# 02. Memory Management – Homework Exercises

Write C++ code for solving the tasks on the following pages.

Code should compile under the C++03 or the C++11 standard.

Submit your solutions here: <https://judge.softuni.bg/Contests/1152/02-Memory-Management-Homework> (select “Compete” when prompted)

Any code files that are part of the task are provided under the folder **Skeleton**.

Please follow the exact instructions on uploading the solutions for each task.

# Task 4 – Parse Unique Companies

You are given code for a program, which reads lines from the console containing the information about Company objects, sends those lines as a single string to a function named parseUniqueCompanies and expects the function to return a pointer to a dynamically allocated array, which the program iterates and prints information about each parsed Company.

In the input, each Company is described by a single line, containing the Company id (an integer) followed by the Company name (a string), separated by a single space.

In addition to the string, the program passes two other parameters:

* an integer, which it expects to be set (by the parseUniqueCompanies function) with the **number of companies** in the input
* a function pointer/reference to a function that generates a unique identifier for a company. The parseUniqueCompanies function is expected to return no more than one company (the first in the input) for each unique identifier

The program decides which unique identifier function to use based on a number in the last line of the input:

1. unique identifier is the Company’s id
2. unique identifier is the Company’s name
3. unique identifier is the Company’s name concatenated by the Company’s id

Your task is to implement the parseUniqueCompanies function a ParseCompanies.h file.

Your ParseCompanies.h file should resemble the following:

|  |
| --- |
| **ParseCompanies.h** |
| #ifndef PARSE\_COMPANIES\_H  #define PARSE\_COMPANIES\_H  #include "Company.h"  // Place your code here  #endif // !PARSE\_COMPANIES\_H |

You should submit a single .zip file for this task, containing ONLY the ParseCompanies.h file. The Judge system has a copy of the other files and will compile them, along with your file, in the same directory.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 123 valid  123 copy  321 ancientmarinerinc  end  1 | 123 valid  321 ancientmarinerinc |
| 42 theanswertolifetheuniverseandeverything  420 theanswertolifetheuniverseandeverything  end  3 | 42 theanswertolifetheuniverseandeverything  420 theanswertolifetheuniverseandeverything |