CS 201: DISCRETE STRUCTURES
SECTION G
September 18, 2018.
Quiz 2 Solution

Translate the following English sentences into propositional logic using the following propositions:
P(x): x is a Pakistani
O(x): x is an office
W(x,y): x works at y

Operators you are allowed to use: {^, v, , →, ↔}. Quantifiers you are allowed to use are: {∀, ∃}

PROBLEM 1
All Pakistanis work in some office.

$\forall x \exists y (O(y) \wedge (P(x) \rightarrow W(x,y)))$

PROBLEM 2
Osama does not work in any office.
(All the following solutions are correct)

$\exists x (O(x) \wedge W(osama,x))$
$\forall x (O(x) \rightarrow W(osama,x))$
$\forall x (O(x) \wedge W(osama,x))$

PROBLEM 3
There is an office in which no Pakistani works.

$\exists y (O(y) \wedge \forall x (P(x) \rightarrow W(x,y)))$