(35)

A DATA PROCESSING SYSTEM HAVING A SELF-ALIGNING STACK POINTER AND METHOD THEREFOR

Abstract of the Disclosure

A data processor (3) implements a single system stack pointer (244) to create records of both supervisor and user stack operations when hardware support for misalignment of such stack operations is optional. The single system stack pointer is implemented as a self-aligning stack pointer which automatically aligns itself to a nearest 0-modulo-4 address below a current address setting such that no alignment system errors occur even when there is no hardware support for misaligned operands. Once the automatic alignment has occurred, the data processor stores a format field in an exception stack frame to indicate information about the alignment of the stack pointer at the time of the error. When the exception has been serviced, the processor uses the four bit format field stored in the exception stack frame to restore the stack pointer to its original value at the time of the exception.

Figure 4 accompanies this abstract.