1a.

L1 = {

Claim: L1 is a CFL

Proof: Let p = P/L Constant

S = UVWXY  
  
Let there be a string “aabbcc” where:

U = a V = a W = b X = bc Y = c

Hence by proof of contradiction we pump up by 4 to prove the CFL is not regular.

1b.

L2 = {

Claim: L2 is a CFL

Proof: Let p = P/L Constant

S = UVWXY

Let there be a string “aabbcc” where:

U = a V = a W = b X = bc Y = c

Hence by proof of contradiction we pump up by 5 to prove the CFL is not regular.

2. Text

Description automatically generated

3.

Diagram

Description automatically generated

4.

Step 1: Scan through the tape and mark the first unmarked 1.

Step 2: Scan the tape until you find an unmarked 0 and mark it. If no 0’s then reject.

Step 3: Move back to the start of the tape and start from step 1.

Step 4: Move back to the start of the tape again and scan for unmarked 0’s. If there are none accept else reject.