ELT-ESE-3 DSBL

Digital Signal processing practical work

HAN Electrical Engineering/Embedded Systems

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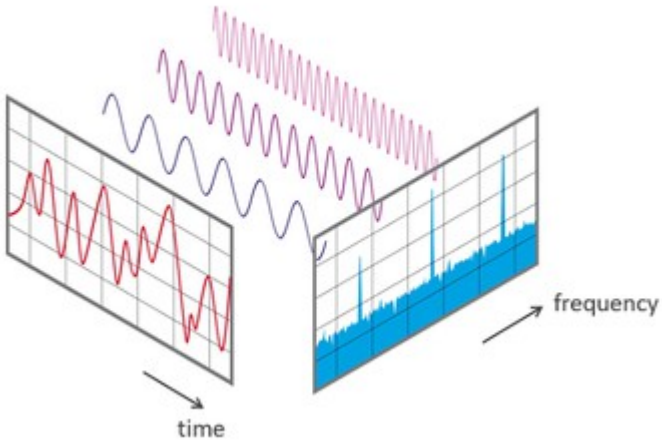
Assignment 3: Implement a desktop FFT application



Goal

To write an application that makes it possible to examine the frequency image of three types of test signals in the time domain.

Time

4 weeks.

Required matters

Workstation in B1.29 / B1.33.

Theory book.

WxWidgets online manual at http://www.wxwidgets.org

Written and tested classes from Assignment 1.

Description

Write an application that makes it easy for the user to set a test signal, and then view this test signal in the frequency domain

The signal must be set according to the following four characteristics:

- form (cosine, triangle, square wave or read from data file)
- signal frequency
- sampling frequency
- number of periods

The frequency image is generated using the FFTW toolkit. This is installed on the workstations as standard. For information and submapumentation, visit the FFTW website at http://www.fftw.org.

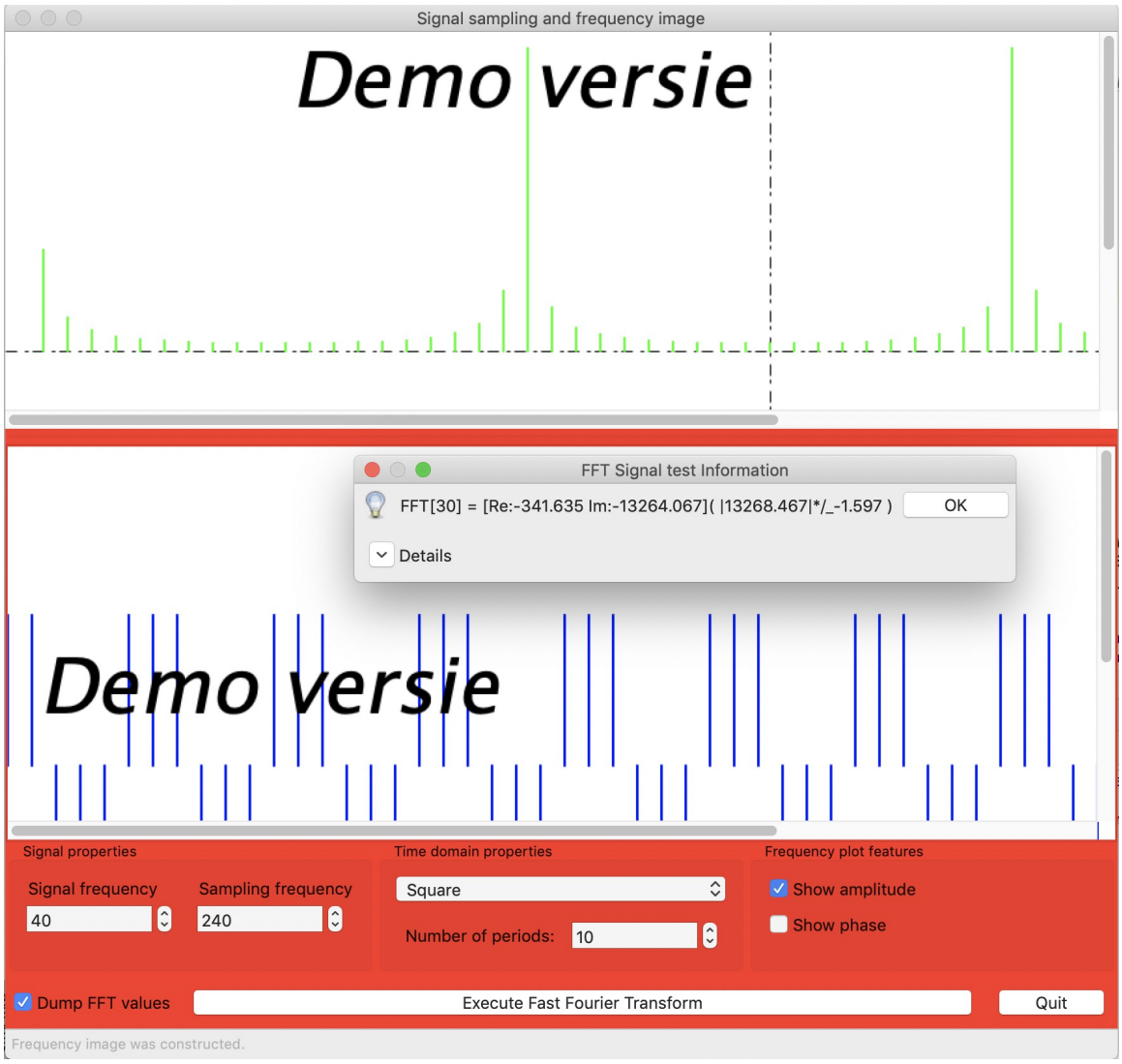
Further requirements are:

- The program must be written in the C ++ language.
- The wxWidgets toolkit is used for the graphical interface.

Assignment

You have to extend the sample code already supplied to a whole that works according to the description given above.

With a working application, an image similar to the following demo image will be visible:



As with assignment 2, a demo version can be requested from the teacher for comparison.

Delivery

Show the teacher the working application.

Write a small report, containing the following:

- source code application
- screendump of the working application

Delivery takes place together with the other assignments. However, do not proceed to the next assignment without verbal approval of the work with the teacher.