8. In a flight booking app, users are asked to enter their departure airport, destination airport, departure date, return date, number of adults and number of children.

A message will then be displayed showing the total flight cost and the duration of the trip.

(a) Describe two processes for the flight booking app. **2**

Process 1 _____

_____

Process 2 _____

_____

(b) The design below shows how the total cost of a booking is calculated.

Algorithm

1. Find ticket costs
2. Get quantity of passengers
3. Calculate initial cost of booking
4. Update cost of booking if bag(s) are added
5. Display final cost of booking

Refinements

2.1 Get quantity of adult passengers

2.2 Get quantity of child passengers

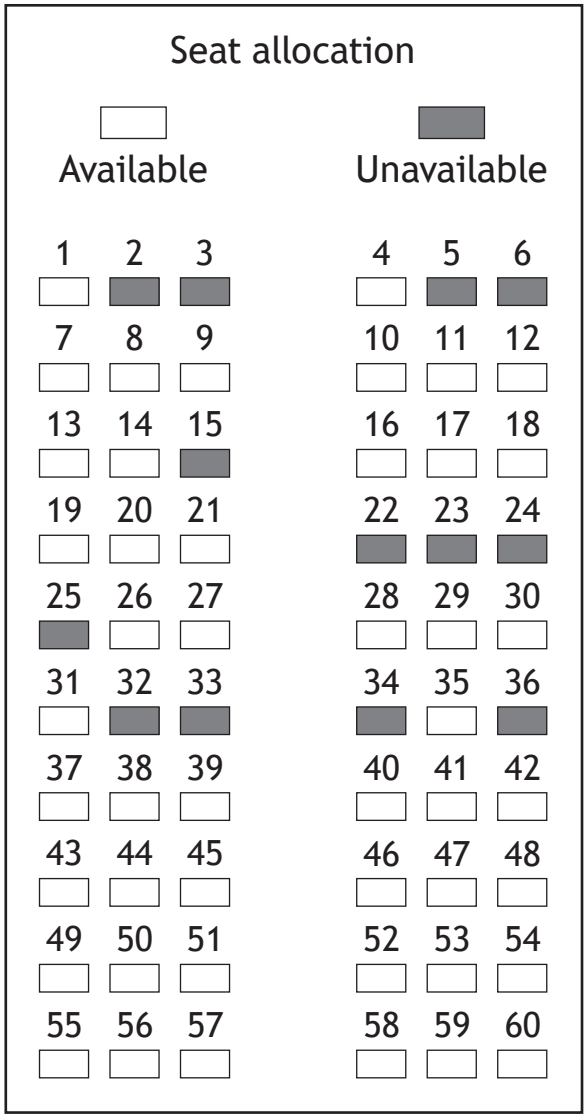
8. (b) (continued)

The app provides an option to add bags to the booking. Each passenger is asked if they want to add a bag. The cost is an additional £7 for each passenger who decides to take a bag.

Using a design technique of your choice, refine step 4. **5**

8. (continued)

(c) Passengers are allocated an available seat. A data structure named `seats` is used to store whether each seat is available (true) or unavailable (false).



(i) State the most suitable data structure and data type used to store the seat availability. **2**

Data structure _____

Data type _____

8. (c) (continued)

(ii) The following pseudocode design shows how an available seat is allocated.

```
1  generate a random seat number
2  loop while the generated seat is unavailable
3      generate another random seat number
4  end loop
5  change seat to unavailable
```

Using a programming language of your choice, write the code required to implement the above design. **4**

(iii) Explain why the above design becomes less efficient as more passengers are allocated seats. **2**

8. (continued)

(d) The app will store passenger information.

State how this information could be transferred securely from the app to the computers running the booking system. **1**

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