

CS 302
QUIZ 3

11 October, 2017

ANSWERS

(a) (2pts) Turkish \rightarrow **KAYAK** ; English **POP**

(b) (8pts) Let n be given by the Pumping Lemma (PL) and choose $w = 1^n 0 1^n$ which clearly is a palindrome hence is in L and $|w| = 2n+1 \geq n$

By the PL $w = xyz$, where $|xy| \leq n$ and $|y| > 0$

Hence $x = 1^p$, $y = 1^q$; $p+q \leq n$ and $q > 0$

Therefore $xyz = 1^p 1^q 1^{n-p-q} 0 1^n$ which implies that :

$xy^iz = xz$, for $i=0$, hence

$xz = 1^p 1^{n-p-q} 0 1^n = 1^{n-q} 0 1^n$, and since $q > 0$, xz is **not** a palindrome ; $xz \notin L$

a contradiction to the PL and thus L is not regular.