Lab 04 - RE to DFA

Instructions:

- **A regular expression is a string representation of a regular language that consists of sets and regular operations; hence, a DFA can be constructed that recognizes the same language that the regular expression represents.**
- **Your objective is to define a format DFA for each regular expression provided. $\Sigma = \{0, 1\}$ for all expressions. Use & for δ and $ for Σ when typing.**
- **A cumulative task will not receive credit if the required previous tasks are not completed.**
- **Your submissions must be submitted to the GitHub repository in the Lab04 directory.**
- **Cheating of any kind is prohibited and will not be tolerated.**
- **Violating or failing to follow any of the rules above will result in an automatic zero (0) for the lab.**

Grading

Task	Maximum Points	Points Earned
1	1.00	
2	1.00	
3	1.00	
4	1.00	
5	1.00	
Total	5.00	

Note: solutions will be provided for tasks colored blue only.

Task 1

- Given $L_1 = \Sigma^*010\Sigma^*$ and $L_2 = (\Sigma\Sigma)^*1$, construct a DFA for $L_1 \cup L_2$.

Task 2

- Given $L_1 = 1\Sigma^+$ and $L_2 = (0\Sigma)^*$, construct a DFA for $L_1 \circ L_2$.

Task 3

- Given $L_1 = \Sigma 1^+ \cup 01 \cup 10$, construct a DFA for L_1^*.

Task 4

- Given $L_1 = 0\Sigma^*1 \cup 1\Sigma^*0$ and $L_2 = \Sigma(\Sigma\Sigma)^*$, construct a DFA for $(L_1 \cup L_2)^*$.

Task 5

- Given $L_1 = 0^+1^+$ and $L_2 = (1\Sigma \cup \Sigma 0)^*$, construct a DFA for $L_2 \circ L_1^*$.

Extra Credit

- Create text files named '`extra01.txt`' and '`extra02.txt`' that construct the formal NFA definition of the operations + and ?, respectively. Use & for δ and $ for Σ when typing.

  (0.5 points)