

1 Introduction

In this lab we will be porting FreeRTOS onto the AT91SAM7L-STK microcontroller. FreeRTOS is an open source RTOS engine with ports for several microcontrollers. However, there is no port or version with the specific configuration (correct register use, complete I/O configuration, etc.) for the AT91SAM7L microcontroller. The closest port that we can use as a starting point is for the AT91SAM7S64 core. We will be working as a class to implement the RTOS on the AT91SAM7L together because the work can be tedious. Links to references are provided below:

- FreeRTOS: www.freeRTOS.org
- Quick Start Guide: www.freertos.org/FreeRTOS-quick-start-guide.html
- Download RTOS.zip: <http://downloads.sourceforge.net/freertos/FreeRTOSV5.1.0.zip>
- Source Organization: <http://www.freertos.org/a00017.html>
- Porting to other hardware: <http://www.freertos.org/porting-a-freertos-demo-to-different-hardware.html>

2 Lab Procedure

- 2.1 Read the FreeRTOS documentation from the links above**
- 2.2 Follow the instructions for porting to other hardware to implement FreeRTOS on the AT91SAM7L**
- 2.3 Create an application that toggles PIOC output pins on the AT91SAM7L with a different RTOS process for each pin**
- 2.4 View the output of the pins using a logic analyzer**
- 2.5 Cause the RTOS to miss its deadlines and observe the impact on the square waves**

3 Lab Report

Lab report questions will be determined during the lab section and made public for you to answer. Please stay tuned.