

Object-Oriented Programming

Deadline: 22 March 2011

1. Download the files `assert.h` and `nr02.cpp` from the course homepage.

Write a function

```
int nthchar( const mystring& s, unsigned int n )
```

that returns the n -th character of the string `s`, when it exists. Use `ASSERT()`, which is defined in file `assert.h`, to make sure that the program stops with an error, if n is too large.

2. Write a function `appendchar(mystring& s, int c)` that appends a character to the string `s`.

This method must have the following structure:

- (a) Check if there is enough space reserved in the string. If yes, then the character can be simply appended.
- (b) If not, then allocate a new contents block, which is twice as big as the previous. Copy the old contents to the new contents block. Delete the old contents block. Append the character to the new contents block. (All this has to happen without memory leaks.)

This task is worth 6 points.

3. Write a method `cleanup(mystring& s)`, which deallocates the memory occupied by `s`.
4. Test the functions of tasks 1,2 and 3 for memory leaks, using the test function between `#if #endif` in the main programme. and the `top` command.

(See the rules for showing code on the course homepage. Default value of a task (when shown on time) is 3 points.)