Home work-4 on logic in AI

navæn ajan kabasu

QI	consider the knowledge base KB
	ac-bac
	5-0
	b-e
	c
	de-h
	c
	P < 91b
	9 C- CAK
	is <- anb
a)	show how The bottom up Povol- procedure work for This example
	Give an logical sequences of KB
A:-	The bottom up pooof pooreduse work as follows
	13
	1 (3
	¿c,ez
	1 c, e, b)
	{c,e,b,a}
	{c,e,b,a,i}
	me aigorimm terminates with c={c,c,b,a,i}
b)	Pis not a logical sequence of kB. Give a model of kB in which
A:-	P is not a logical consequences of kB because when we try
10000	I have also recorded as a long to the mention

to desive above knowledge base bottom up proof. Then it

derives a set of c,e,b, a, i 3 which is all are true some

remaining variables 1d, f, g, h, 1c) is not going to be derived

IP	so mat's laby fis not a logical consequences
	and a sacration (A) (b) (A)
c)	a is a logical consequences of kB. Give a top down desivation
127	FOR THE ESCOSKIOS SOMOJO SUKSD OF THOSE SON MORAL (& D
V. 200	consider The starting variable in This top down model is
14:	'a' so, The model will decive The following steps
	yes (- 0 (9)8
	Yes (- b/c) (9)9
	1 yes (- ence) (d) (d) (d)
	yes (-c) (d,0) 2 de (d
	yes - March of the March of (d, b) and march of the March
	In This way These sequence of choice will lead to proof of
	Solution Color (a) A Color (b) A Color (color (colo
	(d) & A (d) & A -2 (d) 9
Q2:-	consider the blowing clauses (18A()) 1 = (1)
des	Paice and acd bed
	faise c c a c 9 b c e 6 h (s) d = (9) 9
	1 ch (0) (- 5(DQ) 2 -) (0)
	summer The assumpties are ade, f, g, h, i) what are minimal
	Co. (1) Ch. (1) Co. (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
A:-	1-00-00 since and integrity constraints These are The
	and a clicke That man he degived
	1 d 9 1 - 1 shop (1A) d = 18UE & 9 = tove (B)) (1) = tove (0) [C-1
	Idhi = shen ((A) d=touch h=touc(B)) din= touc confict
	redit - when (1A) e = toue wd= toue (B)) end = toue conflict
	lehy when (me tave on tave (B)) enh = tave conflict
	1 e. 94 -1 , shen (a) e = toue & 9 = toue (B)) en9 = toue conflict
	1 dy -) when ((A) d=toue x d= toue (B)) drd=toue conflict
	thy -> when ((c) h: touc) & true conflict

	These are me minimal conflict (d,9) (d, h) (e,d) (eg)
	1014 (016)
a Howiss	a la
	in all to do ue atomic wisches then her
2: 19	have to write all The ground instances There are
	have to water an me good was 19hom on 02 in
	8(6)
	yes c-enc
	Q(b) 0-3 89Y
403	5(d.b)
-to 3	5(e,d) in sold and mappe sour vous extra
	fa) - va) 18(0)
	O(h) - 0. (h) 1 X(h)
	$P(C) \leftarrow V(C) \land S(C)$ 2920000 20 G 10100 907 80 800
	0(1) ((())) (())
	0(0) (0 (0) 1) (0)
	0 (b) . a(b0) (0)
tom o	0(b) (- 5(b,b) 1 (b)
WF 9	
61	(b) (- 5(b,d) \ (c) (b) (- 5(b,e) \ (e)
	$(b) \leftarrow 5(b,e) \land (e)$ $(a) \leftarrow 5(a,a) \land (a)$ $(a) \leftarrow 5(a,b) \land (b)$
A	(a) ← 5(a,a) ∧ (a) (a) ← 5(a,b) ∧ (b) 9(a) ← 5(a,c) ∧ (b)
	9(a) 6 5 (a(c) 19(c)
	9(a) & 5(a,b) 10(b) 9(a) & 5(a,c) 10(c) 9(a) & 5(a,d) 10(d)
	1 H321
1.0	
	-15:1410) 908) & (308:4(3)) rados (4)
	DOGS A C SCOTER (22)

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(e) c4 5 (4,5) 19 (b) small bruss to 100) 9000
     ((C) 6-5 (C,C) A (C) 2 08(ADDED 00 MO-ACT DAT
   Q(C) 6-5(C,C) 1 (e) (9)
       (e) 2- 5(e,a) 1 (a)
       Q(e) GOS (e,b) MQ(b) to mispulson our no solvers - 10
       Q(e) (-5(e,c) 10 (c) ( 500d) bool 22000 (0
       (e) - s@d) 10 (d) 1 bond 22000 201-
       (e) <- 5(e,e) 10(e)
mese about all the ground instances from all mese
     amount ground instances by using The bottom up proceed use.
     we will find The ground atomic consequences. So
     So by using bottom up procedure These below are The ground
     Ottomic Consequences
                              1 POSON (reason, toda)
     -> { }
     -> 1 o(a) 3
     -> (8(a), 8.(e) ) nos of 1 (bod on (10(19)8,1(a) 5)
     -1 (8(a),8(e),8(c))
  (σ) (γ(a), γ(e), ρ(c), ρ(b)) 1.12 de out out ont out out
     -> (v(a), v(e), P(c), Q(b)) 19502 May ei pomos
     -> (v(a), v(e), P(c), V(b), s(a, b))
     -> (a), & (e), P(U, Q(b), 5(a,b), 5(d,b))
     -> ( o(a) , v(e), P(c), V(b) ,5(a,b) ,5(d,b),5(e,d))
     -> (b(a), b(e), P(c), Q(b), S(a,b), S(d,b), S(e,d), Q(a)}
     -) ( 8(a), 8(e), P(c), (b), 5(a, b), 5(d, b), 5(e, d), (a), (d))
     -) (8(a), 8(e), P(c), P(b), S(a,b), S(d,b), S(e,d), P(a), P(d), P(e))
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	some final of ground atomic consequences mat desired from
	The state of the s
	(8(a), 8(e), P(c), D(b), 5(a,b), 5(d,b), 5(e,d), Q(a), Q(d),
	(6) John (0) Co S (CO) A LICE (9)
	1546) 5+ 5(6,0) v (co)
Qu:-	Provide an SLD desivation of the Guery has
a)	acress [Lodd, Library] () UN (2) 2-5 (9) 0
	<pre>chas_access [todd, Library] (b) se s) (9))</pre>
	(9) (0 (99) 2) (0) (1
98	has-access (x,1:boady) - has-access (y, 1:boary) 1 paonl(y,x)
ed be	Caspany de world and force par asid the popular of the
	(200 DIN END THE GROUND GLOMIC CONSTRUCTORS 80
050 90	C-has-access (x, 1:boaxy) , Paxent (x, todd)
	Padent (kaden, toda)
	= has -access (kaken, library) 1 Parant (kaken Hodd)
	(3) 8/(2) 8/(2)
	Here we done The two sub stitutions one is a with todal
	second is y with kasen (10) (1) (1) (1)
	so final unified set is Hodd/x/ karen/y)
	((d,b) 2 (d,a) 2 (d) 0 (0) 8 (a) 8 (c) 8 (c)
	(the) eld me (d) (the) (918, (0) 8) -
	(Ma) 100, 000, 000, 000, 000, 000, 000, 000
451	(a) (8(a) ,8(e), 8(c), 0,(a) \$ (a,b) \$ (a,b) \$ (a,b) \$ (a,c) \$
(exe)	(D)
	(0.14 (0.14 (0.14 (0.18)))

QY C) THERE IS designed for has access (00:01, 1:000,00) because b) The overy has across (many, library) has two shopeviations Give born of mem (19.60) first deviation: sim only 2000 notion on oz - has across (maxy, hibrary) (9 kg) 22000 201has-access (x, 1: booky) & student (x) Student (mady) Here we have done only one substitution mat is x with maky so final subset is (maxx/x) POWER (SOUGH , Q. 1.01) second Devivolion: C-MOS LONGES (SORGH, MODORY) A POROK (SOROH, OHE) - has-access (many, library) SO HERE WE HAVE THAT SOURCE IS A WITH OR OIL IN OTHER S / has-access (x, library) = has_access (x, library) 1 SO END (XIV) SABROPTORE / MY SOUGH IN) = has -arress (4,11,6xady) ^ Parent (4, maxy) Pasent (kasap, masy) has courses (x, OH; (e) 4- has shads (x) thos access (kazen, liboazy) neazent (kazen, mazy) here we done two substitutions one is x with many & The other is y with knowed when as easily and assembly So final set is Lmass 1x, kasen 1y]

Qyc) There is deviation for has access (axie1, library) because There is a supporting constraint that heips is parent (sough mart to atme as 08:01) 50 The deviation looks like This - has access (axie1, library) recom econo con -, hos-access (x, 1: boary) (- has access (x, 1: boary) 1 Paxent (Y, x) c-has access (y, library) , parent (y, axie) Parent (sarah, arie) (-has -access (somah, liboday) 1 Pavent (somah, axie) (HODS-CHORS (MCDY, Liberton) so here we have two substitution one is x with oxiel k other's Y (wind sarahano and a (Exposall x) 22000-201 50, Final Subset is latice /x, satah /y) and) set of answers for the avery has access (x, office) is because of its clause has_access (x, office) 4- has_bress (x) (xxxx) (xxxx) 1/2xxxxx) 4/2xxxx/ (xxxxx) 320)x 30/2 but for has-keys (1) There is no devivation that's why the Chause for Query is emply LY COUNTY X LEGON X & TOP 1001 00

Gule) if we add me given clauses to knowledge after mon The SLO desivation for This Query has access (x, OHice) Thatis - has - access (x, ottice) , has -access (x, office) & has - ters (x) chos-keys (x) , has-keys (x) -> faculty(x) - faculty (x) The onswer set for x is (diane, ming) Answer to the given query is & dione, mings