CIS 263 Army is following {4371, 1323, 6173, 4199, 4344, 9679, 1989} Hash functionis h(x)= x mal 10 Seperate Chaining hash table For each value find the index location Seperate Chaining hash table 4371 wed 10 = 1 index value Stored 1323 med 10 = 3 0 6173 Mod 10 = 3 4371 4144 mol 10 2 9 [1323, 6173] .3 4344 mod 10 = 4 4 9674 mod 10= 4 4344 1409 mod 10= 5 6 7 8 4 [4199, 9679, 1989]

1	inear	Probins	Hash	table
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Using same mod as the previo	us table	
	Linear	Probins Hash table
4371 mid 10 = 1	index	Valuestored
1323 mod 10 = 3 V	0	9679
6 173 mol 10 = 3 X +1=4V		4371
419 mollo = 9V	2	1989
4344 mod 10= 4x +1=5V	3	1323
9679 mod 10= 9 X +1 = 0 V	, 4	6173
1989 mod 10=9x+1=0x+1=1x+1=2V	5	4344
	6	
	7	
	9	
	9	4199
quadratic probing hash table	Q 190	Landic Parbing Hash Table
quadratic probing hash table C1=1 C2=2	Q Uq. Index	Londic Pooling Hash Table Value Stored
$C_1 = 1$ $C_2 = 2$ $h(u, i) = (h'(u) + C_1 i + c_2 i^2) \% m$		
$C_1 = 1$ $C_2 = 2$ $h(u, v) = (h'(u) + C_1 i + c_2 i^2) \% m$ 43.71 + 1.04 2.02  mod  10 = 1	Index	
$C_1 = 1$ $C_2 = 2$ $h(u, i) = (h'(u) + C_1 i + c_2 i^2) \% m$	Index	Value Stored
$C_{1} = 1  C_{2} = 2$ $h(u, i) = (h'(u) + C_{1}i + c_{2}i^{2}) \% m$ $43.71 + 1.0 + 2.0^{2} \text{ mod } 10 = 1$ $(13.23 + 1.0 + 2.0^{2}) \text{ mod } 10 = 3  1$ $[61.73 + 1.0 + 2.0^{2}) \text{ mod } 10 = 3  1$	Index O	Value Stored 4371
$C_{1} = 1  C_{2} = 2$ $L_{1} = 1  C_{2} = 2$ $L_{1} = 1  C_{2} = 2$ $L_{2} = 1  C_{2} = 2$ $L_{3} = 1  C_{1} = 1  C_{2} = 1$ $L_{3} = 1  C_{1} = 1  C_{2} = 1$ $L_{3} = 1  C_{1} = 1  C_{2} = 1$ $L_{3} = 1  C_{2} = 2$ $L_{3} = 1  C_{2$	Index O	4371 9679
$C_{1} = 1  C_{2} = 2$ $L_{1}(u) = (h'(u) + C_{1}i + c_{2}i^{2}) \% m$ $L_{3}71 + 1 \cdot 0 + 2 \cdot 0^{2} \text{ mod } 10 = 1$ $(1373 + 1 \cdot 0 + 2 \cdot 0^{2}) \text{ mod } 10 = 3 $ $(6173 + 1 \cdot 0 + 2 \cdot 0^{2}) \text{ mod } 10 = 3 $ $(6173 + 1 \cdot 1 + 2 \cdot 1^{2}) \text{ mod } 10 = 6$ $(4.199 + (.0) + 2 \cdot 0^{2}) \text{ mod } 10 = 9$	Index 0 1 2 3	4371 9679
$\begin{array}{c} C_{1}=1 & C_{2}=2 \\ h(u,v)=(h'(u)+C_{1}i+c_{2}i^{2})\% m \\ H371+1.0+2.02 & mod 10=1 \\ (1323+1.0+2.02) & mod 10=3 \\ (6173+1.0+2.02) & mod 10=3 \\ (6173+1.1+2.12) & mod 10=6 \\ (4199+1.0+2.02) & mod 10=9 \\ (4344+1.0+2.02) & mod 10=4 \\ \end{array}$	Index 0 1 2 3	4371 9679 1323 4344
$C_{1} = 1  C_{2} = 2$ $h(u, i) = (h'(u) + C_{1}i + c_{2}i^{2}) \% m$ $U371 + 1.0 + 2.0^{2} \text{ mod } 10 = 1$ $(1323 + 1.0 + 2.0^{2}) \text{ mod } 10 = 3 $ $(6173 + 1.0 + 2.0^{2}) \text{ mod } 10 = 3 $ $(6173 + 1.1 + 2.1^{2}) \text{ mod } 10 = 6$ $(4.199 + (.0 + 2.0^{2}) \text{ mod } 10 = 9 $ $(4344 + 1.0 + 2.0^{2}) \text{ mod } 10 = 9 $ $(9679 + 1.0 + 2.0^{2}) \text{ mod } 10 = 9 $	Index 0 1 2 3 4 5 6 7	4371 9679 1323 4344 1989
$C_{1} = 1  C_{2} = 2$ $L_{1}(u, v) = (h'(u) + C_{1}i + c_{2}i^{2}) \% m$ $L_{3}71 + 1 \cdot 0 + 2 \cdot 0^{2} \text{ mod } 10 = 1$ $(1323 + 1 \cdot 0 + 2 \cdot 0^{2}) \text{ mod } 10 = 3 $ $(6173 + 1 \cdot 0 + 2 \cdot 0^{2}) \text{ mod } 10 = 3 $ $(6173 + 1 \cdot 1 + 2 \cdot 1^{2}) \text{ mod } 10 = 6$ $(4199 + (0) + 2 \cdot 0^{2}) \text{ mod } 10 = 6$ $(4344 + 1 \cdot 0 + 2 \cdot 0^{2}) \text{ mod } 10 = 4 $ $(9679 + 1 \cdot 1 + 2 \cdot 1^{2}) \text{ mod } 10 = 4 $ $(9679 + 1 \cdot 1 + 2 \cdot 1^{2}) \text{ mod } 10 = 2 $	Index 0 1 2 3 4 5 6 7	4371 9679 1323 4344 1984 6173
$\begin{array}{c} h(x,0) = (h'(u)+C,i+c_2i^2) \% m \\ H(x,0) = (h'(x)+c_2i^2) \% m \\ H(x,0) = (h'(x)+c_2i^2) \% m \\ H(x,0) = (h'(u)+C,i+c_2i^2) \% m \\ H(x,0) $	Index 0 1 2 3 4 5 6 7	4371 9679 1323 4344 1989
$C_{1} = 1  C_{2} = 2$ $L_{1}(u, v) = (h'(u) + C_{1}i + c_{2}i^{2}) \% m$ $L_{3}71 + 1 \cdot 0 + 2 \cdot 0^{2} \text{ mod } 10 = 1$ $(1323 + 1 \cdot 0 + 2 \cdot 0^{2}) \text{ mod } 10 = 3 $ $(6173 + 1 \cdot 0 + 2 \cdot 0^{2}) \text{ mod } 10 = 3 $ $(6173 + 1 \cdot 1 + 2 \cdot 1^{2}) \text{ mod } 10 = 6$ $(4199 + (0) + 2 \cdot 0^{2}) \text{ mod } 10 = 6$ $(4344 + 1 \cdot 0 + 2 \cdot 0^{2}) \text{ mod } 10 = 4 $ $(9679 + 1 \cdot 1 + 2 \cdot 1^{2}) \text{ mod } 10 = 4 $ $(9679 + 1 \cdot 1 + 2 \cdot 1^{2}) \text{ mod } 10 = 2 $	Index 0 1 2 3 4 5 6 7 8	4371 9679 1323 4344 1984 6173

double Hash table Primery hash = h(x) = x mod 10 Secondary hash = h2(x) = 7-(x mod 7) double hash table 4371 mol 10 = 1 V 1323 mod 10 = 3 V index Valuestored 0 notine. >1989? 6173 mod 10= 3X 4371  $h_1(x) = 3 + (7 - 6173 \mod 7) = 4\sqrt{}$ 2 1323 4 199 mod 10= 9V 3 6173 4344 mod 10= 4X h((x)= 4+(7-4344mod7)= 7V 4679 9679 mollo= 9 X 4344 h,(x)= 9+(7-9679 mod 7) = 1X 7 h, (x) = 9 + 2. (7-[674 mod]) = 3x h3(x)=4+3-(7-(4679 mol7))=5v 9 4199 1989 hy(x)=9+4:(7-(1989 ma7))=7X hs (x) = 9+5. (7-(1989) mal7))= 9 x ho(x)=4+6.(7-(1989 mol7))=1X h z(x) = 9+7.(7-(1989 marx))= 3x, hg(x)=9+8.(7-(A84 mol7))= 5x this begins to repeat? It will never find a location for the last one? 7 guess inthat case it would Just do +13