爱德思

Decision Mathematics 1

分类真题

2014-2022 册

A Level Clouds 出品

目录

Chapter 1

Algorithms

1.

11 17 10 14 8 13 6 4 15 7

(a) Use the bubble sort algorithm to perform **ONE** complete pass towards sorting these numbers into **ascending** order.

(2)

The **original** list is now to be sorted into **descending** order.

(b) Use a quick sort to obtain the sorted list, giving the state of the list after each complete pass. You must make your pivots clear.

(4)

The numbers are to be packed into bins of size 26

(c) Calculate a lower bound for the minimum number of bins required. You must show your working.

(2)

(Total 8 marks)

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Q2: 2014/June/D1

1.

McCANN
SMITH
QUAGLIA
CONGDON
EVES
PATEL
BUSH
FOX
OSBORNE

(a) Use a quick sort to produce a list of these names in alphabetical order. You must make your pivots clear.

(4)

(b) Use the binary search algorithm on your list to locate the name PATEL. State the number of iterations you use.

(3)

The binary search algorithm is to be used to search for a name in an alphabetical list of 641 names.

(c) Find the maximum number of iterations needed, justifying your answer.

(2)

(Total 9 marks)

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3.

1.1 0.7 1.9 0.9 2.1 0.2 2.3 0.4 0.5 1.7

(a) Use the first-fit bin packing algorithm to determine how the numbers listed above can be packed into bins of size 3

(3)

The list is to be sorted into **descending** order.

(b) (i) Starting at the left-hand end of the list, perform **one** pass through the list using a bubble sort. Write down the list that results at the end of your first pass.

(ii) Write down the number of comparisons and the number of swaps performed during your first pass.

(4)

After a second pass using this bubble sort, the updated list is

1.9 1.1 2.1 0.9 2.3 0.7 0.5 1.7 0.4 0.2

(c) Use a **quick sort** on this updated list to obtain the fully sorted list. You must make your pivots clear.

(4)

(d) Apply the first-fit decreasing bin packing algorithm to your fully sorted list to pack the numbers into bins of size 3

(3)

(Total 14 marks)

1.1 0.7 1.9 0.9 2.1 0.2 2.3 0.4 0.5 1.7

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