Università della Svizzera italiana

Faculty of Informatics

Operating Systems

PintOS: Report Project **2**

Group #1
Ivan Linninkov, Mariia Batalkina

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Report Instructions

- Please report **all** changes, even if minor, that you did to complete the project.
- You have to list all files that have been modified, and for each of them, list all functions/structs that have been modified or added (clearly stating "modified"/"added"). Then add a brief explanation or motivation for all those changes.
- A single report is required for each group. For the first individual project, each student submits a report together with the source code files that were changed.

1 Files changed

- /pintoso/pintos-env/pintos/devices/timer.c
- /pintoso/pintos-env/pintos/threads/threads.c
- /pintoso/pintos-env/pintos/threads/threads.h

2 Changes

/pintoso/pintos-env/pintos/devices/timer.c

- `timer_interrupt()` (*modified*):

  It does the same thing as the previous one did but additionally it retrieves the current tick count using `timer_ticks()` and calls `thread_wakeup()` with the current tick count as an argument. This way, we have done better multithreading.

/pintoso/pintos-env/pintos/threads/threads.c

- `thread_sleep(int64_t ticks)` (*modified*):

  This function puts the current thread to sleep for a specified number of timer ticks. It takes the number of ticks as an argument. It disables interrupts, sets the wakeup time for the current thread, inserts the thread into the `sleep_thread_list` ordered by wakeup time, increments the `sleep_count`, and then blocks the thread.

- `thread_wakeup(int64_t ticks)` (*modified*):

  This function wakes up any threads that have reached their wakeup time. It is called from an interrupt context (meaning interrupts are disabled when it's invoked). It iterates through the `sleep_thread_list`, checks if any thread's wakeup time has passed (less than or equal to the current ticks), removes such threads from the list, decrements the `sleep_count`, and unblocks those threads. These two functions enable the implementation of thread sleeping and waking up, allowing threads to wait for a certain period before resuming execution.

/pintoso/pintos-env/pintos/threads/threads.h

- `thread_sleep(int64_t ticks)` (*modified*):

  Same as in the one before.

- `thread_wakeup(int64_t ticks)` (*modified*):

  Same as in the one before.