Title (en)

A DATA STRUCTURE, MEMORY ALLOCATOR AND MEMORY MANAGEMENT SYSTEM

Title (de)

DATENSTRUKTUR, SPEICHERZUTEILER UND SPEICHERVERWALTUNGSSYSTEM

Title (fr)

STRUCTURE DE DONNEES, DISPOSITIF D'ATTRIBUTION DE MEMOIRE ET SYSTEME DE GESTION DE MEMOIRE

Publication

EP 1327194 A2 20030716 (EN)

Application

EP 01974469 A 20011010

Priority

- GB 0104506 W 20011010
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Abstract (en)

[origin: WO0231660A2] We present a Best Fit allocator for dynamic memory management. Portions of the memory that are presently unused are call free cells, and each free cell has a size. The allocator uses a bitmap which, for each number of predetermined sizes, indicates whether free memory cells of that size exist. It also employs a second data array with an entry for each of the predetermined cell sizes. When one or more free cells of a given size exist, the corresponding entry of the data array is a pointer to one of those free cells. The free cells themselves contain pointers to other free cells of the same size, or to free cells that are slightly smaller or larger. The allocator is scalable, in that the worst-case behaviour is independent of the size of the heap, and is independent of the number of free cells and of the number of cells already in use for memory storage. It is also incremental and non-disruptive, in that each memory operation (including splitting and coalescing of free cells) is guaranteed to complete within a small bounded time. We also present a novel collector and a priority queuing mechanism that operate on principles similar to those of the allocator.

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