

**In assignment 3 you have to use the starter code files (t1.c – t2.c) included in the ZIP!**

**Task 1 (10 marks) – starter code file: t1.c**

Pass the 7 chars to printf() so that executing your code will print the word "POINTER".

**Task 2 (15 marks) – starter code file: t2.c**

Implement a swap function **swap\_ptr()** which will swap the two variables provided in the code below (you have to extend the code with the function prototype and body).

**Task 3 (30 marks) – starter code file: t3.c**

Implement **two functions** that remove all the spaces in a string read from the standard input (i.e. keyboard):

- Function **spacedel\_ptr()** can be implemented using only pointers (no array indices are allowed).
- Function **spacedel\_ary()** can be implemented using only array indices.

We assume that the maximum number of characters to enter is 80.

**Task 4 (30 marks) – starter code file: t4.c**

Implement the **my\_strchr()** function that returns a substring of a string that starts with a given character. If the character is not in the string, it should return NULL. We assume that the maximum number of characters to enter is 80.

Sample output:

```
$ ./t4
Enter the string: winter is coming
Enter the character: i
Substring: inter is coming
```

**Task 5 (15 marks) – starter code file: t5.c**

Implement a function that will remove the leading and trailing whitespaces in a string. You are not allowed to use any C standard library function! In this task we assume the only the standard space (' ') is a white space. For example, the string (enclosed by apostrophes)

```
'      this is a test      '
```

would be changed, after trimming, to

```
'this is a test'
```

**Challenge (20 marks)**

Extend the trim function from Task 5:

- Extend! Not change! Meaning that the trim() function can only be extended with further arguments, but the return value as well as the already defined arguments and their types cannot be changed.
- In addition, this function will also replace all multiple spaces in the string with a single.
  - For example, if you enter this string:

```
'      this      is      a      test      '
```

your function should return

```
'this is a test'
```

- The same hold for tabs, meaning that all tabs should be also replaced with a single space expect the leading and trailing whitespaces which should be removed.
- You are not allowed to use any C standard library function!

**Submission Guidelines**

- **Only ZIP files containing all the programs will be accepted as submission.** The ZIP file must have a prefix with the current assignment number following with your student ID. For example, student with ID 123456789 will submit assignment 3 using a ZIP file named as: **assignment3-123456789.zip**
- **In the ZIP file, each program/task must be a .c file.** For example, the program for **Task 1** should be named as **"t1.c"**. Similarly, **"t2.c"** is for **Task 2**.
- **You should provide appropriate comments to make your code readable.** Otherwise, if your code is not working and there are no comments, you may lose all the marks!