ELT-ESE-3 DSBL

Digital Signal processing practical work

HAN Electrical Engineering/Embedded Systems

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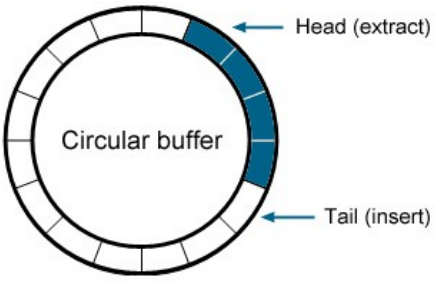
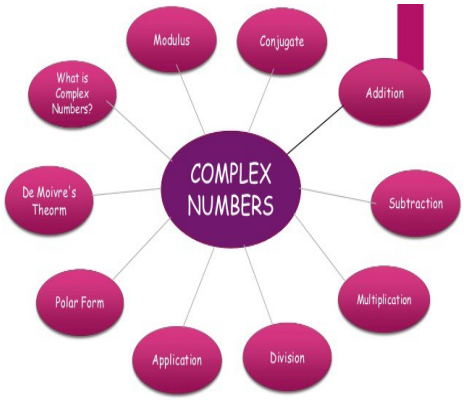
Assignment 1: Design and implementation of basic classes for Digital Signal Processing





Goal:

Write a number of classes that makes DSB software easier to implement.

Time:

2-3 weeks.

Requirements:

- Workstation in B1.29/B1.33
- The general instructions for the practical work must have been read.
- “Lynn & Fürst” theory book.
- C++ tips (zie C++ for C programmers).

Description:

You have to write a number of classes, which makes DSB software easier to implement. These classes provide functionality that comes back in many DSB applications.

The classes that are required in the assignment are :

- **A circular buffer class**. A circular buffer is a buffer that has no beginning and no end, but in which an infinite number of buffer values can be stored. The circular buffer (also called ring buffer) has a limited size, so that over time the oldest buffer element will disappear to make way for a new element.

  Complete the Template based Circularbuffer class as specified in the header file. Read all comments and determine the interpretation of the classes. In case of uncertainty, ask the teacher for an explanation!

- **A complex number class**. This class represents a complex floating-point number $z=x+jy$, and is *publicly* derived from the Imaginary number class.

Complete the Circular Buffer class, the Complex number class and the Polar number class in the header files dsbRingBuffer.h, dsbComplex.h and dsbComplex.cpp are specified. Every piece of software that needs to be completed is indicated with an error directive.

Check the output of the test program as specified in main () on correct outputs.

Building, compiling and executing the application

Refer tho the document PracticalWorkInformation for more information.

Delivery:

Show the teacher the working application. No report is required for this assignment.

Do not advance to assignment 2 without oral approval of the teacher.