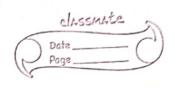
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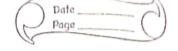
 ARTIFICIAL INTELLIGENCE	
 LAR ASSIGNMENT - 6	
the state shore for this problem in	u he
the state space for this problem can described as the set of ordered p	airs
of integers (2, y)	
1	
22 → quantity of mater in 4-galler x = 0,1,2,3,4	1 149
x = -0, 1, 2, 3, 4	00
y → quantity of mater in 3-gall	on jug
J - 0,1,2,3	7
Start State = (0,0)	
you state = (2,0)	
RULE STATE PROCESS	
~~~ ~~~	
 $1 \qquad (x,y x<4) \qquad (4,y)$	
Fill 4-gal	109
(x y luc 2)	
$\frac{2}{2} (x, y   y < 3) (x,3)$	
Fill 3-gal.	14
3 (x,y x>0) (0,y)	-
	1 1
Empty 4-go	u 149.
4. (x, y   y > 0) (x,0)	
	0
 Empty 3-91	Jug-



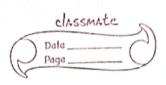
(x,y x+y>=4 (4,y-(4-x))  Y>0) Pour water from 3-gal to 4-gal with its full.  (xy x+y>=3 (x-(3-y), 3)  x>0) Pour water from 4-gal to 3-gal with its full  (x,y x+y<=4 (x+y,0)  y>0) Pour water (all) from 3- gal to 4-gal)  (x,y x+y<=3 (0,x+y)  x>0) Pour all water from 4-gal  (x,y x+y<=3 (0,x+y)  x>0) Pour all water from 4-gal  (2,0) Pour 2-gal water from 2-gal to 4-gal  initiatization!  stort state = (0,0)  Apply Rule 2: (x,y y<3) -> (x,3) (Fill 3-gal fug)  Now the state is (x,3)		
Pour water from 3-gal  to 4-gal until its full.  ( $(x,y x+y)=3$ $(x-(3-y),3)$ $(x>0)$ Pour water from 4-gal  to 3-gal until its full  7 $(x,y x+y)=4$ $(x+y,0)$ $(x+y)=6$ Pour water (all) from 3-gal to 4-gal)  8. $(x,y x+y)=6$ $(x+y)=6$ Pour all water from 4-gal $(x,y x+y)=6$ $(x+y)=6$ $(x+y$	S = (x,y x+y)=4	(4, Y-(4-x))
6 $(x,y x+y)=3$ $(x-(3-y),3)$ $x>0$ )  PBUT WATER FROM 4-gal $to 3-gal$ with life full  7 $(x,y x+y)=4$ $(x+y,0)$ PDUT WATER (all) FROM 3- $gal to 4-gal$ 8. $(x,y x+y)=3$ $(0,x+y)$ $(0,x+y)=3$ POUT all WATER FROM 4-go $(0,2)=3$ POUT 2-gal water from 3-gal to 4-gal.  initialization!  Stort state = $(0,0)$ Apply Rule 2: $(x,y y<3) \rightarrow (x,3)$ (Fill 3-gal jug)	Y>0)	Pour water from 3-gal
6 $(x,y x+y)=3$ $(x-(3-y),3)$ $x>0$ )  PRUM WATER FROM 4-gal $to 3-gal$ with life full  7 $(x,y x+y)=4$ $(x+y,0)$ PRUM MATER (all) from 3- $gal to 4-gal$ 8. $(x,y x+y)=3$ $(0,x+y)$ $(0,x+y)=3$ PRUM all MATER from 4-go $(0,2)=3$ PRUM 2-gal water from 3-gal to 4-gal.  initialization!  Stort state = $(0,0)$ Apply Rule 2: $(x,y y<3) \rightarrow (x,3)$ $(x,y y<3) \rightarrow (x,3)$ (Fill 3-gal jug)		to 4-gal until its full.
x>0)  Pour water from 4-gal $y>0$ )  Pour water from 4-gal $y>0$ )  Pour water (all) from 3- $y>0$ )  Pour water (all) from 3- $y>0$ )  Pour all water from 4-gal $y>0$ )  Pour 2-gal water from 4-gal  Pour 2-gal water from 3- $y=0$ 0,2)  Pour 2-gal water from 3- $y=0$ 1 for 4-gal  initiatization! $y=0$ 2 for 4-gal $y=0$ 3 for 4-gal $y=0$ 4 for 4-gal $y=0$ 4 for 4-gal $y=0$ 6 fill 3-gal fug)		
7. $(x,y x+y \le 4                                  $		(x-(3-y), 3)
7. $(x,y x+y \leftarrow (x+y,0)$ $y>0)$ Pour water (all) from 3- $y>0$ R. $(x,y x+y \leftarrow 3$ $(0,x+y)$ $y>0$ Pour all water from 4-90 $y>0$ Pour 2-9al water from 3- $y>0$ Pour 2-9al from 4- $y>0$ Pour 2-9al from 4- $y>0$ Pour 2-9al from 4- $y>0$ Pour 3- $y>0$ Pour	x>0)	pour mater from 4-gal
7. $(x,y x+y \le 4                                  $	M -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	to 3-gal until its full
Pour mater (all) from 3-  gal to 4-gal)  8. $(x,y x+y \le 3)$ $(0,x+y)$ $(0,$		1 1 1 5 1/17 4 1/1 1/1 1/1 1/1 1/1 1/1 1/1 1/1 1/1 1
gal to 4-gal)  8. $(x,y x+y \le 3)$ $(0,x+y)$ $(0,x+y)$ $(0,x+y)$ Pour all water from 4-go $(0,2)$ $(0,2)$ Pour 2-gal water from 3-gal to 4-gal  initialization:  Start state = $(0,0)$ Apply Rule 2: $(x,y y<3) \rightarrow (x,3)$ (Fill 3-gal fug)	7 (X, Y   X+Y <=4	(x+y,0)
8. $(x,y \mid x+y \leq 3)$ $(0,x+y)$	<u> </u>	POUR MOLUZ COUS FROM 3
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		gal to 4 you
(2,0) $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (2,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0)$ $= (3,0$	0 / 1 / 1 / 1 / 2	
$ \begin{array}{cccc}  & & & & & & & & & & & & & & & & & & &$		DOUR All MAKED WALM 4-00
9 (0,2) (2,0)  POUR 2-gal water from 3-gal to 4-gal  initiatization!  Start state = (0,0)  Apply Rule 2: $(x,y \mid y \leq 3) \rightarrow (x,3)$ (Fill 3-gal fug)	× >0)	10 3-900
POUR 2-gal mater from $2$ -gal to 4-gal.  INITIALIZATION!  Stort state = (0,0)  Apply Rule 2: $(x,y \mid y < 3) \rightarrow (x,3)$ (Fill 3-gal jug)		FA 3 Juc.
POUR 2-gal mater from $3$ -gal to 4-gal.  initialization:  stort state = (0,0)  Apply Rule 2: $(x,y \mid y < 3) \rightarrow (x,3)$ (Fill 3-gal jug)	0 (0,2)	(2,0)
initialization:  Stort state = $(0,0)$ Apply Rule 2: $(x,y \mid y < 3) \rightarrow (x,3)$ $(Fill 3-gal fug)$	(3.5)	. /
initiatization!  Start state = $(0,0)$ Apply Rule 2: $(x,y \mid y < 3) \rightarrow (x,3)$ (Fill 3-gal jug)		3-90l to 4-90l
Stort state = $(0,0)$ Apply Rule 2: $(x,y \mid y < 3) \rightarrow (x,3)$ $(Fill 3-gal jug)$		12 117770077
Stort state = $(0,0)$ Apply Rule 2: $(x,y \mid y < 3) \rightarrow (x,3)$ $(Fill 3-gal jug)$	alitiAliZATION:	
Apply Rule 2: $(x,y \mid y \leq 3) \rightarrow (x,3)$ (Fill 3-gal jug)	WITHUR SITTION	生产统12 到437年13
Apply Rule 2: $(x,y \mid y < 3) \rightarrow (x,3)$ $(x,y \mid y < 3) \rightarrow (x,3)$ (Fill 3-gal jug)	start state = (0,0)	2 2 1000 1000
(FILL 3° grow Jog)	((-1)-V.V) -	Part ( Kix)
(FILL 3º glas Jog)	Apply Rule 2:	
(FILL 3º glas Jog)	(x,414<3) -	$\rightarrow$ $(\times,3)$
Now the state is (x,3)		(HU 3-gar Jug)
Now the state is (1/5)	A 2121	1 x 21
	Now the state is	(1/3)

- Courts	Iteration 1:
-	
t Service	current State = (X,3)
care o	Apply Rule 7:
-	$(x,y)x+y<4 \rightarrow (x+y,0)$
	y>0) Pour all mates from 3-gal to 4-gal jug
	3-9al to 4-9al jug
	Nous the state is (3,0).
_	$(0.9.4\times)$ The $\lambda \wedge \lambda $
1	
	Iteration 2:
-	
-	current state = $(3,0)$ Apply Rule 2: $(x,y y<3) \rightarrow (3,3)$
	Apply Rule 2:
-	$(3,3) \rightarrow (3,3)$
-	Fill 3-gal jug.
-	
1	Nou the state is (3/3).
#	
#	Iterzation 3:
	2.30FT-AN 12(F) i
	cutrent state = (3,3)
	Apply Rule 5:
	(4, y-(4-x))
L	y>0) Pour matez from
	3-gal to 4-gal until
	full
	NRIU the state is (4,2).

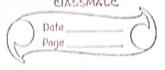
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Iteration 4:
Current state = $(4,2)$ Apply Rull 3: $(x,y x>0) \rightarrow (0,y)$
APPELLI PULL 2:
(X,Y)
$(0,y) \rightarrow (0,y)$
Empty 4-92l Jug
Nou the state is (9,2).
100 STOR 16 (9, 2).
1 1/0 8 1 10 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Iteration 5:
current state = (0,2)
Apply Rule 9.
Apply Rule 9: (2,0)
Pour 2-gal matez from
3 to 4-9al jug.
Now the state is (2,0).
4 July 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
GOAL ACTIEVED
with a March Francis wife in the 12 de st to
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,	Following is my approch for solving the above problem:
	Following is my approved for
	the abore prospen:
	Rislip was always mutual, which means that if I has a friend 2, then 2 has a friend 1.
1.	Rischip mas allumis moderates there 2 has
	that if I has a precise
	a frend 1
	2 2 lies a friend 3,
2.	docente mil ou that I and 3 are
¥ 502 - 3 - 10	Higher thank be corretal to use the
	1 has a friend 2, 2 has a friend 3, doesn't mean that I and 3 abe friends. Thus, be careful to use the disjoint set.
	The state of the s
3.	ANALYSIS: seeningly, temp-point diagram.
	ANALYSIS: Seeningly, tend-point diagram.  But it's simplex than a bimary
50.23	chart.
	100 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Open trug-tag array, record whiteless energy
	Open true-tag array, record whether enery our has friend in the first group, the second group.
	second group.
	smelp the person ouch:
	1) TE the sixt avour doorn't have his friend
	then out it in the first group and
	more his friends in the first group
	1) If the first group doesn't home his friends then put it in the first group and mark his friends in the first group with friends.



	and the state of t
	2) Otherwise:
	Carla . Till - Block to Tribally
	i) If the 2nd group doesn't have his friend, then put it in the 2nd group and more his friends in the 2nd group with friends.
	the end of the state of the sta
	then furth in the 2nd group and mark
	his friends in the 2nd group with
	Friends.
	- 1 100 h 1000 122 - 200 H507 3 400 A 111 1 1 1
	. + 2/17
	2) Otherwise, the description in both groups
	P. O. S. M. C. Marind
	Was no filens.
	you am put sum asomely is in
	has no friends.  you can put him casually is or  group, also cannot handle it
	G - 1 Control Control (Control
3.	Aunlysis: Because flure are M representatives
	Analysis: Because flure are M representatives of country A and N representatives of country B, and K pairs of
	or country o and k point of
	representatives were chalen
	Cololle alle at the colol bolics of heavello
	such that for each pair, I member is from delegation A & others member is Itrom delegation B.
	15 From delegation A & others
	membez is Itvolu delegation B.
	J
	the problem can be representated bipartite
	the problem can be representated sipartite graph if in which vertices are divided
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	M representations of country is una
	m representatives of country R one set
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t	and N+M is the number of vertices g.
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