NTNU
Norwegian University of
Science and Technology

Department of Computer Science – IDI

TDT4205
Compiler Design

Assignment 1

Please submit solutions on Blackboard by Monday, 03.02.2020 20:00h

1.1 Regular languages

a. Filenames in MS-DOS are restricted to the following format:

Up to eight characters for the name followed by a dot (".") and up to three characters for the extension.

Legal characters for DOS filenames include the following[1]:

- Upper case letters A–Z
- Numbers 0–9
- Space

Examples for valid names are `CONFIG.SYS`, `WORD.EXE`, but also `A FILE.123`

Build a regular expression that accepts MS-DOS filenames (no automaton required).

1.2 NFAs and DFAs

a. Construct an NFA that accepts the following regular expression:

$$(mars \mid mass \mid miss)$$

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[1] In reality, some more characters are in fact allowed, see https://en.wikipedia.org/wiki/8.3_filename – but we didn't want the regexp to become too complex.