Programming Languages 1
Lesson 7

Exercises:

1. Write a C program to demonstrate the use of C pointers.
   1. Learn the basic concept of pointers (*, &).
   2. Type the following code, and examine it.

```
#include <stdio.h>
#include <stdlib.h>

int main(){
  int a, b, c, *p1;
  int *p2, *p3, **p4;

  a=3;    b=4;    c=5;
  p1=&a;  p2=&b;  p3=&c;

  printf("*p1: %d, *p2: %d, *p3: %d\n", *p1, *p2, *p3);
  p2=p1;
  printf("*p1: %d, *p2: %d, *p3: %d\n", *p1, *p2, *p3);
  *p2=*p3;
  printf("*p1: %d, *p2: %d, *p3: %d\n", *p1, *p2, *p3);
 p4=&p3;
  printf("*p3: %d, *p4: %d, **p4: %d\n", *p3, *p4, **p4);

  return 0;
}//main
```

2. Write a C program in which you read in 20 integer values to an array. After this print out the sum and the average of the numbers. In the program use your own functions to read in 20 numbers to an array of any size, and another that sets the value of two variables to hold the sum and the average.
   1. Write the main function, using the two functions below:
      `void readToArray(int *ar, int size);`
      `void getSumAvg(int *ar, int size, int *sum, float *avg);`
   2. Implement the two functions.
   3. Try to change the size of the array to 10.

3. Add an extra function to the previous code, that sets two variables to the smallest, and the largest value of the array.
   1. Extend the main function so that it has two variables for the limiting values, calls the respective function, and prints out the results.
   2. Write the function, using the following definition:
      `void getMinMax(int *ar, int size, int *min, int *max);`