

# CIT 596 Homework 1

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February 3, 2011

## 1 Exercise 1.4

### 1.1 Exercise 1.4 e

Create a DFA that accepts the language  $\{\omega \mid \omega \text{ starts with an } a \text{ and has at most one } b\}$ .

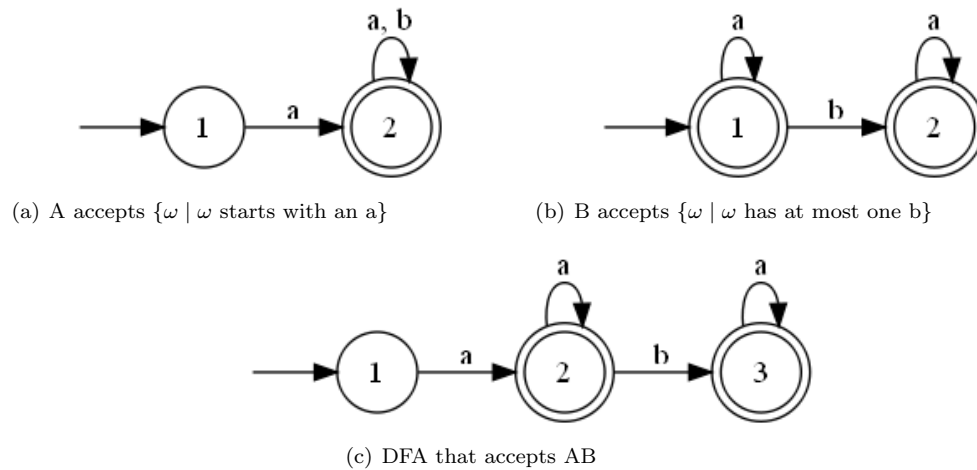


Figure 1: DFA for Exercise 1.4e

### 1.2 Exercise 1.4 f

Create a DFA that accepts the language  $\{\omega \mid \omega \text{ has an odd number of 'a's and ends with a b}\}$ .

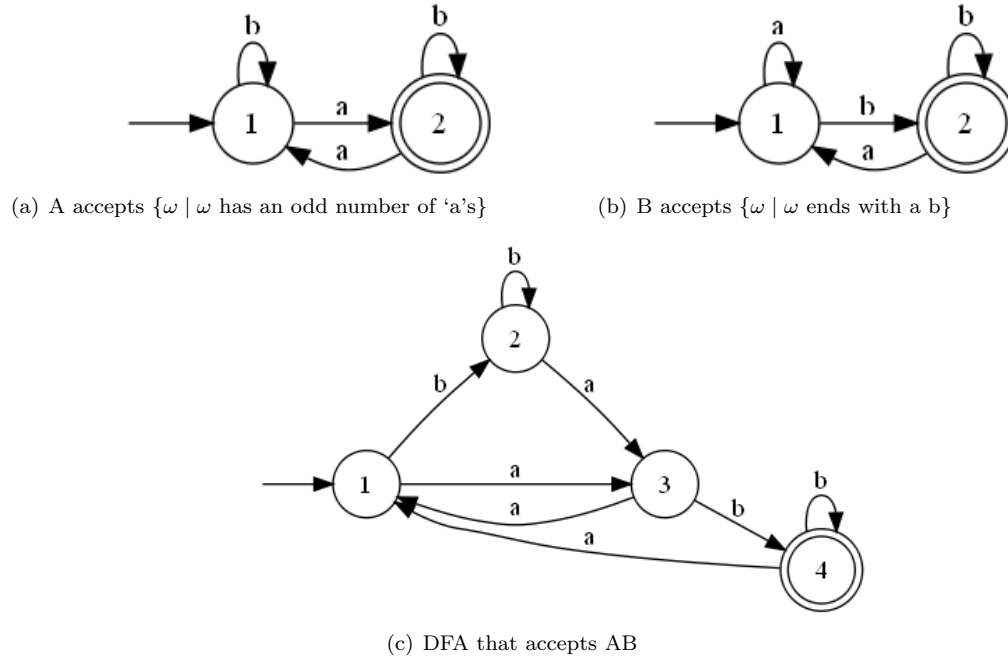


Figure 2: DFA for Exercise 1.4f

### 1.3 Exercise 1.4 g

Create a DFA that accepts the language  $\{\omega \mid \omega \text{ has an even length and an odd number of 'a's}\}$ .

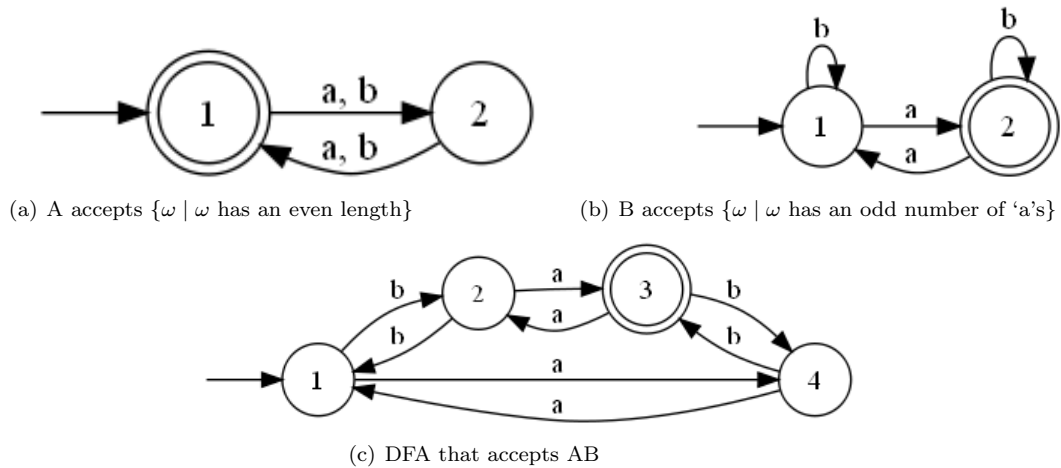
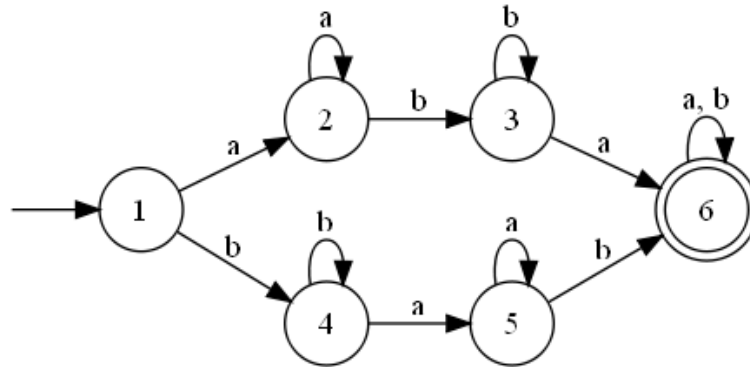


Figure 3: DFA for Exercise 1.4g

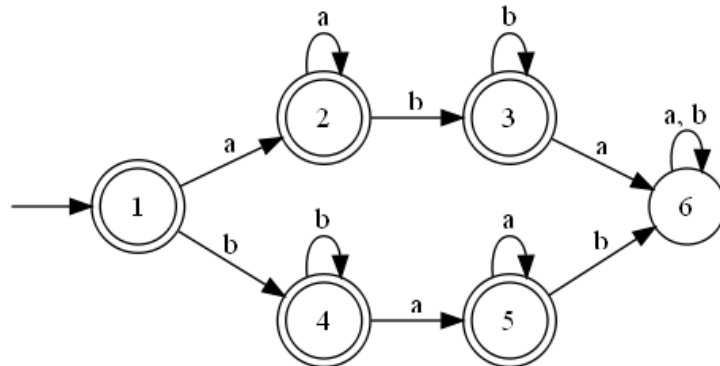
## 2 Exercise 1.5

### 2.1 Exercise 1.5 c

Create a DFA that accepts the language  $\{\omega \mid \omega \text{ does not contain ab nor ba}\}$ .



(a) A accepts  $\{\omega \mid \omega \text{ contains ab or ba}\}$



(b) DFA that accepts  $\neg A$

Figure 4: DFA for Exercise 1.5c

2.2 Exercise 1.5 e

2.3 Exercise 1.5 f

3 Exercise 1.6

3.1 Exercise 1.6 c

3.2 Exercise 1.6 e

3.3 Exercise 1.6 g

3.4 Exercise 1.6 i

3.5 Exercise 1.6 j

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