Electrical Engineering and Information Technology, B.Eng.
Introduction to the C Programming Language: Exercises

Exercise Sheet 2

---

1. Exercise. Test the modulo-operator: set the values of two int variables a and b, compute the results of
   a / b and a % b
   and print the results on the screen.

2. Exercise. Test the following code sequence:

```
int     a, b, c, d;

        a = 2;
        b = 4;
        c = a/b;
        d = 1/c;
        printf("result = %d\n", d);
```

   What is the mathematical result? What is the result on your computer?

3. Exercise. a) understand and test the following program.

   b) Change the program, so that blanks and tabs at the end of a line are not counted.

```
#include <stdio.h>
#define  MAXLINE   100     /* maximal length of an input line */

/*** this file contains ***/
int  main   (void);
int  getline(char line[], int maxline);
void copy   (char from[], char to[]);

/* implementation */

int main(void)
/************************************************/
/*                                              */
/* Output the longest input line.               */
/* To end the program, enter a line which contains*/
/* only the character '$'                       */
/*                                              */
/************************************************/
{
int     len;                /* Length of the momentary input line */
int     max;                /* Maximum up to now                  */
char    line[MAXLINE];      /* momentary input line               */
char    longest[MAXLINE];   /* longest line up to now             */

      max = 0;
      while ((len = getline(line, MAXLINE)) > 0) {
            if (len > max) {
                  max = len;
                  copy(line, longest);
            }
      }
```

```
      if (max > 0) {         /* at least one line available       */
            printf("%s", longest);
      }
      getchar();
      getchar();
      return (0);
} /* END_main() */

int getline(char  s[],
            int   lim)
/*****************************************/
/*                                       */
/* Read a line into s and return the length */
/*                                       */
/*****************************************/
{
int c, i;

      for (i = 0; i < lim-1; i++) {
            c = getchar();
            if (((c == '$') && (i == 0)) || (c == '\n')){
                  break;
            }
            s[i] = c;
      }
      if (c == '\n') {
            s[i] = c;
            i++;
      }
      s[i] = '\0';
      return i;
} /* END_getline() */

void copy(char from[],
          char other[]   )
/***********************************/
/*                                 */
/* copy from[] to other[]          */
/*                                 */
/***********************************/
{
int   i;

      i = 0;
      while (from[i] != '\0') {
            other[i] = from[i];
            i++;
      }
      other[i] = '\0';
} /* END_copy() */
```