EADS Laboratory 2
Double Linked Ring template
Report

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Intro

The project consists of 3 header files: “DLR.h” containing the data structure Double Linked Ring, “iterator.h” containing the iterator for the structure and “produce.h” which contains produce() function described below in the report. Implementation of all methods and functions is in the header files.

Template parameters

The template parameters are **Key** and **Info**.
Key parameter is used for identification of a single element of the sequence, **Info** is simply the data contained in the element.

Class DLR

Private part

```
typedef struct node
  {
     Key key;
     Info info;
     node *next;
     node* prev;
  }node;
  node *any;
  size_t length;
```

Structure node contains **Key** value, **Info** value and pointer to **next** and **previous** node.
Any is node pointer to the reference node.
Length is number of elements in the ring.

Constructors

DLR class contains default constructor with initializer list as well as copy constructor.

Operators

DLR class contains arithmetic operators such as +, assignment operator = and bool operators like ==, >= != and so on.

Constant functions

DLR class contains constant functions which are checking the contents of the ring, for instance isEmpty() or contain() which returns true if element with given Key and Info exists.

Modifying methods
DLR contains methods for inserting new element after any node, removing node with given key, removing the ring and so on.

Access elements
DLR contains public methods for accessing some private parts of data.

Produce() function
The function produce takes 10 parameters:
-DLR<Key, Info>& ring1 and DLR<Key, Info>& ring2 - two objects of DLR template,
-start1 and start2 integers which are positions in ring1 and ring2 from which the iterator will start,
-step1 and step2 integers which are lengths of subsequences of ring1 and ring2 added to new produced ring returned by this function,
-dir1 and dir2 bools are for indicating direction for the iterator in ring1 and ring2,
-dir bool indicates the direction for function produce to produce the ring clockwise or counterclockwise, (true = clockwise, false = counterclockwise),
-num integer - which is the number of times the function takes a subsequence from each of the two rings.

Basing on those parameters it takes those two rings and produces one new ring which it returns.

Class iterator
Iterator class contains an iterator for DLR. There are several operators defined in this class such as +(int), ++, -(int), --, =, == along with access functions, constructors, default destructor and isEmpty() function which checks if the iterator does not point at nullptr.