We are asked to create a context-free-grammar for the following restricitons:

* Any word where the n(a) != twice the n(b).
* Or in English: Do not let the count of a’s become double the number of b’s you count.

To solve such an issue, we can break this problem into 2 parts.

1. N(a) > 2 \* N(b)
   1. S🡪aaSb | A
   2. A🡪 Aa | a
2. N(a) < 2 \* N(b)
   1. S🡪aaSb | B
   2. B 🡪 Bb | b

So if we join the two grammar’s we have found we should get the following C.F.G:

∴

S 🡪 aaSb | A | B

A 🡪 Aa | a

B 🡪 Bb | b

