

2002 Paper 10 Question 5

Data Structures and Algorithms

Some languages allow the user to allocate and free space explicitly using calls such as `malloc(size)` and `free(ptr)`. The blocks of space are typically allocated from a large region that you can assume is a vector.

- (a) Discuss the issues that must be considered when deciding how to implement such space allocation functions. [6 marks]
- (b) Outline the design of a standard algorithm for space allocation using the first fit strategy, and outline an algorithm based on the binary buddy system in which block sizes are rounded up to the next power of 2. [7 marks each]