# Parallel Processing – task 2

05.11.2015

Design and implement the synchronization protocol for the following problem. Use the monitors (locks, conditionals).

Problem

1. After buying the ingredients on the market, the Alchemists try to extract gold. They sit around the round table. The number of Alchemists is $n \geq 4$ (assume that n is even, its value is given as the parameter of the main function).

2. Between the Alchemists there are pots and bowls of ingredients (see the picture, pots are blue and ingredients are white).
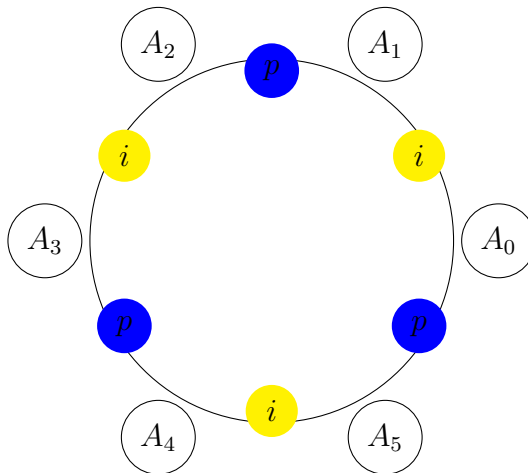
3. Each Alchemist thinks (it takes some random time period) and then tries to obtain gold.

4. To obtain gold, the Alchemist needs a bowl of ingredients and a pot (at the same time).

5. Each bowl may contain up to 5 units of ingredients. Each production process consumes one unit of ingredients.

6. There is also an Apprentice, who comes in some random intervals. He fills all the bowls.

7. After producing 10 units of gold, and Alchemist goes to a lunch (his seat remains free).

Technical aspects

1. The solution should offer the maximum parallelism. If all the Alchemists want to produce gold, a half of them should be able to do it at the same time (unless they lack ingredients).

2. None of the Alchemists have priority.

3. Avoid busy waiting and starvation. Take the ingredients only if you keep both bowl and pot.

4. Include the comments describing the synchronization process.

5. Print the current status of the processes in the console.

6. The number of Alchemists is a parameter of the program.

Deadline for submitting your solution: 17.11.2015 (23:59)