

## Handout 18

# Functions and arrays

### 18.1 A first example

```
// sum items in an array
#include <stdlib.h>
#include <stdio.h>

int main()
{
    // functions
    double arraySum(double array[], int size);

    // program
    double list[5] = {1.0, 1.1, 1.2, 1.3, 1.4};
    double total;
    total = arraySum(list,5);
    printf("Sum of elements is %lf\n", total);
}

// function to compute sum of elements in array of doubles
double arraySum(double array[], int size)
{
    double sum =0;
    int k;
    for(k=0;k<size;k++)
    {
        sum = sum + array[k];
    }
    return sum;
}
```

Write additional functions that compute the minimum and maximum entries in an array.

## 18.2 Filling an array

Complete the following:

```
// fill an array and print it
#include <stdlib.h>
#include <stdio.h>

int main()
{
    // functions
    void arrayScan(double array[], int size);
    void arrayPrint(double array[], int size);

    // program
    int length = 5;
    double list[length];
    arrayScan(list, length);
    arrayPrint(list, length);
}

// scanf to fill array
void arrayScan(double array[], int size)
{
    int k;
    for(k=0;k<size;k++)
    {
        scanf("%lf", &array[k]);
    }
}

// print array in one line
void arrayPrint(double array[], int size)
{
    ?????
}
```

## 18.3 Changing an array

What does this function do to an array?

```
void arrayChange(double array[], int size)
{
    int k;
    for(k=0;k<size;k++)
    {
        array[k]*=3;
    }
}
```

## 18.4 Homework: array-functions.c

Write a program that

- asks for a positive integer  $n$
- fills an array of size  $n$  with integers
- computes the minimum value
- computes the maximum value
- computes the average value
- sorts the array
- prints out the array (in a single line) and then reports the min/max/average on the next line

Each of these tasks should be accomplished by an independent function.