

Homework #10

In each question, make a Turing machine for the given language.

Question 1. $\{a^n b^{2n}\}$

(This is the same as one that we did in class, but we did it slightly wrong! Do it right this time.)

Question 2. $\{a^{n+2} b^n\}$

(Hint: have your machine start by immediately marking two as , and then transition into a loop that does $a^n b^n$.)

Question 3. $L(a^* b^* + b^* a^*)$

Question 4. $\{x \in \{a, b\}^* \mid x \text{ uses twice as many } as \text{ as } bs\}$

Question 5. $\{a^n b^n c^m d^m\}$

Question 6. $\{x \in \{a, b, c\}^* \mid x \text{ uses the same number of } as \text{ as } bs \text{ (but any number of } cs)\}$