

CS265: Advanced Programming Techniques

Summer 2022

Assignment #2

Due date: Wednesday, August 10 at 11:59 PM

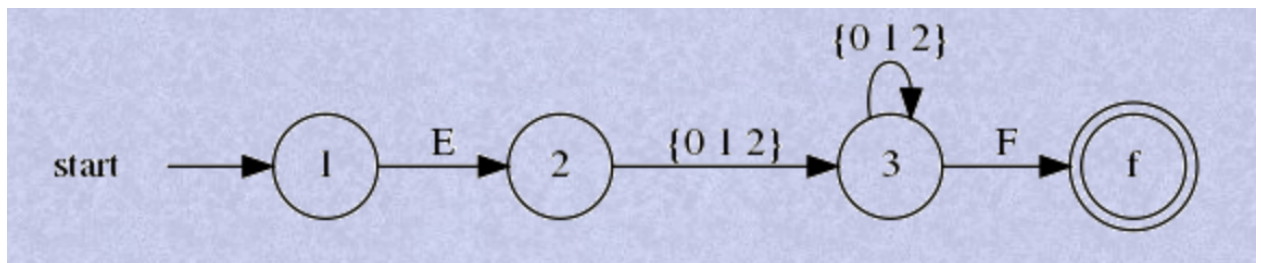
What to do

- Write a C program, called `msg.c`, that reads messages from an input file (or stdin) and verifies whether the messages are valid or not.
- We developed a protocol for reading messages from a device. There are different length messages. Each message has rules, described below. Messages are separated by a newline.
- Each message is followed by a description, some examples, and a *Deterministic Finite State Automaton (DFA)* which recognizes the message. Before input is read, we are in state 1. We transition states on each character read. If, at the end of input, we are in an *accepting state* (double circle), then the message is valid.

foo:

Starts with an E followed by a string of digits 0 1 or 2 followed by an F . E.g.:

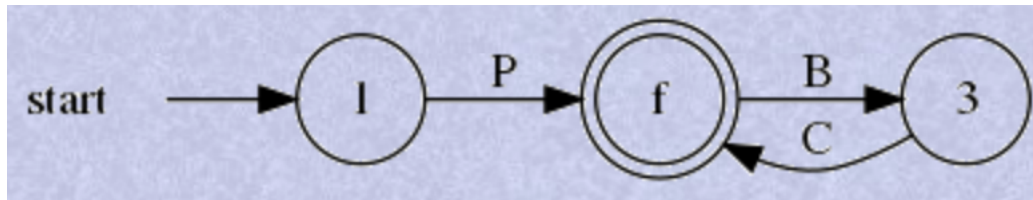
E201022011101F



eep:

Starts with a P, followed by arbitrary number of BC (including none). E.g.:

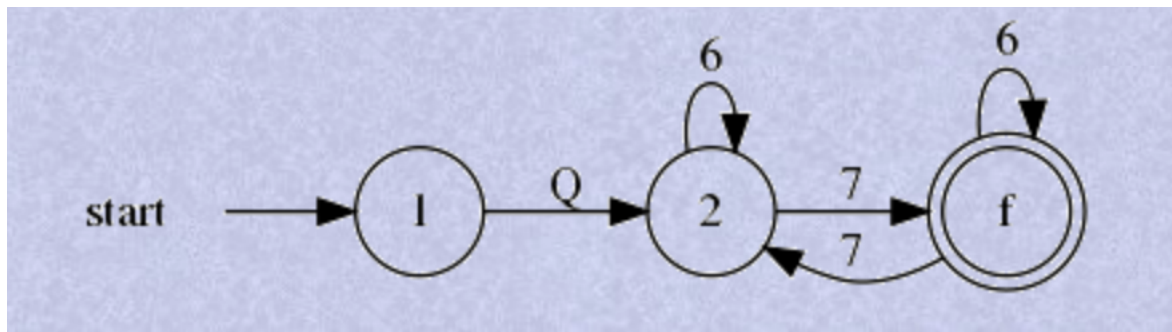
P
PBCBCBC



op:

Starts with a Q . Followed by a string of 6 and 7 , where the number of 7 s must be odd.
E.g.:

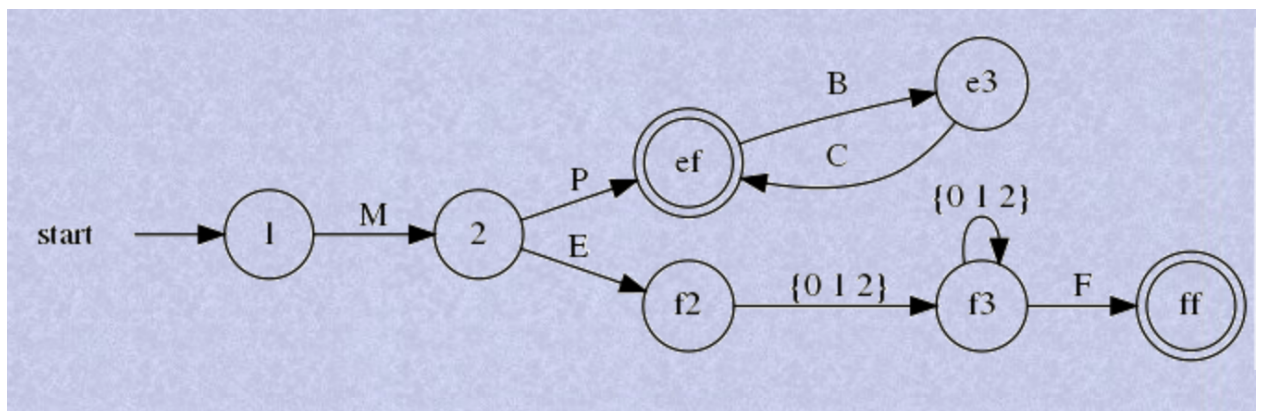
Q7
Q66666676666
Q76767



ork:

Starts with an M. Followed by 2 decimal digits, then a **foo** or an **eep**. E.g.:

M84E2010201F
M27PBC



Input

You will read input from the filename provided as the first argument on the command line. If you cannot open it for reading, print a meaningful message, and quit. If no filename is provided, you will read from `stdin`. **Note**, `stdin` is of type `FILE*`, and can be read exactly like a file.

Output

Print out the message, followed by a space, then `OK` if the message is valid, `FAIL` otherwise. One per line.

Hints

You maybe find these helpful. If you do not, that is okay. They are not directives.

- Read each line, parse the string, or
- Use `fgetc()`, parse the input directly
- Make a function for each message

What to submit

Submit your C program file named `msg.c` in Blackboard.

Do not submit a `.doc` file, a `.zip` file, a `.txt` file or a `.pdf` file. These formats are not correct for this assignment and will not be accepted. Make sure you develop and test your program on tux.