

Replace numbers		
Submission deadline:	2011-11-27 23:59:59	462027.427 sec
Evaluation:	0.0000	
Max. assessment:	5.0000 (Without bonus points)	
Submissions:	0 / 10 Free retries + 20 Penalized retries (-2 % penalty each retry)	
Advices:	0 / 2 Advices for free + 2 Advices with a penalty (-10 % penalty each advice)	

The problem is to implement a function to replace integer numbers with their respective textual representation. The function interface is:

```
char * replaceNumbers ( char * str );
```

str

is the input string, ASCIIZ (zero terminated). The string may be quite long. The function may read the string, however, it shall not modify it.

return value

the function shall return the input string with the replacements. The output string shall be dynamically allocated using `malloc()` function (do NOT use C++ `new` operator). The caller (e.g. the testing environment) will process the string and will free it using `free()` function.

The replacements are strict: only integer numbers separated by a space or a newline shall be replaced. Remaining text (including words with digits or numbers left or right connected to a word) shall be copied without modifications. The textual representation must follow the usual English rules (see examples below).

Submit a source file containing the implementation of the `replaceNumbers` function. The source file must contain the function itself and all your supplementary functions needed (called from) the function. On the other hand, the source file shall not contain `#include` preprocessor directives and `main` function (if the `#include` definitions and `main` function are inside a conditional compile block, they may stay in the submitted file). Use the code below as a basis for your development. If the preprocessor definitions and conditional compilation remain unmodified, the file may be submitted to the Progtest.

```
#ifndef __PROGTEST__
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <ctype.h>
#endif /* __PROGTEST__ */

/* your supplementary functions (if any) */
char * replaceNumbers ( char * str )
{
    /* implementation */
}

#ifndef __PROGTEST__
int main ( int argc, char * argv [] )
{
    /* your tests */
}
#endif /* __PROGTEST__ */
```

Your implementation will be included in a testing environment. There will be both time and memory limits when testing your implementation. Neither shall cause any problem with this problem. Pointers will be used to solve this problem, you shall pay special attention to their correct use. You may need to resize buffers for the output value. Do not increase the size by just few bytes. It is recommended to increase the buffer size using geometric series.

Sample function usage:

```
char * r;

r = replaceNumbers ( "CVUT FIT was founded on July 1 2009" );
/* r = "CVUT FIT was founded on July one two thousands nine" */
free ( r );

r = replaceNumbers ( "PA1 is my favorite subject, rating 5 out of 5." );
/* r = "PA1 is my favorite subject, rating five out of 5." */
free ( r );

r = replaceNumbers ( "The range of int data type is -2147483648 to 2147483647 inclusive." );
/* r = "The range of int data type is minus two billions one hundred and forty \
seven millions four hundreds and eighty three thousands six hundreds and forty \
eight to two billions one hundred and forty seven millions four hundreds and \
eighty three thousands six hundreds and forty seven inclusive." */
free ( r );

r = replaceNumbers ( "Number 123123 is a multiple of 1001" );
/* r = "Number one hundred and twenty three thousands one hundred and twenty three is a multiple of one thousand one" */
free ( r );

r = replaceNumbers ( "Chuck Norris and sometimes 007 are able to solve all Progtest homework problems in take #1" );
/* r = "Chuck Norris and sometimes seven are able to solve all Progtest homework problems in take #1" */
free ( r );
```

lee (1) ;

Submit:

Submit



Reference