1.9:

Direct memory access is used for high speed I/O devices in order to avoid increasing the CPU’s execution load.

•(a) How does the CPU interface with the device to coordinate the transfer?

啟用DMA控制器，由CPU給予匯流排資料傳輸的權限，DMA控制器不須經過CPU而能在設備與記憶體之間進行資料傳輸，達到減少CPU工作量與提高系統性能。

•(b) How does the CPU know when the memory operations are complete?

CPU會收到來自DMA控制器發出的interrupt信號，並且先執行interrupt需要處理的程序，再回到CPU原本的處理狀態。

•(c) The CPU is allowed to execute other programs while the DMA controller is transferring data. Does this process interfere with the execution of the user programs? If so, describe what forms of interference are caused.

DMA控制器在傳輸資料時，如果CPU也同樣需要訪問記憶體，會導致衝突產生，CPU需要等DMA控制器處理完資料傳輸後才能訪問記憶體，進而降低系統性能。