

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

Exercise Sheet 7

1. Define in a 'C'-program a char-array text[], a float variable f_memory and an int variable i_memory. Read with scanf() the following text and the numbers:

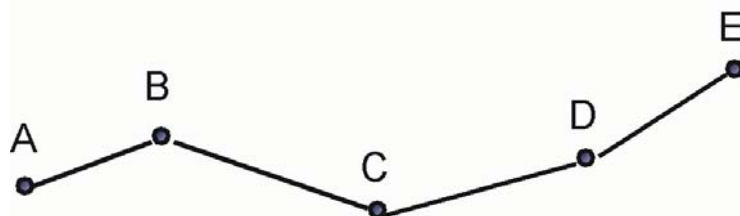
```
January:2011
5.7564
2010
```

Write the text and the numbers with printf() back to the screen.

2. Develop a program which reads the values of an int array numbers[10] with scanf(). Then the largest and the smallest number of numbers[] shall be found and both numbers shall be interchanged. Use the function swap() from E.5-4 to interchange both numbers.

Extend this exercise and copy swap() into it's own sourcefile. Now you have to declare swap() as extern in the sourcefile with the main() function. Compile and link both sourcefiles and run the resulting .exe file.

3. A traverse (frequency polygon) is a path composed out of a finite number of straight lines. Traverse is a method in the field of surveying to establish control networks. It is also used in geodesy. Traverse networks involve placing survey stations along a line or path of travel, and then using the previously surveyed points as a base for observing the next point (Wikipedia).



Write a program which computes the length of a traverse which is given by 5 points. The points are in a two-dimensional plane, that is: they have a x- and a y- coordinate. Save the coordinates of a point in an array.

Type in from the keyboard the coordinates of 5 points.

Write a function which has 5 arrays with the coordinates of the points as parameters and which returns the length of the traverse. According to Pythagoras we have:

$$length(A, B) = \sqrt{(x_b - x_a)^2 + (y_b - y_a)^2}$$