

Jurusan Teknik Informatika

Universitas Kristen Petra

**UTS SEMESTER GENAP 2020/2021**

**Mata Kuliah** : Teori Bahasa dan Automata  
**Hari/Tanggal** : Selasa / 12 Oktober 2021  
**Waktu** : 10.30 – 12.30WIB (120 menit)  
**Sifat** : Terbuka

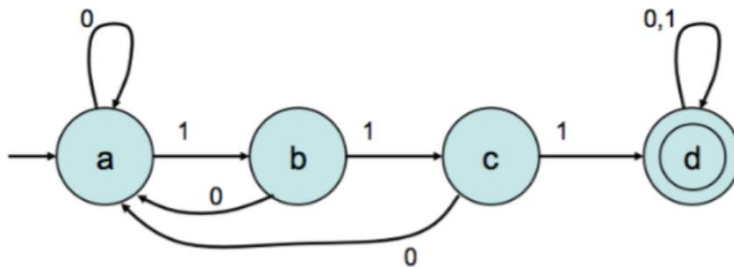
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1. Given the following RE,

$$0+1*0(0+1)*0(0+1)$$

- Change the RE to be  $\epsilon$ -NFA. (10 points)
- Change the  $\epsilon$ -NFA as result of point a to be NFA (10 points)
- Change the  $\epsilon$ -NFA as result of point b to be DFA (10 points)

2. Given following DFAs



- Construct the RE equivalent to the DFA directly by observation or state elimination (10 points)
  - Construct the RE equivalent to the DFA by using the systematic Method (k-path inductive) (15 points)
3. Consider the following languages over  $\Sigma = \{0, 1\}$
- Construct a DFA that accepts a number in the base 2 number system which is NOT a multiple of 5. (15 points)
  - Construct a DFA that it MUST have any string with three consecutive 0's OR two consecutive 1's. (15 points)
  - Construct a RE such that it contains any string with three consecutive 0's AND two consecutive 1's. (15 points)

**GOD BLESS YOU**