The C.F.G I found for the language:

W : na(w) != nb(w)

You can have more a’s or more b’s, but you can’t have equal amounts of both.

This is my solution:

By breaking the language into 2 parts: 1 with more a’s and 1 with more b’s.

The main issue ran into with this is that you can have any combination of a’s and b’s.

The trvial case:

(a,b)\* a+

(a,b)\* b+

(a,b)\* a (a,b)\*

(a,b)\* b (a,b)\*

The tricky part is that (a,b)\* could start with a or b … so

b (a,b)\* a (a,b)\*

a (a,b)\* b (a,b)\*

So with 6 cases we should be able to make a choice

So

S 🡪 A | B // greater a’s or greater b’s

A 🡪 XaA | XaX // greater a’s

B 🡪 XbB | XbX // greater b’s

X 🡪 bXaX | aXbX | λ // (a,b)\*

∴

