

$S = 0^p a 1^p$

2.3

- If we pump only 0s, it is no longer a palindrome.
- If we pump only 1s, fail
- If we pump only  $a$ ,

$|x y| > p \Rightarrow \text{fail}$

Or anything including  $a$ .

Only 0s, only 1s, and things including  $a$  are every possible  $y$  for  $S = xyz$

§ every one fails one of the reqs. of the Pumping Lemma:

$A \ni \text{~~xyz~~ } x y^i z \text{ for ~~xyz~~ } i \geq 0$

$\hookrightarrow |xy| \leq p$   
notation.