Embedded Systems

Exercise 7

Introduction

The aim of the laboratory is to acquire the skills of data caching using abstract data structures. Within this task a simple FIFO queue (discussed during the ES lecture) for data transmission using LPUART should be implemented.

Requirements for the application

Using the program developed in Exercise 6, design the FIFO queue to buffer received ASCII characters from the terminal according to the provided specification:

- Implement all functions necessary to initialise and use FIFO buffer, e.g. FIFO_Init (), FIFO_Get () and FIFO_Put (), etc.
- The FIFO buffer should allow storing number of elements defied by FIFO_SIZE define.
- Data received from LPUART should be stored in FIFO.
- The contents of the FIFO should be printed on terminal when New Line character is received from LPUART.
- When there is no more data available in the FIFO a suitable message should be sent (“FIFO full”) and all data from FIFO should be printed on the terminal.
- Do not use interrupts in this program. Use polling mechanisms to check if data was received or sent.

Additional information

- Communication should be configured to 8N1 mode (8 data bits, no parity, 1 stop bit).
- The baud rate should be configured to 115200
- PuTTY is a console application that can be used on the PC to communicate over the UART interface