# Homework: C File Processing

This document defines the homework assignments from the "C Programming" Course @ Software University. Please submit as homework a single **zip** / **rar** / **7z** archive holding the solutions (source code) of all below described problems.

## Problem 1. Print File Contents

Write a program that reads a text file and prints its contents on the console.

## Problem 2. Odd Lines

Write a program that reads a text file and prints on the console its odd lines.

## Problem 3. Line Numbers

Write a program that reads a text file and inserts line numbers in front of each of its lines. The result should be written to another text file.

| program.c | modified.c |
|---|---|
| `#include <stdio.h>`<br><br>`int main()`<br>`{`<br>`    printf("Spicy");`<br><br>`    return 0;`<br>`}` | `0  #include <stdio.h>`<br>`1`<br>`2  int main()`<br>`3  {`<br>`4      printf("Spicy");`<br>`5`<br>`6      return 0;`<br>`7  }` |

## Problem 4. Copy Binary File

Write a program that copies the contents of a binary file (e.g. image, video, etc.) to another file.

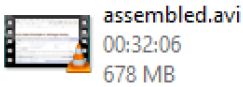
## Problem 5. Slicing File

Write a program that takes any file and slices it to **n** parts. Write the following functions:

- **`slice(const char *sourceFile, const char *destinationFile, size_t parts)`** - slices the given source file into **n** parts and saves them in **destinationDirectory**.

| Source File | Destination Directory |
|---|---|
| `parts = 5`<br>  <br>SOLID-Logger.avi<br>00:32:06<br>678 MB |  Part-0.avi 135 MB<br>  Part-1.avi 135 MB<br>  Part-2.avi 135 MB<br>  Part-3.avi 135 MB<br>  Part-4.avi 135 MB |

- **`assemble(const char **parts, const char *destinationDirectory)`** - combines all parts into one, in the order they are passed, and saves the result in **destinationDirectory**.

| Source Files | Destination Directory |
|---|---|
|  |  |

The **input file names**, **destination directory** and **parts** should be passed to the program as arguments.

The program should produce proper error messages in case of errors. Use buffered reading.

## Problem 6. Fix Subtitles

Write a program that takes as arguments **input subtitles file** and **offset** in **milliseconds**. The program should edit the subtitles' timing by the given offset. The subtitles will contains will be in the format specified below.

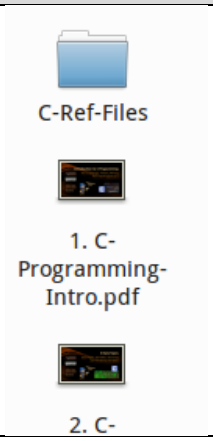
```
#num
hh:mm:ss,ms --> hh:mm:ss,ms
text
```

The program should correctly modify seconds, minutes and hours when overflow occurs (i.e. 61 seconds is not valid). Example: **00:00:52,580** + 700 -> **00:00:53,280**. The program should support modifying subtitles in the range [00:00:00,000 - 99:59:59,999].

| Offset | source.sub | fixed.sub |
|---|---|---|
| 1500 | 44<br>00:04:22,535 --> 00:04:24,870<br>( Laughs ) Take her.<br><br>45<br>00:04:24,904 --> 00:04:28,874<br>Are you men or snakes, that you would threaten a child? | 44<br>00:04:24,035 --> 00:04:26,370<br>( Laughs ) Take her.<br><br>45<br>00:04:26,404 --> 00:04:30,374<br>Are you men or snakes, that you would threaten a child? |

## Problem 7. * Directory Traversal

Traverse a given directory for all files with the given extension. Search through the first level of the directory only and write information about each found file in **report.txt**.

| Input | Directory View | report.txt |
|---|---|---|
| /home/pesho/Downloads |  | 3. C-Programming-Formatted-IO.pdf - 3243KB<br>2. C-Programming-Data-Types.pdf - 6834KB<br>C-Ref-Files - 4KB<br>cpp.chm - 472KB<br>10. C-Programming-Memory-Management-Exercises.zip - 34KB<br>refs.chm - 468KB<br>1. C-Programming-Intro.pdf - 2525KB<br>netbeans-8.0.2-cpp-linux.sh - 64918KB |

## Problem 8. ** Full Directory Traversal

Modify your previous program to **recursively traverse** the **sub-directories** of the starting directory as well.

## Problem 9. *** Word Count

Write a program that reads a list of words from the file **words.txt** and finds how many times each of the words is contained in another file **`text.txt`**. Matching should be **case-insensitive**.

Write the results in file **`results.txt`**. Sort the words by frequency in descending order.

| words.txt | text.txt | result.txt |
|---|---|---|
| quick<br>is<br>fault | -I was quick to judge him, but it wasn't his fault.<br>-Is this some kind of joke?! Is it?<br>-Quick, hide here…It is safer. | is - 3<br>quick - 2<br>fault - 1 |