

b



3

For each transaction, the following data are stored.

For the customer:

- customer name
- ID number

For the hire:

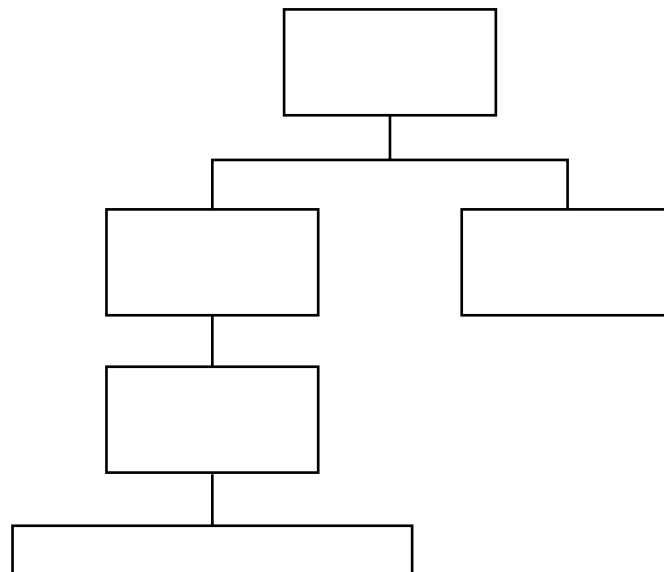
- car registration
- hire start date
- number of days hired

The transaction data are stored in a text file `HIRE-TRANS`. The file is made up of a file body, `F BODY`, and a file trailer, `F TRAILER`.

F_BODY has one transaction, TRANS, on each line.

- (a)** The first step in Jackson Structured Programming (JSP) design is to produce a JSP data structure diagram.

Complete the following JSP data structure diagram.





(b) The computer system will produce many printed reports.

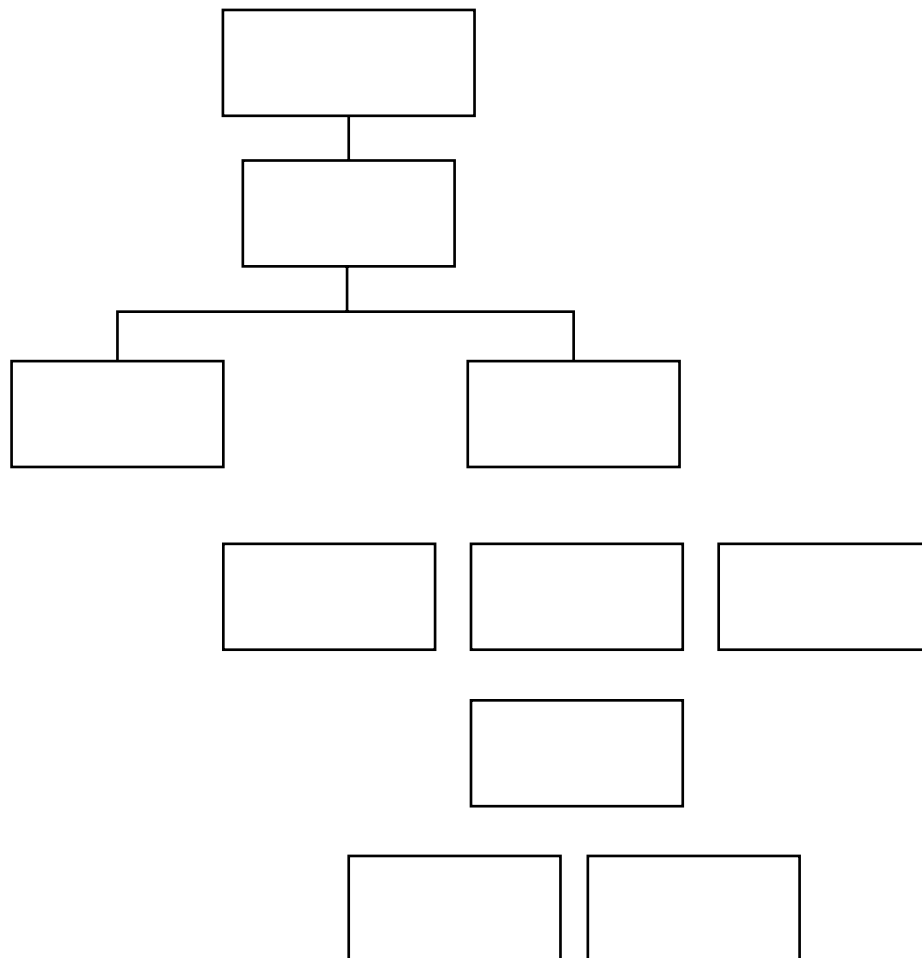
One report is `CAR_REPORT`. This displays all hire data for all cars.

For each car, the following data are displayed:

- the car data
- a list of all the hires
- the total number of hires

A car with zero hires is not included on the report.

Complete the following `CAR_REPORT` JSP data structure diagram.



QUESTION 2.



- 2 (a) (i) State how repetition is shown in a Jackson Structured Programming diagram.

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- (ii) State how selection is shown in a JSP structure diagram.

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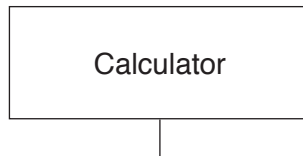
.....[1]

- (b) A simple calculator is to be created.

The calculator is to be used as follows:

- User inputs 2 numbers (x and y).
- User inputs an operator (+, -, * or /).
- The calculator computes the answer.
- The calculator displays the answer.

Draw a JSP diagram for the calculator. The first element is provided.



QUESTION 3.

- 1 A bank provides bank accounts to customers.

The following pseudocode represents the operation of the bank account.

```
CALL OpenAccount()
CALL AccountLifeTime()
CALL CloseAccount()

PROCEDURE AccountLifeTime()
    REPEAT
        CALL Transactions()
    UNTIL AccountClosed() = TRUE
ENDPROCEDURE

PROCEDURE CloseAccount()
    IF ReopenAccount() = TRUE
    THEN
        CALL FlagToReopen()
    ELSE
        CALL DeletePermanently()
    ENDIF
ENDPROCEDURE
```

- (a) Complete the JSP structure diagram for this bank account from the pseudocode given.

Bank account





(b) A transaction can be a credit (deposit) or a debit (withdrawal).

There are two types of transaction that are credits (deposits). These are:

- SWIFT payment
- BACS payment

There are three types of transaction that are debits (withdrawals). These are:

- Debit card payment
- Cheque payment
- Online payment

Complete the JSP structure diagram to represent these additional requirements.

