URBAN EDGE 18 / 11 / 19

# MODULE-5

## Pumping Lemma for CFL

Let L be any CFL then there exists a constant n such that if z is in L & $|z| \geq n$, then we may write $z = uvwxy$

such that

(i) $|vx| \geq 1$

(ii) $|vwx| \leq n$

(iii) $uv^iwx^iy \in L$ for all $i \geq 0$

eg: $L = \{a^n b^n c^n \mid n \geq 1\}$

Let $z \in L$ where $z = a^k b^k c^k$

$z = uvwxy$

$|vx| \geq 1$, $|vwx| \leq n$

$u = a^l$, $v = a^{k-l}$, $w = \varepsilon$, $x = b^l$, $y = b^{k-l} c^k$

~~For~~ $uv^iwx^iy \notin L$ for all $i \geq 1$. $uv^iwx^iy \in L$ only for $i = 1$