
About the Time Manager

You can use the **Time Manager** to schedule execution of a routine after a specified amount of time has elapsed. The **Time Manager** topics includes all the information about the original Time Manager, as well as additional information about the revised **Time Manager** included with system software version 6.0.3 (and later) and about the extended **Time Manager** included with system software version 7.0 and above.

Because different versions of the **Time Manager** are available under different system software versions, your application may need to determine which version is available in its current operating environment. To do so, you can use the **Gestalt** function explained in the **Compatibility Guidelines**.

To use this information, you should already be familiar with

- operating-system queues
- the **Vertical Retrace Manager**

You need to know about operating-system queues because all **Time Manager** routines involve inserting entries into a queue and then activating or removing queued entries. You should be acquainted with the **Vertical Retrace Manager** because it provides an alternative (and sometimes preferable) method for scheduling routines for future or periodic execution.

The primary service that the **Time Manager** provides to applications is a method for scheduling routines to execute at a later time. By suitably defining the task that later executes, you can use the **Time Manager** to accomplish a wide range of time-related activities. For example, because one of the actions a routine can perform is to reschedule itself for later execution, the **Time Manager** provides your application with a means to perform periodic or repeated actions. You can use the **Time Manager** to

- schedule routines to execute after a specified delay
- set up tasks that run periodically
- compute the time a routine takes to execute
- coordinate and synchronize actions in the Macintosh computer

The **Time Manager** provides a hardware-independent method of performing these and other time-related tasks. You should use the **Time Manager** instead of cycle-counting timing loops, which can vary in duration because they are dependent upon clock speed and interrupt-handling speed. Furthermore, on machines with 68020 or 68030 microprocessors, it is almost impossible to rely on cycle-counting loops because instructions may be both cached and pipelined. In such cases, it is very difficult to tell what part of the instruction cycle the machine is currently in.

To use the **Time Manager**, you must first issue a request by passing the **Time Manager** the address of a task record, one of whose fields contains the address of the routine that is to execute. Then you need to activate that request by specifying the delay until the routine is to execute. The **Time Manager** maintains requests that you issue in a queue, whose

structure is similar to that of standard Macintosh operating-system queues. Any number of outstanding requests can be in the **Time Manager** queue, and each application can add any number of entries to the queue. If several requests happen to schedule routines for execution at exactly the same time, those routines will execute as close to the scheduled time as possible, in the order in which they entered the **Time Manager** queue.

The routine you place in the queue can perform any desired action so long as it does not call the **Memory Manager**, either directly or indirectly. You cannot call the **Memory Manager** because **Time Manager** tasks execute at interrupt time.