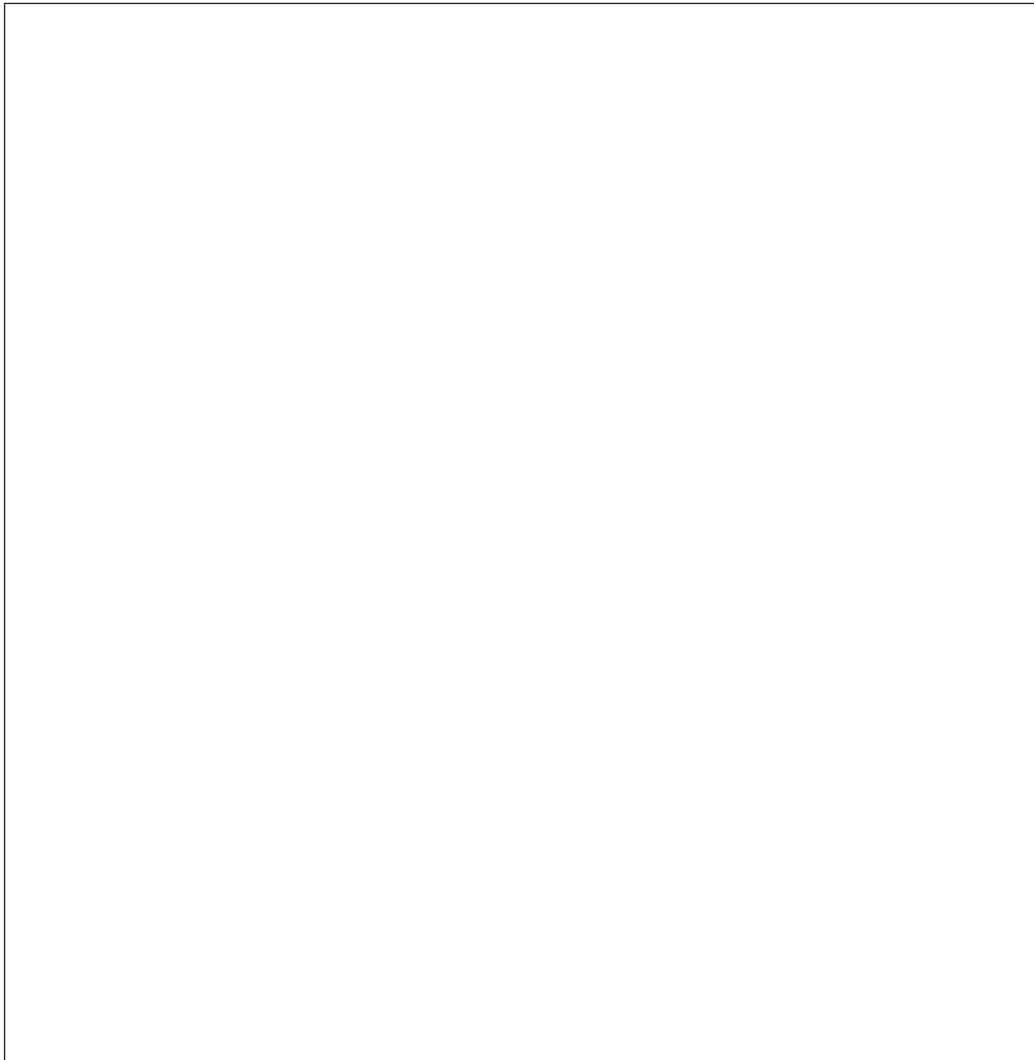**10.** A cinema is developing an app to survey customers. Cinema staff will ask customers questions as they leave the cinema. Staff will use a touchscreen on a tablet to input and submit the responses given by each customer.

Customers will be asked the following questions:

- Which of the two films the cinema is currently showing did you see?

- What score would you give the film, from 1 to 5?

- Did you purchase food in the cinema?

(a) As many customers as possible should be surveyed as they leave the cinema. It is important that answers to questions can be input as quickly as possible using a touchscreen.

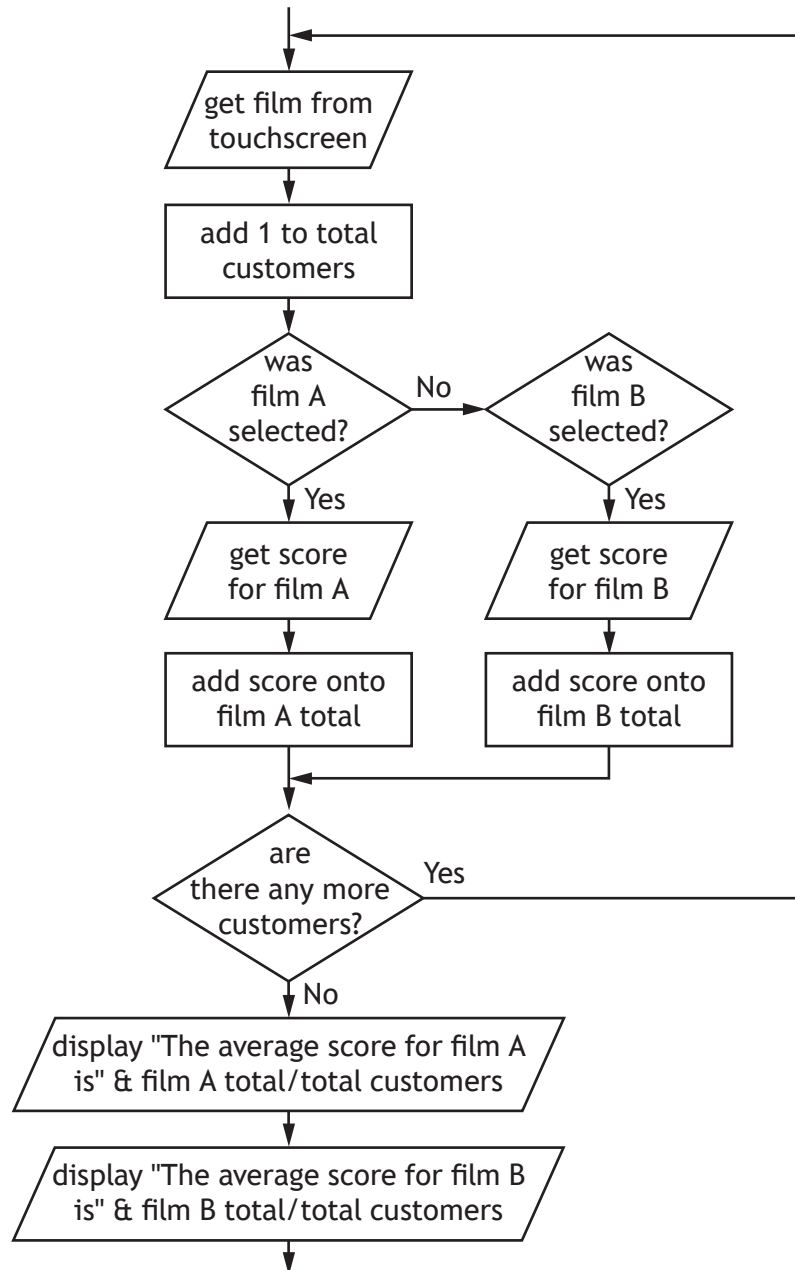Using the information above, design a user interface for this part of the app.   **4**

[Turn over

10. (continued)

At the end of each day the app will calculate the average score for each film.

The suggested design for this part of the app is shown below.

```
        ┌─────────────────┐
        │ get film from   │
        │ touchscreen     │
        └─────────────────┘
                │
        ┌─────────────────┐
        │ add 1 to total  │
        │ customers       │
        └─────────────────┘
                │
            ◇ was              ◇ was
              film A    No        film B
              selected? ───────► selected?
                │                  │
               Yes                Yes
        ┌─────────────┐     ┌─────────────┐
        │ get score   │     │ get score   │
        │ for film A  │     │ for film B  │
        └─────────────┘     └─────────────┘
                │                  │
        ┌─────────────┐     ┌─────────────┐
        │ add score   │     │ add score   │
        │ onto film   │     │ onto film   │
        │ A total     │     │ B total     │
        └─────────────┘     └─────────────┘
                │
            ◇ are
              there any more   Yes
              customers?  ──────►
                │
               No
   ┌──────────────────────────────────────┐
   │ display "The average score for film A │
   │   is" & film A total/total customers  │
   └──────────────────────────────────────┘
                │
   ┌──────────────────────────────────────┐
   │ display "The average score for film B │
   │   is" & film B total/total customers  │
   └──────────────────────────────────────┘
                │
```

10. (continued)

(b) Read the design for the cinema app and identify

(i) a value that will be stored as an integer **1**

_____

(ii) the condition used in the loop **1**

_____

(iii) an inefficient part of the design that could be removed without affecting the solution. **1**

_____

_____

(c) Before the design is implemented, the following test data is created.

Type of test	User input
Normal	A
	10
	B
	8
	A
	2
	B
	8

The design does not calculate the average score for each film correctly.

(i) State the average score for each film that this design will output. **1**

Film A _____

Film B _____

(ii) Describe how the design should be edited to calculate the correct average scores. **1**

_____

_____