CSMM: Lesson 2.1 HW

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Answer the following questions.

1. Is the following language finite, or infinite? (Assume $\Sigma = \{a, b\}$)

A word is in L if it consists of 0, 1, or 2 symbols from Σ.

2. Write out 4 legal words in the language defined in question 1.
3. Define an infinite language over the alphabet $\Sigma = \{a, b, c\}$.
4. Define a finite language over the infinite alphabet $\mathbb{Z}$ (i.e., $\Sigma = \mathbb{Z}$, where $\mathbb{Z}$ is the set of all integers).

ANSWERS

Derivations vary, just be careful with parens and variables.

1. Finite
2. Pick four: $L = \{\varnothing, a, b, aa, ab, ba, bb\}$
3. Several exist, so long as you can have infinite combinations of symbols from Σ.
4. Again, several exist, but here's one example: $L = \{1\}$. Yup, simple as that.