

in fact, the slow IOT routines return to the user program by means of a special "return" IOT that moves the user registers from user memory back to the special interrupt locations and then debreaks.

IOT's communicate with the user programs in several ways. Many IOT routines transfer information through two special hardware registers accessible to all programs, the "Accumulator" and the "I-O register." In addition, some IOT's cause information to be transferred to user-program buffer areas; these areas are frequently defined by a prespecified block of pointers immediately following the privileged instruction in the user program. Other IOT's indicate the success or failure of an attempted operation by returning to the user program at one of a series of prespecified points, normally the first, second, third, or fourth location following the privileged instruction. The IOT to "reserve the paper-tape punch," for example, will return to the first location after the privileged instruction if the punch is already reserved by some other program, or to the second location if the punch has been successfully reserved.

A few IOT's are designed to delay execution of the user program for a given length of time or to restart a user program at a specific time. These time-dependent functions require the IOT routines involved to have some knowledge of the passage of time in the real world. For this reason, there are two clocks which interact with these routines, a one-second clock and a one-minute clock. The one-second clock is used to measure delay times and the one-minute clock allows the Executive to keep track of the time of day.

Some privileged instructions, of course, will be errors in the