

## Introduction to Programming Homework 1

You are going to write a program that will simulate a bacteria habitat. The parameters of your habitat will be given in a text file (data.txt). Your program must read this file in text mode from your application folder. Data.txt file includes information about your habitat and the bacteria capability to eat other bacteria.

Here is a short sample:

```
bacteria:
A B C
rules:
A -> B
B -> C
C -> A
size:
4 x 4
start:
A 0 0
B 3 3
C 0 3
```

First section (bacteria: ) of the file gives the name of the bacteria separated by space. Second section (rules: ) shows the eating rules. "A -> B" means A can eat B if it is in the growing area. Third section (size: ) gives the size of our habitat in matrix format. And the last section (start:) shows the starting position of bacteria. We are going to simulate the life cycle of the habitat after n turn. Your program reads this file, shows this information on the screen and reads the life turns (n) from user. After that the program calculates the resulting habitat pattern on the screen.

Here is the four turns of our sample habitat.

A			C
			B

Start

A	A	C	C
A			C
			B
		B	B

After First Turn

A	C	C	C
A	A	C	B
A		B	B
	B	B	B

After Second Turn

C	C	C	B
A	C	B	B
A	A	B	B
A	B	B	B

After Third Turn

C	C	B	B
C	B	B	B
A	A	A	B
A	A	B	B

After Fourth Turn

In each turn the bacteria are multiply itself to neighbor cells. If the cell is occupied by other bacteria according to the rules one bacteria eats the other one. The life cycle must be executed in the same order that the bacteria written on the file. For example in our sample scenario first bacteria A multiply itself, after B and at last C makes the multiplication.

## IMPORTANT INFO ABOUT HOMEWORK DELIVERY

The sample input file is in the attachment.

Homeworks are collected by the system in our website. Any other delivery method is not going to be accepted. While writing the code, students must obey the rules below.

- At the beginning of your code file there must be a comment part giving information about you, compiler environment of your code and any other issue need to be taken into consideration to run the code file.

Ex:

```
//      Özgür Can TURNA
//      1306xxxxxx
//      Date : 28.04.2016
//      Development Enviorement : Visual Studio2013
```

- The code file should be compiled either in Microsoft Visual Studio or under GCC.4.xx(CodeBlocks is using this also)
- Only one code file is collected so do not try to send any other file or more than one file.
- The code file must be named as "code.cpp"
- If your program includes extra header files such as "stdafx.h" it takes zero since I cannot compile your code. Be careful about it.
- When you first upload your file if the system says ok. Nothing is required. When you check the system again sometimes it says there is no file in the system do not mind it.