

ewnti ewnti

Ave`j ingub mk`vi

c0g ce®

Gev`ti i f0tbi e`vcvi Uv tKb thb Ab`i Kg gtb nt`Q , wK eStZ cvi wQ bv! t0t0 DVtj B tKb thb bvbv ai tbi wPŠv-Gtm fvebvi i vtR` Rtiv nq | Zvi gta` wKQzn`Q mPŠv, wKQz K0PŠv-Avi wKQzA0PŠv |

mPŠv gta` Gg0tZ0thUv gv_vq AvmtQ Zvntj v GK0U fvj tKvb wcl tq tj Lv, Avi K0PŠv-ntj v Aj 0t0 wPŠv, thgb wKQ0t0 AvtM t00U SvK0ub w` tq w` tq Pj wQj gtb nw`Q:tj v GLb hw` t00U tft0 P0 gvi ntq hvq Zvntj GB t0t0 hwiG_0tj vi wK Ae`v nte? Avi A0PŠv-ntj v hvtk Avwg D`0U wPŠv-ewj , thgb wegv0t e0m hw` wegv0tbi hvGxiv tKvb K0Bg Kti Zvntj tKvb t`tki AvBtb Zvt` i wePvi nte, m0eZt tWw0t0kbk t`tki AvBtb wePvi nte, Avmtj GUv wK wK nte?

t00U nqtZv GK t`tki tKv00vbx0 gw0j Kvbvaxb, Ab` Avti K t`k t_0k ZZxq Avi GK t`tki Dci w` tq hv`Q PZ_0`tki D0i`tk, Av`Qv Avgiv hLb Rwg 0q weK0 Kwi `vj tj wK tj Lv _vtK th KZ nvRvi wKtj wglUvi DPzch0-tKZv t0vM Ki0Z cvi te | Avgvi RvbvgtZ tj Lv

_vtK bv `vj tj , Avgvi gtb nq AvBbwe` t` i Gme w0tq M0el bv Kiv `i Kvi , nqtZv tKD tKD i iyKi0 BwZgta` , h0Kvj xb mg0q tkvbw hvq tKvb t`k Avti K t`tki AvKvkmxgv AwZK0 Kti0 G w0tq nB PB, Avmtj tmLv0b Gi Kg tKvb AvBb Av0Q wK th GZ nvRvi wKtj wglUvi D`PZv ch0-mxgv, eoB Rvb0Z B`0 Ki0Q |

AvRKvj gvbl KZwKQzwb0tqB tZv M0el bv Ki0Q - tKD Kti cvwL w0tq, tKD Kti Nvm w0tq |

tmw` b tU0b Pto Kg0_0tj hw`Qj vg, ZLb t0k0b GK f`0tj vtKi mv0_ t` Lv nj , f`0tj vK M0el bv Ki0Qb Nvm w0tq, niiv tm0d Nvm, Nvtmi dj , Nvtmi eb0Z`w` w0tq | wZvb

A000j qvi GK0U c0m0 wek0e`vj q t_0k w0GBPw Kti Rvcv0bi GK wek0e`vj tq tcv0 WKU0vj t0tj v wntm0e K0qK eQi KvR Kti w0w0b w0t0i Gtm w0w0bi GK0U c0m0 wek0e`vj q wi mv0 t0tj wmc wntm0e KvR Ki0Qb |

Avti K0U fvebv fv0ei RM0Z Nj Nj Kti N0i teov`Q tmwU nj - B`w0s A000j qvq GK0U Z0Q wcl tq GZ wglwqv Kfv0i R nt`Q i0tj tKgb thb we`0q j vtM, NUBwU nj L0B w000j , cvPk- Qw00k eQti i GK0U A000j qvb t0tq B0` w0w0kqvq W0M `0Mw0j s gv0j vq aiv cti0Q, Kv0-g0n KZc0 Zvi e`vtM t0k0`vi mvgM0 t0t0t0b | ZvB ZvtK AvUK Kti wePvi vaxb ti0t0b, wKŠ`tm w0t0R0K w0t`0 ej - ej0 t Ab` tKD Zvi e`vtM W0M X0K0q w`0t0Q, tm G wcl tq wKQB Rvtb bv, wKŠ`wePvi K Zvi c00 tKvb c0gvbw` bv cvl qvq ZvtK wek eQi Kvi0 t00i Av`k w`0t0Qb, hw` l B0` w0w0kqv0 AvBtb G RvwZq Aciv0a gz`0 Ū A_ev hveZRxb Kvi0 Ū t` l qvi K_v, Zvi c0i l t0t0wU c00i D0Kj DaZb tKvtU0Avicj Kti0Qb, Gw`tk Zvi c00i mg_00 tj vKRb A_00 hvi0 gtb Kti wntdj Ki ex (t0t0wU) w0t`vl0 Zvi0 Pv0v Z0j Zvi gv0j v Pvj vt0vi R0b` A_00Rv0w0b w`0Q | `0 Rb AvBbwe` l hv`0b ZvtK w0t`vl0 c0gvb Kivi Rb` B0` w0w0kqv0 tKvtU0gv0j v Pvj vtZ, BbUwi m0U0j

GKRb tj embR cy`l Zvi gvgj vq A_`hVmbv w` t`Q ARvbn Kvi t`b ZvtK I wgvWwqvq t` Lv`Q
dj vl Kti | GgbwK A t`ij qvb mi Kvi I A_`mrvh` w` t`Qb, Rvbn tM tQ w`tdj Ki ex
B` wbsKvtj tZqvEi evi B t` wbwkqvq wMtqtQb Ges Zvi tevbi cZwOZ e`emv AvtQ, Zvi
wczvi I bwmK WwM wbtq Sv t`gj v wQj | A_`w wgvWwqv hZUv mgq wbtq GB NUvvi Lei `tj v
cPvi Ki tQ Ges G tZ hZ A_`e`q n t`Q, G A_`w t`q AwvdKvi GK nvRvi t`gtqK `wi`Zvi
AwfKvc Ges Awk`vi nvZ t` tK evPv t`bv thZ Lp` f`vj f`vte, A_P t`KD G w`el t`q a` t`c
Ki tQ bv GZUKl , m f` RM t`Zi g`vbj wK Kti th GZUv GK t`PvLv nq f`v t`Z j 3/4 v j v t`M |
G NUbv i`bvi ci t` tK Avgvi wbt`Ri I f`q f`q j v t`M hw` mwZ` mwZ` Gi Kg hvGvc t` e` v t`Mi
wFZ t`i WwM XwK t`q w` t`q t`Kvb wbt` v`P t`j vK t`K w`c t` t`d t`j , Guv Lp`B D t` t`Mi w`el q |

wmWwb w`egvb e` i t` tK hLb t`c b`Qvotj v ZLb mgq Pvi t`U t`e t`R c`qvGk wgvwU, AvKv t`k
i`3j vj m h` c`l`q A` w`gZ nq nq , m`h`q A` -hvl qv `k` t` L t`j t`Kgb thb GKUv Abf`wZ
bvov t` q gb t`K, Rwbobv t`Kb Ggb nq, nq t`Zv Kv t`iv Kv t`iv GKB i K t`gi Awf`AZv nq A_ev
Kv t`iv wKQB nqbv, wK Rwb GKUv Awb`o`qZv KvR Kti g`t`bi Mnx t`b, GB e`jS t`kl m`h`
t` Lj vg! thgb AvMwvGKvj t`e t`P `vKvi w`b`o`qZv t`KD w` t`Z cvi t`e bv, t`Zgub AvMwvG m`h`
DVv t`KI t`KD cvi t`ebv w` t`Z w`b`o`qZv | w`b`o`qB ` t`Uvi cvi msLv t`bi m`e`v`ebvi nv t`i `vK t`e
w`ei vU Zvi Zg` | GB Awb`o`qZvi ga` w` t`q c`w`_exi me c`b`xKj t`K `Pvi c`ZKj Zvi
t`gvKw`ej v Kti t`e t`P `vK t`Z nq , c`KwZi Pi g` c`j t`qi c`wZ t`h w`M Zvq Rqx n t`q mvg t`b AvMvq
c`b`xKj I D w`M Z R M r |

c`ZKj Avenl qv, c`ZKj cvi t`ek, c`ZKj Lv` msM`ni msM`g I c`ZKj i vR`w`wZK
gZ t`f` i m v t`_ h`x Kti, w`e t`kl Kti gvbeKj t`K AvMv t`Z nq m b` t`_ cv t`b | M t`o t`Zv t`j m f`Zv,
M t`o t`Zv t`j AvaybK kni -e` i , c`KwZ gv t`S gv t`S ` w`ot`q w` t`q hvq Zv t` i KwB k`g Mov
m f`Zv t`K, ZQbQ & Kti t` q me m y` i cvi K i bv | g`vbj Avevi M t`o t`Zv t`j m f`Zv I
Bbd t`-vK Rvi GK wU D 3/4 j f`w`el t`Zi Avkvq | Gi g`t`a` c`KwZi t`P t`c t` l qv A_ev
gvbeK t`j i w`uqvK t`g`i dj m`jZ t`Z nDK, Av t`m g`nv gvi x NvZK e`w`a, g`vbj cvMj n t`q hvq
Gme g`nv gvi xi Kovj M`m t` t`K i `v`v cvl qvi Rb`, M t`el bv Kti wK f`v t`e Gme NvZK e`w`a
t` t`K t`e t`P `vK v hvq t`m Rb` I I a A_ev w`c`f`b wU f` Aw`e`v t`i m v abvq, K L b l g`vbj m dj
nq Avevi K L b l ARvbn B `v t`K NvZK e`w`a i Kv b ev c`ZKvi | Zey g`vbj t` t`g `v t`K bv
GZUKl , AvMv t`Z `v t`K m b` t`Li cv t`b `P` t`e t`M | GK` j g`vbj P t`j hvq G c`w`_ex t` t`K
Avi GK` j e`jS t`bq P j vi c` t`_i wKvbn, Zvi ci Zv w`l P t`j hvq, G f`v t`e B P j t`Z `v t`K
cvj vK t`g mvg t`b P j vi msM`g |

wmWwb t` t`K t`ewqs 747 w`egv t`b DVj vg, w`u t`c j vg Rvbn j vi cv t`k 32G, Guv nj w`eRw`R
Kv t`ki Lp` Kv t`Q, Avgvi cv t`ki w` t`U em t`j v GKRb Pw`y`k-c`w`P k e`Q t`i i f` t`Q t`j bvg Zvi
t`M b`GLb c`k`e Avm t`Z cv t`i Av`Qv cvi Pq n l qvi Av t`M wK Kti e`S j vg th t`Q t`j wU f` ? Avm t`j
t` L t`Z f`^ g`t`b n w`Qj ZvB |

Pj t`e

(tj LK cvi w`PwZ: Ave` j i ngvb w`K`vi GKRb Kw`uDUvi w`e`v`bx, eZ`g`v t`b w`mWwb
w`e`k`e` `v j t`qi `g` Ae Bbd i t`gkb t`UK t`bv t`j w`R t`Z ev BI Bbd i t`g w`UK t`n w`el t`q w`c GBP, w`w i
Rb` M t`el bv Ki t`Qb. B-t`gBj : sikder@cs.usyd.edu