# 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 3 – Make Company

You are given program in an MakeCompanyMain.cpp, as well as a Company.h file, that read information about **companies** and writes it to the console.

Each company has:

* An **id** (a 4-byte integer)
* A **name** (a string containing a sequence of lowercase English letters a-z)
* **Employees** by their initials (a vector of pairs of characters, containing at most 255 employee initials)

The MakeCompanyMain.cpp file reads the information from the console as a single line for each company, containing:

* company **id** string
* space
* company **name**
* 2 characters representing the initials of the first employee
* Space
* Again 2 characters, representing the second employee
* … and so on

NOTE: there could be companies without employees, in which case the line ends with the company name.

For example, if we have the companies:

* id = 42, name = "uni", employees = { {'I', 'K'}, {'S', 'N'} } and   
  id = 13, name = "joro", employees = { {'G', 'G' } }

Their representation as strings read by MemoryMain.cpp will be:

42 uni IK SN  
13 joro GG

The program reads each line from the console, then calls a function named makeCompany to **dynamically allocate memory** for a Company object and set its values, then prints its representation as a back to the console (i.e. the program should print the exact line it read), until a line containing the single string "end" is reached.

Your task is to create a file called MakeCompany.h containing the function makeCompany such that the program compiles successfully and performs the described task.

Your file should resemble the following:

|  |
| --- |
| **MakeCompany.h** |
| #ifndef MAKE\_COMPANY\_H  #define MAKE\_COMPANY\_H  #include "Company.h"  // Place your code here  #endif // !MAKE\_COMPANY\_H |

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

### Additional Requirements

Make sure you correctly create the Company objects and ensure that there are **no memory leaks**.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 42 uni IK SN  13 joro GG  end | 42 uni IK SN  13 joro GG |
| 188 noemployees  58 oneemployee SA  end | 188 noemployees  58 oneemployee SA |