ABSTRACT

(Figure 1)

A MULTISTAGE LEADING ZERO DETECTOR AND GATE GENERATOR APPARATUS

A multistage leading zero detector for use in left-shift normalization of floating-point mantissas is described. Detection of the leading one is accomplished by segmenting the mantissa into non-overlapping segments. The most significant segment containing a non-zero value bit is detected causing the activation of an output line corresponding to the segment position within the mantissa. A second level of detection selects the designated most significant segment and detects the position of the most significant non-zero bit within the segment causing activation of a line within a second set of lines, each corresponding to a bit position within a segment. This leading zero detector is combined with a multi-stage left-shifted unit to form a complete left-shift normalization unit.