

淡江大學八十九學年度碩士班招生考試試題

134

系別：資訊管理學系

科目：資料結構

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1. If overflow in a static hash table is handled by linear probing, please describe how the function DELETE works, which deletes a record from the hash table. (15%)
2. (a) Show the result of inserting 5, 3, 6, 8, 11, 4, 7, 9 into an initially empty binary search tree
(b) Show the new tree after deleting the root (10%)
3. Given the following recursive function $S(n)$ for $n \geq 1$. Please explain the final value of $S(n)$.
$$S(n) = \begin{cases} 1, & n = 1 \\ n + S(n-1), & n > 1 \end{cases} \quad (10\%)$$
4. The max heap H contains four numbers 1, 2, 3, 4. Please show all the possible configurations of H . (10%)
5. In a max heap, (15%)
 - (a) where is the largest element?
 - (b) where might the second largest element be located?
 - (c) where might the smallest element be located?
6. Please discuss the relative advantages and disadvantages of a Heap Sort over a Quick Sort? (15%)
7. n integers are stored in an array $list[n]$ and the contents of $list$ is not allowed to be changed all the time. Please develop a most efficient method to find the largest integer in $list$ using your indexing structure and analyze your method in terms of space and time complexities. (25%)