CS 310 In-Class Activity: Using the System Timer

Spring 2021

February 16, 2021

1 Introduction

In this activity, you are going to use the system timer to create delays. The Raspberry Pi's system timer is a free-running couter that increments a count register once every microsecond[1] starting from zero at boot. The count register is an eight-byte register located at address `0x3f003004`. We can read from the count register to find out how many microseconds have elapsed since boot:

```
1  unsigned long get_timer_count() {
2      unsigned long *timer_count_register = 0x3f003004;
3      return *timer_count_register;
4  }
```

Task 1: call `get_timer_count` from your `kernel_main` function. Use `gdb` to inspect the value of the count register.

Task 2: write a function that waits for 1ms[2] by reading the system timer.

[1] 1 μs is one millionth (10^{-6}) of a second.
[2] 1ms = 1000μs.