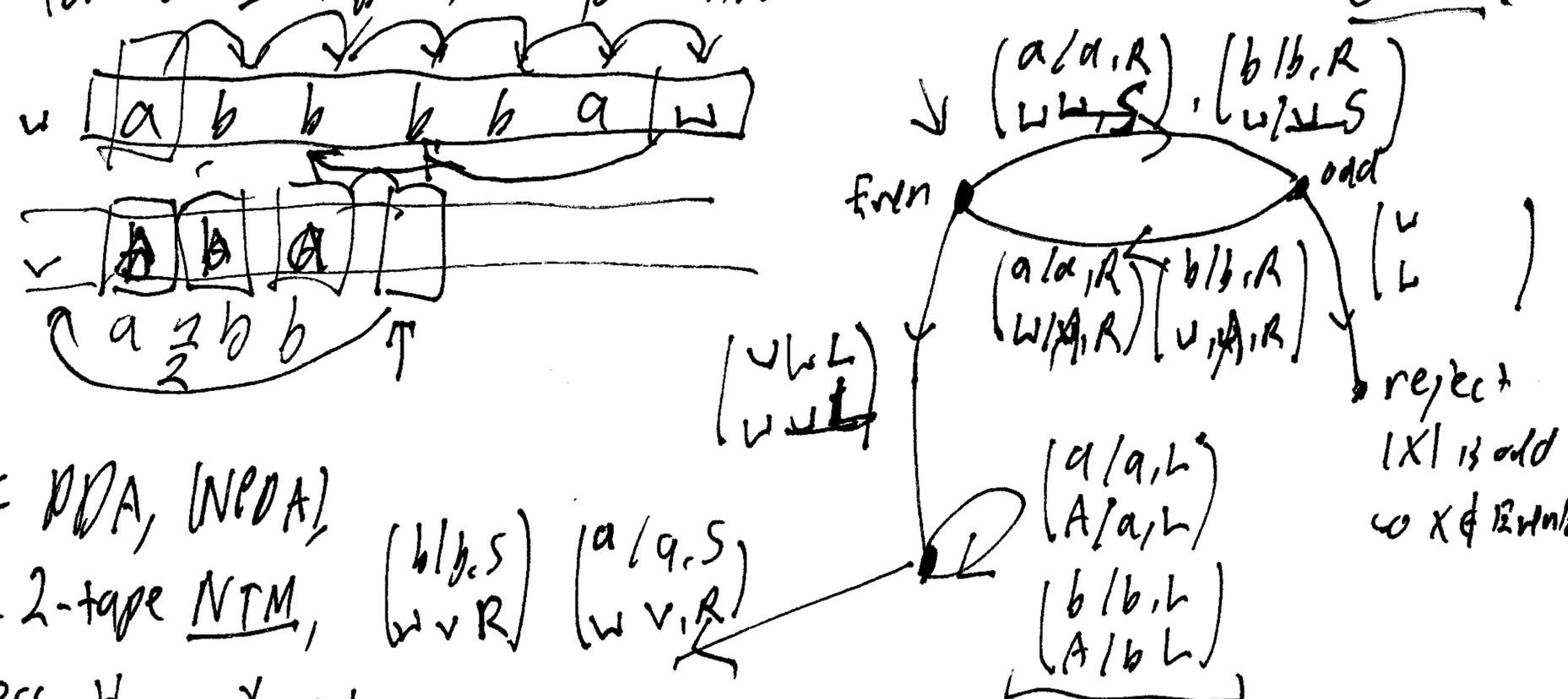


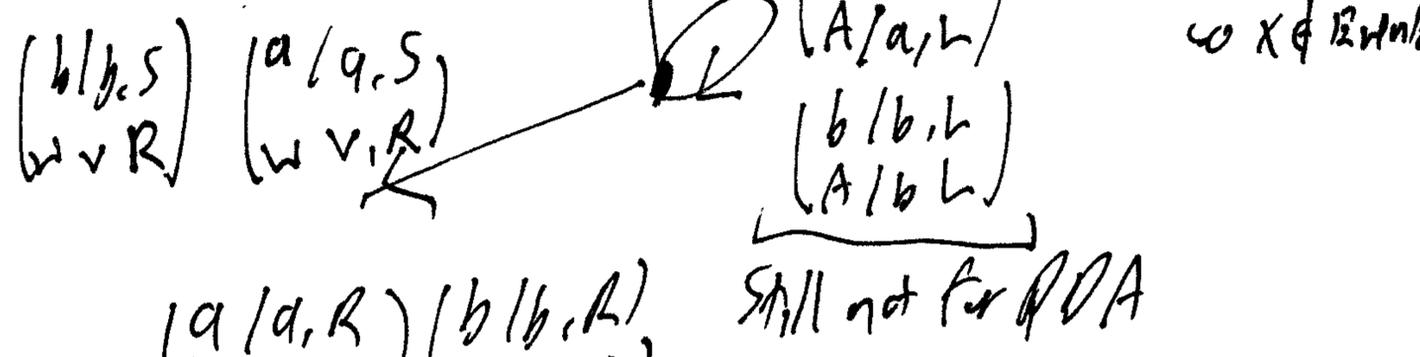
Lecture 10e 4/4 cont'd Compare Two Languages (2)

Even Pal Marked = $\{w\#w^R : w \in \{a,b\}^*\}$ also
 Even Pal = $\{ww^R : w \in \{a,b\}^*\}$ $DW = \{ww = w \in \{a,b\}^*\}$
 (without the #)

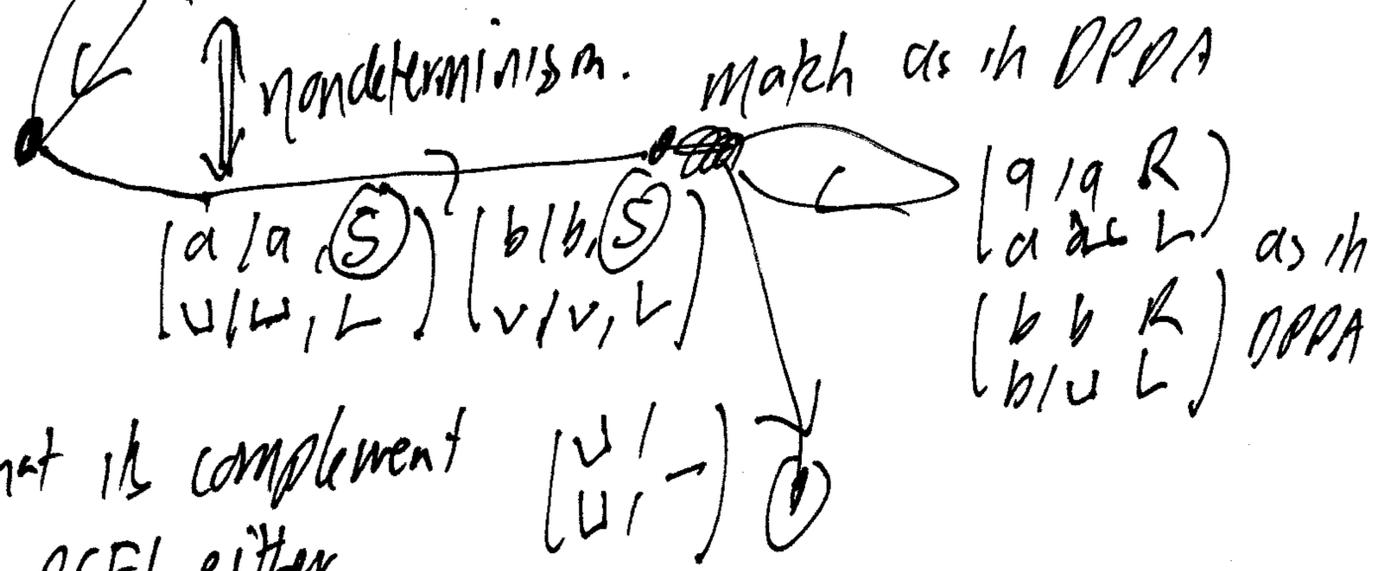
Strategy for a 2-tape TM for either Even Pal or DW : Count.



A Nondet PDA, (NPDA) coded as a 2-tape NTM, can guess the midpoint instead of counting.



Fact: Even Pal is a CFL but it is not a DCFL.



And, any CFL L such that its complement \tilde{L} is not a CFL, is not a DCFL either.

(Extra) Example: $\tilde{L} = \{a^n b^n c^n : n \geq 0\}$ is not a CFL. But the L of which this is a complement is a CFL: it is the language on HWF unioned with $\sim a^* b^* c^*$.

Incidentally, to build a one-tape TM^M such that $L(M) = \tilde{L}$, design a "master loop" that on each "pass" X-es out one 'a', one 'b', and one 'c'. If in any pass it cannot do it for each, it rejects; if the tape is all X-es at the end of a pass, it accepts. HW8 is similar