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Dept. of Electrical & Electronic Engineering
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# Fault Tolerant Systems

## FTS 410

# LAB Assignment

## Lab Assignment 1 — Due: week 3

Connecting two computer systems via a serial line is one of the most simple connections possible. Consider an embedded system connected to a PC via a serial line (115,200 Baud):

- The embedded systems sends continuously data packets to the PC.
- Data format is "%3.1f %3.1f\n", so always one line of data with 11 characters is sent. Data values are 0.0 to 100.0 . The data rate is 10 packets per second.
- Each data packet represents a position value in 2D of a mobile robot in metres, travelling at a max. speed of 10 m/s.
- Display the current robot position graphically in a window, together with a message counter, time elapsed between two packets, and a "pause" and "exit" button (use: www.fltk.org)

First, make sure your program is running correctly with the embedded system running without a fault. After that, make your PC program fault-tolerant in the sense that it will detect faults and will continue to run even if the embedded system will exhibit different faults. These faults could be in the line connection (e.g. serial line being disconnected/reconnected) or in the data being transmitted (incorrect data).

With your source code, submit a list of possible faults that could occur in the embedded system (or the serial line connection) and describe the approaches you have taken to overcome each individual fault.

For testing, you may want to modify the correct program of the embedded system to introduce faults.