Lab-9 First Orden Logic

Coneate a knowledge base consisting of FOL statements of prove the given query using Resolution Proof by Resolution Given KB on Phemises -> John likes all kind of food -> Apple and vegetables are food -> Anything anyone eats and not killed is food -> Anil eats peanuts and still alive. > Harry eats everything that Anil eats -> Anyone who is alive implies not killed -> Anyone who is not killed implies alive Prove by Resolution that: John likes peanut Representation in Follows a. Vx: food (x) -> likes (John, x) b. food(Apple) A food (vegetables)

C. Yx Yy: eats (x, y) A - tilled(x) -> food(y) d. eats (Anil, Peanuts) 1 alive (Anil) e. xx: eats (Aril, x) -> cats (Howay, X) 1. 4x: - killed (x) -> alive (x) 9. tx: alive(x) -> - tilled(x) is similar h. likes ( John, Peanuts)

. Eliminate implication a. Vx - food (x) Vlikes (John, x) b. food (Apple) 1 food (vegetables) fements and c. +x +y - [eats (x,y) 1 - tilled (x)] v food (y) d. eats (Anil, Peanuts) 1 alive (Anil) e. xx nexts (Anil, x) Veats (Havey, x) 1. 4x-[- killed (x)] valive(x) q. Xx - alive(x) V - killed (x) h. likes (John, Peanuts) . Move regation (-1) inwards and trewsite a. xx - food(x) V likes (John, x) b. food (Apple) A food (vegetables) C xx xy reats (x,y) avkilled (x) v food (y) deads (Anil, Peanuts) 1 alive (Anil) e. +x Teats (Anil, x) Veats (Havey, x) 1. 4x killed (x) ] valive (x) g. +x - alive(x) v - killed(x) h. likes (john, Peanuts) · Rename variable on Handardize variables a. +x - food (x) Vlikes (John, x) 6. food (Apple) 1 food (vegetables) Cty +2 reats (y, z) v killed (y) v food (z) d. cots (Anil, Peanuts) Malive (AniT) e. In Tests (Aril, w) Veats (Harry, w) t. tg killedlg) ] v alive (g) 9 +k - alive (k) v - killed (k) h. likes (John, Peanuts)

· Drop universe a.-food(x) vlikes(John,x) A Local IV (VI book 1 6. food (Apple) c. food (vigetables) de reats(y,z) v tilled (y) v food(z)
e eats (Anil, Peanuts) 10 V(X, 1994) class f. alive (Aril) 9. - eats (Anil, W) V eats (Harry, W) -h. killed (q) valive (q) -i. -alive(k) V- Killed(k) -j. likes (John, Peanuts) -food(x) Vlikes (John, X) Tlikes (John, Peanuts) SPearets 1x3 food (Peanuts) -reats (y, z) vtilled(y) v food(z) reats (y, Peanuts) V killedly), eats (Anil, Peanuts) Killed (Anil) - alive(k) V - killed (K)
(Anil / k) - alive (Anil) alive (Anil) { } Hence proved

Algorithm 1. Input: · Knowledge Base (KB) · Query (9) 2. convent KB and -19 to clausal Form: · Eliminate implications · Move negations inward · standandize variables · skolemize (remove = quartifiers) · Drop universal quantifiers · Convert to CNF. 3. Apply Resolution: Repeatedly resolution:
Repeatedly resolve pains of clauses that contain complementary literials · Add new clauses to the KB · stop it: · Empty clause (1) is derived -> & is tome 891 · No new Clauses Lan be added -> & is False 4. output Type / False for Query 9 or blide, enloy from = mor trolure, child re 5) update of = max ( value, child-value) Wines samed on the des to the land sular models its a win player. Silve bid dold volve of Alpha Erda ( Wild, depth - 10 x 1 p. True) ( suler blide , when ( solve , while value ) (mor, g) mer of stalge to