

**Theory of Computation, CSCI 438 spring 2022**  
**Nonregular Languages, pg. 77-82, Feb. 2**

**Prove that the following two languages are not regular, and Problem 1.36 (page 89)**

1. Prove that  $L = \{a^n b^n : n \geq 0\}$  is not regular.

2. Prove that  $L = \{a^n b^{2n} : n \geq 0\}$  is not regular.

Problem 1.36 (page 89)

Let  $B_n = \{a^k \mid k \text{ is a multiple of } n\}$ . Show that for each  $n \geq 1$ , the language  $B_n$  is regular.