MODULE K ALGORITHM DESIGN · K6

Flowcharts: symbols and how to read them

Original practice questions · 22 marks · ~25 minutes · Cambridge 0478 syllabus 7.3, 7.7, 7.8, 7.9 and section 4 (flowchart symbols)

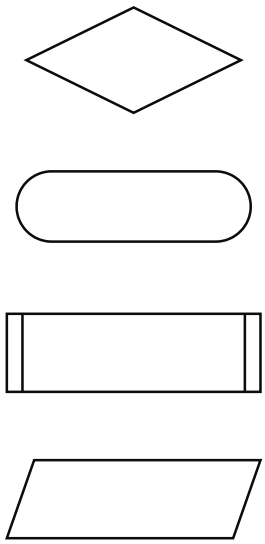
Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. Draw flowcharts in pencil and use the standard flowchart symbols. The total for this worksheet is **22 marks**.

1

Total: 4 marks

(a) Draw **one** line from each flowchart symbol to its correct description. Not all descriptions will be used. **[4]**



Shows data going into, or coming out of, the algorithm

Shows something being performed or done, such as a calculation

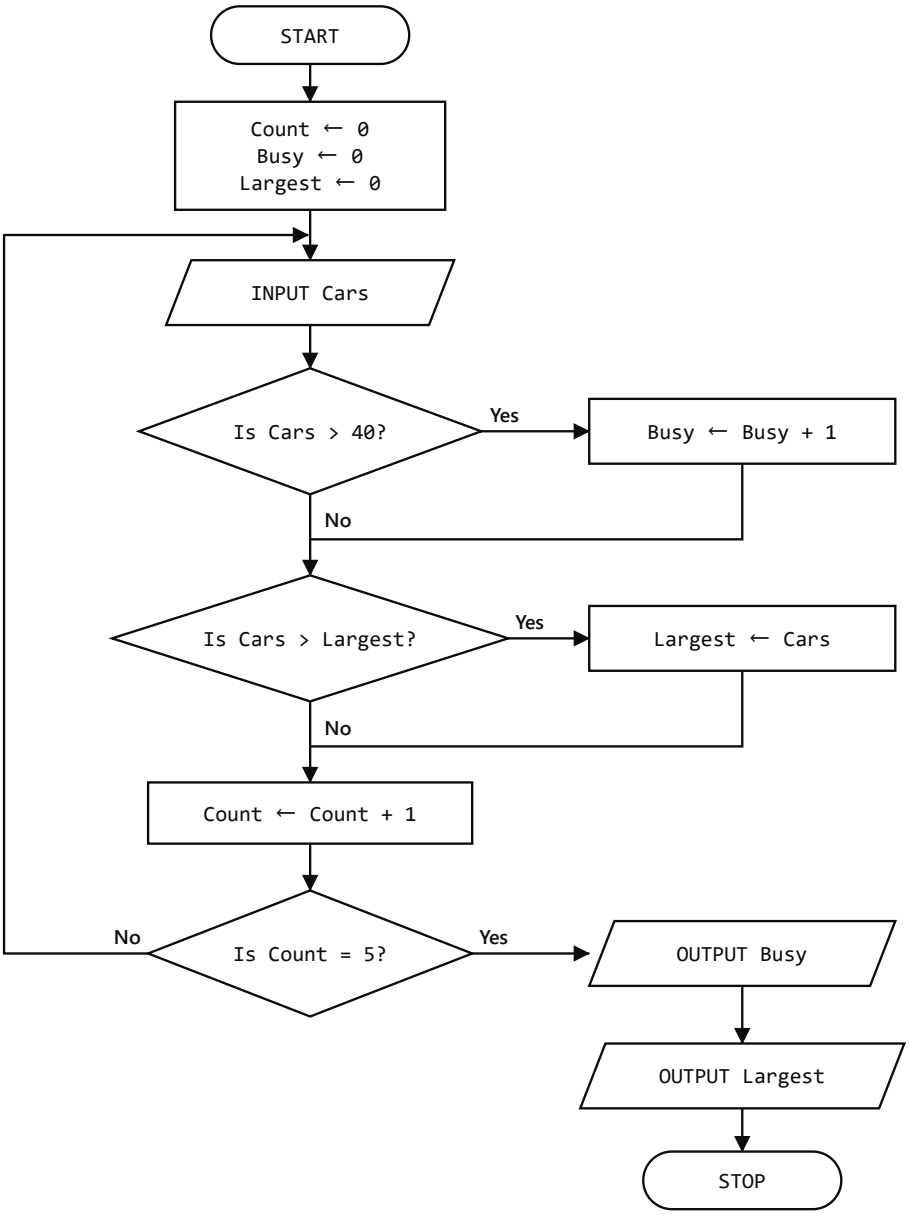
Shows a call to a separate flowchart that is not joined to this one

Shows where the algorithm starts or where it stops

Shows a question with two possible outcomes, such as Yes or No

2 **Total: 7 marks**

The flowchart represents an algorithm used by a ferry company. It inputs the number of cars carried on each of five crossings.



(a) Complete the trace table for the algorithm using this input data: **[5]**

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38, 45, 22, 45, 41
```

Count	Cars	Busy	Largest	OUTPUT

(b) Describe the purpose of the algorithm. **[2]**

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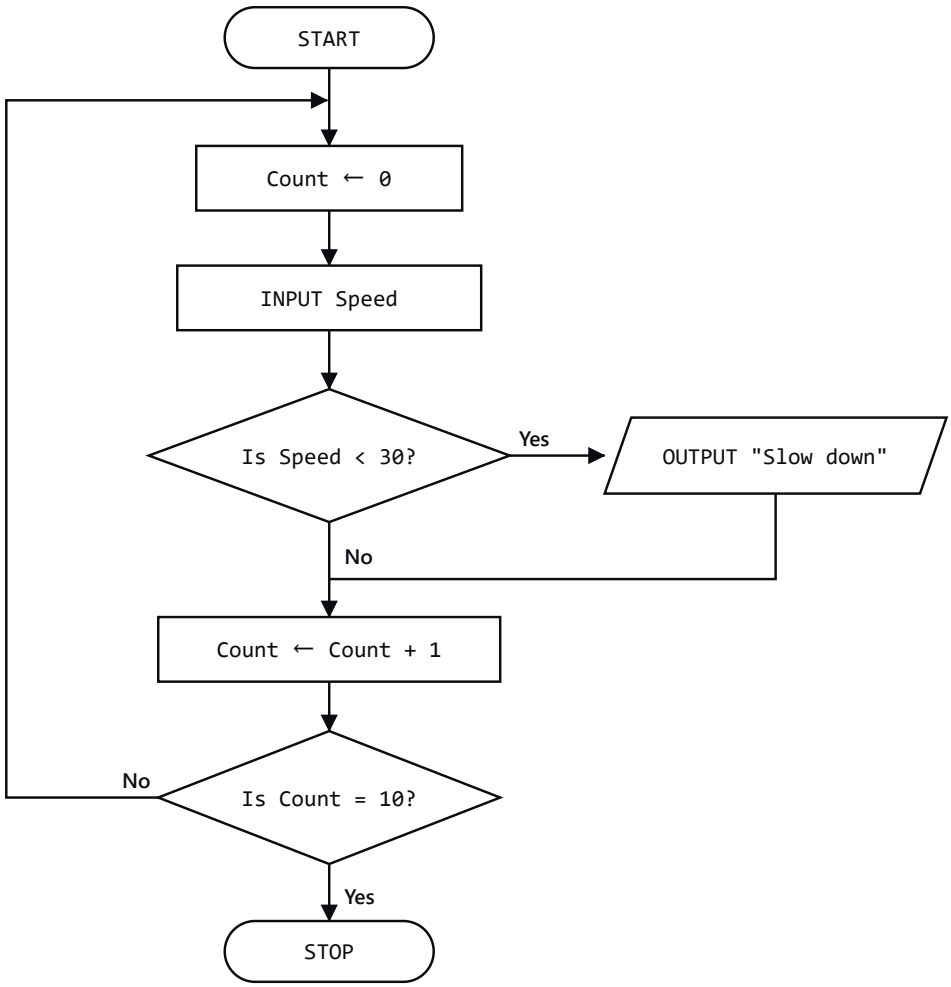
3 **Total: 3 marks**

The ferry company also wants the algorithm in Question 2 to output the total number of cars carried on the five crossings.

(a) Explain how the flowchart in Question 2 could be changed to do this. Any pseudocode used must be fully explained. **[3]**

4 **Total: 3 marks**

This flowchart should input the speeds of 10 vehicles passing a roadside sign. For each vehicle with a speed over 30, it should output `"Slow down"`. The algorithm should stop after 10 speeds have been input. The flowchart contains **three** errors.



(a) Identify the **three** errors in the flowchart and suggest a correction for each error. **[3]**

Error	Correction

5 **Total: 5 marks**

A fitness centre gives its members points for exercise.

(a) Draw a flowchart for an algorithm to: **[5]**

- input the number of minutes a member exercised
- check that the number is between 1 and 180 inclusive and, if it is not, output an error message and input the number again
- calculate the points as the number of minutes divided by 10, using integer division (`DIV`)
- output the points.

Total for this worksheet: 22 marks