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## MultiClock

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Freeware - no liability accepted. Use at your own risk.

Platform compatibility: Win95/98/ME/2000/XP  
(*untested in Vista/Win7/Win8 but should work*)

MultiClock is a multi-function clock and timer. It has standard configurations to function as a simple clock, alarm clock, stop-watch, countdown timer, or a time-keeper in games with multiple players, such as a [chess](#) clock or [timer](#) for croquet or [speed croquet](#). In the croquet options it can handle independent timing for [double-banked games](#) on a single court. It can operate up to 99 separate timers, either stopping and starting independently (up to 9 only) or cycling in sequence.

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Number of timers

1

1

1

1

2 independent

2 alternating

2 alternating

2 alternating

2 independent pairs of 2 alternating

1 - 9, either independent or cycling

1 - 99, cycling in sequence

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## General operations

The timer fonts are sized automatically to be as large as possible within the MultiClock window, which starts by default as a full-screen window.

- The window size can be changed at any time while the timers are running.
- The timers can run in either foreground or background (i.e. behind another window).
- The various count-down options cause an alarm to sound and the screen to flash when the end of the count-down is reached. For count-downs with multiple timers there is an alarm for each timer.
- Active timers continue to run while the configuration menu is in use. They are only replaced by the new configuration when 'OK' is selected. 'Cancel' reverts to the previous timer operation, except on start-up when it causes the program to terminate.
- The computer is prevented from entering a standby or hibernation mode if any of the clocks are running.
- For the croquet options with independent, double-banked games the keyboard can be thought of as being divided into two areas which can be operated independently:
  - Game 1: CapsLock, Esc (on the left of the keyboard), PageUp, PageDown
  - Game 2: Enter, Pause (on the right of the keyboard), CursorUp, CursorDown

## Keyboard operations - all modes

The following keyboard operations are available in all modes:

(a) The standard system keys or hot-keys, including:

Alt+F4          terminate the program (removes all timers)

(b) Program keys:

F1                Help

F12              About...

Alt+T            Timer menu (reset or exit)

Alt+C            Configuration menu

Alt+H            Help / About menu

Ctrl+R          Reset to initial values and stop all timers (except for the standard Clock)

## Count-down Timer

In this mode, a single timer counts down from a starting point defined by the user (default: 3 hours). An alarm sounds and the screen flashes when it reaches zero, and the timer stops.

This mode is suitable for timing a standard game of croquet.

In addition to the [standard keys](#), the following keys are active:

Esc	stop
Pause	stop
Caps Lock	start
Enter	start
Space-bar	start

See also [Croquet, two games double-banked](#).

## Croquet, two games double-banked

In this mode there are two independent timers, one per game. Both count down to zero from a pre-defined starting-point (default: 3 hours). When each timer reaches zero an alarm sounds, the screen flashes and the timer stops.

The timers can be stopped and started independently of each other. (Stopping once started would rarely happen in practice, however.)

In addition to the [standard keys](#), the following keys are active:

### **Game 1 (blue+black vs. red+yellow)**

Esc	toggle pause/(re)start
Caps Lock	start

### **Game 2 (green+brown vs. pink+white)**

Pause	toggle pause/(re)start
Enter	start

See [Count-down Timer](#) for a single croquet game.

## Speed Croquet, primary colours

Timing for speed croquet is similar in most respects to [chess](#), and the keyboard operations are basically the same. The only significant difference are that

- When one Speed Croquet team's time is expired the game can still continue until the second team's time also runs out or one of the teams pegs out. Also time-outs in speed croquet are somewhat more common, if a referee needs to be called. The default duration per team is the last-used value, or 45 minutes on first use.
- The clocks for Speed Croquet can be adjusted with time penalties so that they are not necessarily the same as each other at the start of a game. Extra keyboard operations are provided to facilitate this.

In addition to the [standard keys](#), the following keys are active:

### When both clocks are paused:

Tab	switch selection between clocks (flagged with '*')
Ctrl+PageUp	add 30 seconds to the clock flagged with '*'
Ctrl+PageDown	deduct 30 seconds from the clock flagged with '*'
Ctrl+CursorUp	add 1 second to the clock flagged with '*'
Ctrl+CursorDown	deduct 1 second from the clock flagged with '*'

### When both clocks are paused OR one is running:

Space-bar	(re)start, then alternate between teams } first team to play defaults
Enter	(re)start, then alternate between teams } to <b>blue+black</b>
but can be	
Caps Lock	(re)start, then alternate between teams } changed using the Tab key
PageUp	start the <b>blue+black</b> clock, stop the <b>red+yellow</b> clock
PageDown	start the <b>red+yellow</b> clock, stop the <b>blue+black</b> clock
CursorUp	start the <b>blue+black</b> clock, stop the <b>red+yellow</b> clock
CursorDown	start the <b>red+yellow</b> clock, stop the <b>blue+black</b> clock
Pause	toggle pause/(re)start the selected clock
Esc	toggle pause/(re)start the selected clock

Space-bar, Enter or Caps Lock will start or restart the clock flagged with '\*'. If a game is paused after starting, this will default to the same clock that was last running. To restart the other clock instead, use the Tab key followed by Space-bar/Enter/Caps Lock, OR use the PageUp/Down or CursorUp/Down keys as required (see above).

Note that the adjustment of time remaining using the Ctrl+... keys can only be done while both clocks are paused. However, no reduction will be made if a clock has insufficient time remaining. If time penalties are transferrable, no adjustment to either clock will be made if one of them has insufficient time remaining.

If both Ctrl and PageUp/Down or CursorUp/Down keys are pressed and held down (while a game is paused), time adjustments will be repeated until the keys are released or a clock runs out of time. The speed of repetition depends on the user's system setting for keyboard repeat rate.

## Custom options

With the Custom configuration you can vary several of the configuration defaults:

- The number of timers can be set between 1 and 99. (If you choose 0 it defaults to 1.) However, if you choose more than 9 you can not stop or start all the timers at random - you have to cycle between them.
- If “Alarm on” is checked an alarm will sound at the end of each timer’s countdown. If not, the countdown for each will end silently.
- If “Operate independently” is checked you can operate the timers independently of each other. This means that each timer can be started or stopped by pressing the appropriate number key. For example, pressing the key “8” would start and stop timer 8. In this mode you can also use the following keys:

Enter	start all timers together
Esc	stop all timers together
Pause	stop all timers together
- Count down to zero from the specified duration, or count up from zero (no alarms with the latter).
- Display hundredths of a second on all timers. (This is the default setting only for the standard stop-watch.)

Note however that in Custom mode the display is always black-and-white.

## Accuracy

The internal program timers use a timing resolution of 1 millisecond, regardless of whether the hundredths of a second are displayed or not. However, the accuracy of the timer depends ultimately on

- (a) the accuracy of the hardware clock running in the PC itself - typically this should be accurate to 1 second per hour or better;
- (b) the timing accuracy with which the user hits the keyboard; this is unlikely to have an accuracy better than about 0.1 second, so to be realistic the hundredths of a second displayed should be regarded as subject to user error.

The accuracy should not be significantly affected if there are other applications running at the same time. However, to avoid the possibility of minor delays to the screen update and alarm it is best to avoid substantial parallel activity on the PC.

If the MultiClock window is minimised then the timers are updated at a reduced frequency of once per second, in order to improve the performance of other applications that might be running. Therefore any alarms set in MultiClock might sound up to a second late. If the MultiClock window is restored then the timer updates revert to a higher frequency for better accuracy.

Depending on the PC hardware, there can also be a small lag after reaching the trigger point before the alarm actually starts to sound, so for accurate timing operations it is better to rely on the timer display on the screen. (This delay is typically a fraction of a second while the operating system loads files from the hard disk in order to actually play the alarm sound.)