

國立中央大學97學年度碩士班考試入學試題卷

所別：生物資訊與系統生物研究所碩士班 一般生 科目：計概與資料結構 共 1 頁 第 1 頁

學位：在職生

*請在試卷答案卷(卡)內作答

- 1 Assume a long string s of length n consist of **binary values** (ex: pictures or video stream). Discuss 2 different algorithms to search the string s for a particular sub-string t of length m . (Creating a data structure/file for searching such as index/tree is allowed). Discuss the following items:
 - 1.1 Brief introduction of the algorithms (5 points each).
 - 1.2 Complexity of the algorithms (5 points each).
 - 1.3 The pros and cons of the algorithms (10 points each).
- 2 Assume a long string s of length n consist of **only limited number of characters** (ex: DNA or protein sequences). Discuss 2 different algorithms to search the string s for an extract sub-string t of length m . (Creating a data structure/file for searching such as index/tree is allowed). Discuss the following items:
 - 2.1 Brief introduction of the algorithms (5 points each).
 - 2.2 Complexity of the algorithms (5 points each).
 - 2.3 The pros and cons of the algorithms (10 points each).
- 3 Assume a long string s of length n consist of **only limited number of characters** (ex: DNA or protein sequences). Discuss an algorithm to search the string s for a **un-extract pattern string** t of length m . (That is, the search result substrings of s may not 100% equal to t). Discuss the following items:
 - 3.1 Brief introduction of the algorithm (5 points each).
 - 3.2 Complexity of the algorithm (5 points each).
 - 3.3 The pros and cons of the algorithm (10 points each).

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