

## CS19002 PDS Lab, Test 1, Feb 13, 2009

(For students with odd PC numbers)

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There are two glasses *A* and *B*. Initially, Glass *B* contains 100 ml of pure alcohol, and Glass *A* contains 100 ml of pure water. Your task is to mix the alcohol and the water in the two glasses, without using any extra container. Each of the two glasses has an extra capacity of 10 ml for carrying out this task.

Initially, transfer 10 ml of alcohol from Glass *B* to Glass *A*, and stir the content of Glass *A* well, so as to produce a uniform mixture. Subsequently, keep on transferring 20 ml of the mixture of Glass *A* to Glass *B* and then 20 ml of the mixture of Glass *B* to Glass *A*. After every transfer of the mixture, stir the liquid so as to create a homogeneous solution. Repeat this process until the difference between the alcohol concentrations in the two glasses goes below 1%.

Eventually, Glass *A* and *B* must contain 100 ml and 100 ml of the mixture. Thus, a transfer of 10 ml of the mixture is necessary after the above loop stops.

Report how the alcohol percentages in the two glasses vary after each liquid transfer. Your output should look like the following.

```
Transfer 1: 10 ml from B to A, Alcohol percentages: 9.091 and 100.000
Transfer 2: 20 ml from A to B, Alcohol percentages: 9.091 and 83.471
Transfer 3: 20 ml from B to A, Alcohol percentages: 22.615 and 83.471
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## CS19002 PDS Lab, Test 1, Feb 13, 2009

(For students with even PC numbers)

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There are two glasses *A* and *B*. Initially, Glass *A* contains 100 ml of pure alcohol, and Glass *B* contains 150 ml of pure water. Your task is to mix the alcohol and the water in the two glasses, without using any extra container. Glass *B* has an extra capacity of 10 ml for carrying out this task.

Initially, transfer 10 ml of alcohol from Glass *A* to Glass *B*, and stir the content of Glass *B* well, so as to produce a uniform mixture. Subsequently, keep on transferring 10 ml of the mixture of Glass *B* to Glass *A* and then 10 ml of the mixture of Glass *A* to Glass *B*. After every transfer of the mixture, stir the liquid so as to create a homogeneous solution. Repeat this process until the difference between the alcohol concentrations in the two glasses goes below 1%.

Eventually, Glass *A* and *B* must contain 100 ml and 150 ml of the mixture. Thus, a transfer of 10 ml of the mixture may be necessary after the above loop stops.

Report how the alcohol percentages in the two glasses vary after each liquid transfer. Your output should look like the following.

```
Transfer 1: 10 ml from A to B, Alcohol percentages: 100.000 and 6.250
Transfer 2: 10 ml from B to A, Alcohol percentages: 90.625 and 6.250
Transfer 3: 10 ml from A to B, Alcohol percentages: 90.625 and 11.523
```