E-402-STFO Problems for Module 1

Updated November 27, 2024

This module has 13 problems, each problem gives you a variable number of points. If you are at 100 points or more you get get full marks.

Each problem has a separate turn in on Kattis. Each has some sample input and output which you are shown, and some secret data which you are not shown. If you get all the secret data correct, you get points for that problem, otherwise none.

Kattis supports most programming languages, see the languages page on the site for a full list. Your programs need to read input from stdin and print answers on stdout. You can only import standard libraries in this module.

The problem descriptions in this PDF are shortened. See the full description on Kattis.

`m2p01`, 12 points Make a program that checks whether an automata accepts a given set of strings.

`m2p02`, 12 points Make a program that finds the automata for the complement of the language of a given automata.

`m2p03`, 6 points Make a program that finds the automata for the union of the languages of two given automata.

`m2p04`, 6 points Make a program that finds the automata for the intersection of the languages of two given automata.

`m2p05`, 6 points Make a program that finds the automata for the difference of the languages of two given automata.

`m2p06`, 6 points Make a program that finds the automata for the symmetric difference of the languages of two given automata.

`m2p07`, 12 points Make a program that finds the automata for the concatenation of the languages of two given automata.

`m2p08`, 12 points Make a program that finds the automata for the Kleene star of the language of a given automata.

`m2p09`, 12 points Make a program that checks whether the language corresponding to an input automata is empty.

`m2p10`, 12 points Make a program that checks whether the language corresponding to an input automata is finite.

`m2p11`, 12 points Make a program that finds the length of the shortest word the input automata accepts.

`m2p12`, 12 points Make a program that finds the length of the longest word the input automata accepts.

`m2p13`, 12 points Make a program that finds the number of words of a given length that the given automata accepts.