

08.71.23/24 Tölvunarfræði 2/2a (English exam)

Makeup exam

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Time: 13³⁰ ? 16³⁰

The first 5 problems are for all students (both from Tölvunarfræði 2 and 2a) Problem 6 is only for students in Tölvunarfræði 2, but problem 7 is only for students in Tölvunarfræði 2a (engineering students). In both cases **five best problems out of six count**. All problems have the same value.

All written materials and a calculator are allowed.

- ?? Note that when asked to "Describe" or "Show" then it is enough to do that in words and with drawings. If you are to write C++ code you will be asked for that specifically.
- ?? Give supporting arguments for all answers and remember that it is not necessary to write up definitions from the book.

1. Implement in C++ a recursive power function that can handle negative powers. Follow the definition below:

$$x^n = \begin{cases} 1 & \text{if } n = 0 \\ x^{n-1} * x & \text{if } n > 0 \\ x^{n+1} / x & \text{if } n < 0 \end{cases}$$

2. A list of names is stored in a 2D linked list. We have one linked list for the initial letters of the names and then linked lists for the names that go out from the initials list. Below is an example of such a list.



