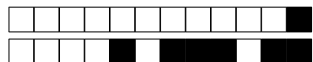




SAMPLE EXAM #1

Explain here what is a rainbow table, with a simple example provided below. Example of a chain: the row starting at **answered** and ending with **loadstar**. Explain the search algorithm.

	W_0	E_0	W_1	E_1	W_2	E_2	W_3
(0)	answered	$h \rightarrow$ 273EFF	$r_0 \rightarrow$ hatched	$h \rightarrow$ B5FC2D	$r_1 \rightarrow$ gluttony	$h \rightarrow$ CD3864	$r_2 \rightarrow$ loadstar
(1)	gaudily	$h \rightarrow$ F1076B	$r_0 \rightarrow$ comedy	$h \rightarrow$ 5DC716	$r_1 \rightarrow$ gaucher	$h \rightarrow$ DD64BE	$r_2 \rightarrow$ solstice
(2)	wimpled	$h \rightarrow$ 1B103D	$r_0 \rightarrow$ resound	$h \rightarrow$ A773F2	$r_1 \rightarrow$ shoo	$h \rightarrow$ 9388EA	$r_2 \rightarrow$ gong
(3)	autocrat	$h \rightarrow$ 29AF8D	$r_0 \rightarrow$ conduit	$h \rightarrow$ BD88FE	$r_1 \rightarrow$ tightest	$h \rightarrow$ A0B479	$r_2 \rightarrow$ communal
(4)	scherzo	$h \rightarrow$ 444811	$r_0 \rightarrow$ weaker	$h \rightarrow$ 0B98F9	$r_1 \rightarrow$ piking	$h \rightarrow$ C70CFC	$r_2 \rightarrow$ pointing
(5)	singed	$h \rightarrow$ ODCB87	$r_0 \rightarrow$ hatter	$h \rightarrow$ 2FDBED	$r_1 \rightarrow$ blip	$h \rightarrow$ DB5955	$r_2 \rightarrow$ mansion
(6)	soberly	$h \rightarrow$ 80B27A	$r_0 \rightarrow$ myna	$h \rightarrow$ 224F29	$r_1 \rightarrow$ fascist	$h \rightarrow$ 3F8B6F	$r_2 \rightarrow$ peek
(7)	dopier	$h \rightarrow$ B0571D	$r_0 \rightarrow$ below	$h \rightarrow$ E93474	$r_1 \rightarrow$ sociable	$h \rightarrow$ 02DE68	$r_2 \rightarrow$ resolute
(8)	lorry	$h \rightarrow$ 8487EB	$r_0 \rightarrow$ divert	$h \rightarrow$ 4297DB	$r_1 \rightarrow$ ostrich	$h \rightarrow$ 6119A1	$r_2 \rightarrow$ tactic
(9)	aquifer	$h \rightarrow$ 8006B7	$r_0 \rightarrow$ blanket	$h \rightarrow$ D4F575	$r_1 \rightarrow$ allspice	$h \rightarrow$ 34C9D7	$r_2 \rightarrow$ huckster



+1/2/59+

Question 1 ♣ In the example table, which operations are necessarily performed to search for **CD3864** (line 0)?

- | | | |
|--|--|---|
| <input type="checkbox"/> r_0 (2EBF49) | <input checked="" type="checkbox"/> h (answered) | <input type="checkbox"/> r_0 (B5FC2D) |
| <input type="checkbox"/> r_2 (273EFF) | <input checked="" type="checkbox"/> r_1 (B5FC2D) | <input type="checkbox"/> h (CD3864) |
| <input checked="" type="checkbox"/> r_2 (CD3864) | <input type="checkbox"/> h (loadstar) | <input type="checkbox"/> h (cash) |
| <input checked="" type="checkbox"/> h (hatched) | <input type="checkbox"/> r_1 (CD3864) | <input type="checkbox"/> r_0 (CD3864) |
| <input type="checkbox"/> h (gluttony) | <input type="checkbox"/> r_2 (B5FC2D) | <input type="checkbox"/> r_1 (273EFF) |
| <input checked="" type="checkbox"/> r_0 (273EFF) | <input type="checkbox"/> r_1 (3CA6B8) | <input type="checkbox"/> r_0 (answered) |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **1B103D** (line 2)?

- | | | |
|--|---|--|
| <input type="checkbox"/> h (wimpled) | <input type="checkbox"/> r_2 (wimpled) | <input type="checkbox"/> r_0 (34AA54) |
| <input type="checkbox"/> r_2 (7AFE37) | <input type="checkbox"/> h (lifespan) | <input checked="" type="checkbox"/> r_2 (1B103D) |
| <input checked="" type="checkbox"/> r_0 (1B103D) | <input type="checkbox"/> h (A773F2) | <input type="checkbox"/> h (gong) |
| <input checked="" type="checkbox"/> r_2 (9388EA) | <input type="checkbox"/> r_0 (A773F2) | <input checked="" type="checkbox"/> r_1 (1B103D) |
| <input type="checkbox"/> r_0 (9388EA) | <input checked="" type="checkbox"/> h (resound) | <input type="checkbox"/> r_1 (9388EA) |
| <input checked="" type="checkbox"/> h (shoo) | <input type="checkbox"/> r_2 (A773F2) | <input checked="" type="checkbox"/> r_1 (A773F2) |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **5DC716** (line 1)?

- | | | |
|--|--|--|
| <input type="checkbox"/> r_1 (DD64BE) | <input type="checkbox"/> r_0 (5DC716) | <input checked="" type="checkbox"/> r_2 (5DC716) |
| <input checked="" type="checkbox"/> r_2 (DD64BE) | <input checked="" type="checkbox"/> r_0 (F1076B) | <input type="checkbox"/> h (commune) |
| <input type="checkbox"/> h (talk) | <input type="checkbox"/> r_1 (A9855C) | <input type="checkbox"/> h (solstice) |
| <input checked="" type="checkbox"/> h (gaudily) | <input type="checkbox"/> r_0 (DD64BE) | <input type="checkbox"/> r_2 (F1076B) |
| <input checked="" type="checkbox"/> h (gaucher) | <input checked="" type="checkbox"/> r_1 (5DC716) | <input type="checkbox"/> r_1 (F1076B) |
| <input type="checkbox"/> r_1 (gaucher) | <input type="checkbox"/> h (comedy) | <input type="checkbox"/> h (5DC716) |

Question 4 ♣ In the example table, which operations are necessarily performed to search for **044319** (not in the table)?

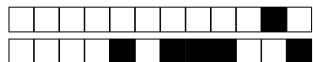
- | | | |
|---|--|--|
| <input type="checkbox"/> h (communal) | <input type="checkbox"/> r_1 (29AF8D) | <input checked="" type="checkbox"/> r_0 (044319) |
| <input type="checkbox"/> r_2 (autocrat) | <input type="checkbox"/> r_2 (A0B479) | <input type="checkbox"/> r_0 (BD88FE) |
| <input type="checkbox"/> r_0 (29AF8D) | <input type="checkbox"/> r_1 (BD88FE) | <input type="checkbox"/> h (A0B479) |
| <input type="checkbox"/> r_1 (A0B479) | <input type="checkbox"/> h (conduit) | <input type="checkbox"/> r_0 (A0B479) |
| <input type="checkbox"/> h (tightest) | <input checked="" type="checkbox"/> r_1 (044319) | <input checked="" type="checkbox"/> r_2 (044319) |
| <input type="checkbox"/> h (autocrat) | <input type="checkbox"/> r_2 (29AF8D) | <input type="checkbox"/> r_2 (BD88FE) |



SAMPLE EXAM #2

Explain here what is a rainbow table, with a simple example provided below. Example of a chain: the row starting at **aerie** and ending with **rage**. Explain the search algorithm.

	W_0	E_0	W_1	E_1	W_2	E_2	W_3
(0)	aerie	531DFF	$r_0 \rightarrow$ brute	$h \rightarrow$ C5722C	$r_1 \rightarrow$ grazed	$h \rightarrow$ 975E3E	$r_2 \rightarrow$ rage
(1)	wastrel	301FA8	$r_0 \rightarrow$ bided	$h \rightarrow$ 24BA60	$r_1 \rightarrow$ almost	$h \rightarrow$ 556F7B	$r_2 \rightarrow$ chafe
(2)	goodby	5F8E62	$r_0 \rightarrow$ stammer	$h \rightarrow$ 19E7CA	$r_1 \rightarrow$ energy	$h \rightarrow$ B7DABB	$r_2 \rightarrow$ discount
(3)	frothier	3462C1	$r_0 \rightarrow$ operand	$h \rightarrow$ B09046	$r_1 \rightarrow$ slot	$h \rightarrow$ BBDE48	$r_2 \rightarrow$ cardio
(4)	treading	11FB71	$r_0 \rightarrow$ early	$h \rightarrow$ 65C01A	$r_1 \rightarrow$ adaptive	$h \rightarrow$ CC0987	$r_2 \rightarrow$ fount
(5)	valet	8B9BB1	$r_0 \rightarrow$ amenity	$h \rightarrow$ B5133C	$r_1 \rightarrow$ pacific	$h \rightarrow$ 759EF4	$r_2 \rightarrow$ strafed
(6)	speak	E5EC96	$r_0 \rightarrow$ effete	$h \rightarrow$ AC1C83	$r_1 \rightarrow$ reefing	$h \rightarrow$ D3B58D	$r_2 \rightarrow$ converge
(7)	bunted	883EC7	$r_0 \rightarrow$ terraced	$h \rightarrow$ BCCB87	$r_1 \rightarrow$ polyp	$h \rightarrow$ 67E734	$r_2 \rightarrow$ flux
(8)	ranchd	E78289	$r_0 \rightarrow$ perfumed	$h \rightarrow$ 414A3E	$r_1 \rightarrow$ cluster	$h \rightarrow$ EC247F	$r_2 \rightarrow$ ration
(9)	kilning	986281	$r_0 \rightarrow$ flashed	$h \rightarrow$ 7358E9	$r_1 \rightarrow$ bated	$h \rightarrow$ 094DF4	$r_2 \rightarrow$ upending



+2/2/57+

Question 1 ♣ In the example table, which operations are necessarily performed to search for **24BA60** (line 1)?

- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> r_0 (301FA8) | <input checked="" type="checkbox"/> r_1 (24BA60) | <input checked="" type="checkbox"/> h (almost) |
| <input checked="" type="checkbox"/> h (wastrel) | <input type="checkbox"/> r_1 (301FA8) | <input type="checkbox"/> r_0 (556F7B) |
| <input type="checkbox"/> r_2 (301FA8) | <input type="checkbox"/> h (necklace) | <input checked="" type="checkbox"/> r_2 (556F7B) |
| <input type="checkbox"/> h (bided) | <input type="checkbox"/> h (chafe) | <input type="checkbox"/> r_0 (24BA60) |
| <input type="checkbox"/> h (getup) | <input checked="" type="checkbox"/> r_2 (24BA60) | <input type="checkbox"/> r_1 (almost) |
| <input type="checkbox"/> r_1 (556F7B) | <input type="checkbox"/> h (24BA60) | <input type="checkbox"/> r_1 (6BC588) |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **5F8E62** (line 2)?

- | | | |
|--|---|---|
| <input type="checkbox"/> r_1 (B7DABB) | <input checked="" type="checkbox"/> h (energy) | <input checked="" type="checkbox"/> r_1 (5F8E62) |
| <input type="checkbox"/> h (goodby) | <input checked="" type="checkbox"/> r_2 (B7DABB) | <input type="checkbox"/> r_2 (19E7CA) |
| <input type="checkbox"/> r_0 (DAF197) | <input checked="" type="checkbox"/> r_2 (5F8E62) | <input checked="" type="checkbox"/> r_1 (19E7CA) |
| <input type="checkbox"/> h (discount) | <input type="checkbox"/> r_2 (goodby) | <input type="checkbox"/> h (19E7CA) |
| <input type="checkbox"/> h (kibosh) | <input type="checkbox"/> r_0 (19E7CA) | <input checked="" type="checkbox"/> r_0 (5F8E62) |
| <input type="checkbox"/> r_0 (B7DABB) | <input checked="" type="checkbox"/> h (stammer) | <input type="checkbox"/> r_2 (61B856) |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **A1B3BE** (not in the table)?

- | | | |
|--|---|---|
| <input type="checkbox"/> r_1 (3462C1) | <input checked="" type="checkbox"/> r_0 (A1B3BE) | <input type="checkbox"/> r_0 (BBDE48) |
| <input type="checkbox"/> h (BBDE48) | <input type="checkbox"/> r_0 (B09046) | <input checked="" type="checkbox"/> r_1 (A1B3BE) |
| <input type="checkbox"/> r_2 (BBDE48) | <input type="checkbox"/> r_0 (3462C1) | <input checked="" type="checkbox"/> r_2 (A1B3BE) |
| <input type="checkbox"/> h (frothier) | <input type="checkbox"/> r_1 (BBDE48) | <input type="checkbox"/> r_1 (B09046) |
| <input type="checkbox"/> r_2 (frothier) | <input type="checkbox"/> r_2 (B09046) | <input type="checkbox"/> r_2 (3462C1) |
| <input type="checkbox"/> h (cardio) | <input type="checkbox"/> h (operand) | <input type="checkbox"/> h (slot) |

Question 4 ♣ In the example table, which operations are necessarily performed to search for **975E3E** (line 0)?

- | | | |
|---|--|---|
| <input type="checkbox"/> r_1 (9A5858) | <input type="checkbox"/> r_2 (C5722C) | <input type="checkbox"/> h (grazed) |
| <input checked="" type="checkbox"/> r_0 (531DFF) | <input type="checkbox"/> h (975E3E) | <input checked="" type="checkbox"/> r_2 (975E3E) |
| <input type="checkbox"/> r_2 (531DFF) | <input type="checkbox"/> h (debit) | <input type="checkbox"/> r_1 (975E3E) |
| <input checked="" type="checkbox"/> h (brute) | <input type="checkbox"/> r_0 (aerie) | <input type="checkbox"/> r_1 (531DFF) |
| <input checked="" type="checkbox"/> h (aerie) | <input type="checkbox"/> r_0 (C5722C) | <input type="checkbox"/> h (rage) |
| <input type="checkbox"/> r_0 (CFB72C) | <input type="checkbox"/> r_0 (975E3E) | <input checked="" type="checkbox"/> r_1 (C5722C) |



SAMPLE EXAM #3

Explain here what is a rainbow table, with a simple example provided below. Example of a chain: the row starting at **snore** and ending with **alluvia**. Explain the search algorithm.

	W_0	E_0	W_1	E_1	W_2	E_2	W_3
(0)	snore	$h \rightarrow$ 627C55	$r_0 \rightarrow$ featured	$h \rightarrow$ 877C2E	$r_1 \rightarrow$ nobody	$h \rightarrow$ 038F2F	$r_2 \rightarrow$ alluvia
(1)	cheery	$h \rightarrow$ 9732D4	$r_0 \rightarrow$ decident	$h \rightarrow$ 3FB531	$r_1 \rightarrow$ rookery	$h \rightarrow$ 663FB7	$r_2 \rightarrow$ grosser
(2)	blank	$h \rightarrow$ 9C85D2	$r_0 \rightarrow$ petrol	$h \rightarrow$ 4613E0	$r_1 \rightarrow$ masterly	$h \rightarrow$ 37E9C7	$r_2 \rightarrow$ ism
(3)	locking	$h \rightarrow$ 83335A	$r_0 \rightarrow$ wiper	$h \rightarrow$ OC5DB1	$r_1 \rightarrow$ stealing	$h \rightarrow$ 9706C1	$r_2 \rightarrow$ club
(4)	exhaling	$h \rightarrow$ A6D834	$r_0 \rightarrow$ cleanest	$h \rightarrow$ BBAEEC	$r_1 \rightarrow$ ghostly	$h \rightarrow$ 63FFF3	$r_2 \rightarrow$ busybody
(5)	solemnner	$h \rightarrow$ 66F5AE	$r_0 \rightarrow$ biggest	$h \rightarrow$ D771B6	$r_1 \rightarrow$ pace	$h \rightarrow$ D387E6	$r_2 \rightarrow$ onward
(6)	kidney	$h \rightarrow$ 6A9401	$r_0 \rightarrow$ mutation	$h \rightarrow$ BB9B83	$r_1 \rightarrow$ damned	$h \rightarrow$ BA51FF	$r_2 \rightarrow$ downwind
(7)	wooziest	$h \rightarrow$ E28114	$r_0 \rightarrow$ tonsil	$h \rightarrow$ A3302F	$r_1 \rightarrow$ overrun	$h \rightarrow$ B80A1D	$r_2 \rightarrow$ consult
(8)	tryst	$h \rightarrow$ 175AE6	$r_0 \rightarrow$ careened	$h \rightarrow$ 017A97	$r_1 \rightarrow$ duelling	$h \rightarrow$ 536E0F	$r_2 \rightarrow$ prettily
(9)	daytime	$h \rightarrow$ 3DB331	$r_0 \rightarrow$ loony	$h \rightarrow$ 82502A	$r_1 \rightarrow$ monotony	$h \rightarrow$ 0E8C3F	$r_2 \rightarrow$ footstep



+3/2/55+

Question 1 ♣ In the example table, which operations are necessarily performed to search for **9E58FA** (not in the table)?

- | | | |
|--|--|--|
| <input type="checkbox"/> $h(\text{stealing})$ | <input checked="" type="checkbox"/> $r_1(\text{9E58FA})$ | <input type="checkbox"/> $r_0(\text{83335A})$ |
| <input type="checkbox"/> $h(\text{locking})$ | <input type="checkbox"/> $r_2(\text{83335A})$ | <input type="checkbox"/> $r_0(\text{0C5DB1})$ |
| <input checked="" type="checkbox"/> $r_0(\text{9E58FA})$ | <input type="checkbox"/> $r_1(\text{83335A})$ | <input type="checkbox"/> $r_2(\text{0C5DB1})$ |
| <input type="checkbox"/> $r_2(\text{9706C1})$ | <input type="checkbox"/> $r_2(\text{locking})$ | <input type="checkbox"/> $h(\text{9706C1})$ |
| <input type="checkbox"/> $r_0(\text{9706C1})$ | <input type="checkbox"/> $h(\text{wiper})$ | <input checked="" type="checkbox"/> $r_2(\text{9E58FA})$ |
| <input type="checkbox"/> $r_1(\text{9706C1})$ | <input type="checkbox"/> $r_1(\text{0C5DB1})$ | <input type="checkbox"/> $h(\text{club})$ |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **9C85D2** (line 2)?

- | | | |
|--|--|--|
| <input type="checkbox"/> $r_0(\text{4613E0})$ | <input checked="" type="checkbox"/> $h(\text{petrol})$ | <input type="checkbox"/> $h(\text{ism})$ |
| <input type="checkbox"/> $h(\text{blank})$ | <input type="checkbox"/> $r_2(\text{4613E0})$ | <input checked="" type="checkbox"/> $h(\text{masterly})$ |
| <input checked="" type="checkbox"/> $r_1(\text{9C85D2})$ | <input checked="" type="checkbox"/> $r_2(\text{37E9C7})$ | <input type="checkbox"/> $r_1(\text{37E9C7})$ |
| <input checked="" type="checkbox"/> $r_2(\text{9C85D2})$ | <input type="checkbox"/> $r_0(\text{89EDDA})$ | <input type="checkbox"/> $r_2(\text{2C3FEF})$ |
| <input checked="" type="checkbox"/> $r_1(\text{4613E0})$ | <input checked="" type="checkbox"/> $r_0(\text{9C85D2})$ | <input type="checkbox"/> $h(\text{4613E0})$ |
| <input type="checkbox"/> $r_2(\text{blank})$ | <input type="checkbox"/> $h(\text{meowed})$ | <input type="checkbox"/> $r_0(\text{37E9C7})$ |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **038F2F** (line 0)?

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> $r_0(\text{627C55})$ | <input type="checkbox"/> $r_0(\text{snore})$ | <input type="checkbox"/> $r_1(\text{038F2F})$ |
| <input type="checkbox"/> $r_0(\text{E23BB5})$ | <input type="checkbox"/> $h(\text{alluvia})$ | <input type="checkbox"/> $r_0(\text{038F2F})$ |
| <input checked="" type="checkbox"/> $h(\text{featured})$ | <input type="checkbox"/> $r_2(\text{877C2E})$ | <input type="checkbox"/> $r_1(\text{627C55})$ |
| <input type="checkbox"/> $h(\text{nobody})$ | <input checked="" type="checkbox"/> $r_2(\text{038F2F})$ | <input type="checkbox"/> $r_0(\text{877C2E})$ |
| <input type="checkbox"/> $h(\text{mestizo})$ | <input checked="" type="checkbox"/> $r_1(\text{877C2E})$ | <input checked="" type="checkbox"/> $h(\text{snore})$ |
| <input type="checkbox"/> $h(\text{038F2F})$ | <input type="checkbox"/> $r_1(\text{3F4CD3})$ | <input type="checkbox"/> $r_2(\text{627C55})$ |

Question 4 ♣ In the example table, which operations are necessarily performed to search for **3FB531** (line 1)?

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> $h(\text{rookery})$ | <input type="checkbox"/> $r_1(\text{9732D4})$ | <input type="checkbox"/> $h(\text{grosser})$ |
| <input type="checkbox"/> $h(\text{savager})$ | <input checked="" type="checkbox"/> $r_2(\text{3FB531})$ | <input checked="" type="checkbox"/> $r_1(\text{3FB531})$ |
| <input checked="" type="checkbox"/> $h(\text{cheery})$ | <input checked="" type="checkbox"/> $r_0(\text{9732D4})$ | <input type="checkbox"/> $h(\text{3FB531})$ |
| <input checked="" type="checkbox"/> $r_2(\text{663FB7})$ | <input type="checkbox"/> $r_1(\text{663FB7})$ | <input type="checkbox"/> $r_1(\text{rookery})$ |
| <input type="checkbox"/> $h(\text{decendent})$ | <input type="checkbox"/> $h(\text{megaton})$ | <input type="checkbox"/> $r_2(\text{9732D4})$ |
| <input type="checkbox"/> $r_0(\text{3FB531})$ | <input type="checkbox"/> $r_1(\text{07C8EC})$ | <input type="checkbox"/> $r_0(\text{663FB7})$ |



SAMPLE EXAM #4

Explain here what is a rainbow table, with a simple example provided below. Example of a chain: the row starting at [armada](#) and ending with [shank](#). Explain the search algorithm.

	W_0	E_0	W_1	E_1	W_2	E_2	W_3
(0)	armada	$h \rightarrow$ A94DBC	$r_0 \rightarrow$ omitted	$h \rightarrow$ 29DA18	$r_1 \rightarrow$ encoding	$h \rightarrow$ B88014	$r_2 \rightarrow$ shank
(1)	branding	$h \rightarrow$ 9E6750	$r_0 \rightarrow$ fancying	$h \rightarrow$ AF2280	$r_1 \rightarrow$ enamor	$h \rightarrow$ F00538	$r_2 \rightarrow$ sieve
(2)	gannet	$h \rightarrow$ FD05D9	$r_0 \rightarrow$ frigid	$h \rightarrow$ CABC3E	$r_1 \rightarrow$ grounded	$h \rightarrow$ 52A69A	$r_2 \rightarrow$ deplaned
(3)	sizzle	$h \rightarrow$ D0DBC4	$r_0 \rightarrow$ reap	$h \rightarrow$ 1C185A	$r_1 \rightarrow$ commit	$h \rightarrow$ 7713F0	$r_2 \rightarrow$ dumfound
(4)	vandal	$h \rightarrow$ 947634	$r_0 \rightarrow$ craze	$h \rightarrow$ 17C351	$r_1 \rightarrow$ blocking	$h \rightarrow$ 5B5D27	$r_2 \rightarrow$ scale
(5)	sire	$h \rightarrow$ 9D1CD9	$r_0 \rightarrow$ lumpish	$h \rightarrow$ F9D102	$r_1 \rightarrow$ mestizo	$h \rightarrow$ 5E977A	$r_2 \rightarrow$ panderer
(6)	gullet	$h \rightarrow$ FC1A4E	$r_0 \rightarrow$ bowsprit	$h \rightarrow$ 46FE6C	$r_1 \rightarrow$ embalmed	$h \rightarrow$ F830DA	$r_2 \rightarrow$ grid
(7)	craving	$h \rightarrow$ 7F0BC4	$r_0 \rightarrow$ forensic	$h \rightarrow$ 3B0CBF	$r_1 \rightarrow$ wiggled	$h \rightarrow$ 81B46B	$r_2 \rightarrow$ plunging
(8)	joshing	$h \rightarrow$ 20B1A5	$r_0 \rightarrow$ killdeer	$h \rightarrow$ 0D2C7D	$r_1 \rightarrow$ yucking	$h \rightarrow$ 6DA879	$r_2 \rightarrow$ debonair
(9)	drapery	$h \rightarrow$ 332979	$r_0 \rightarrow$ litany	$h \rightarrow$ 72E504	$r_1 \rightarrow$ provably	$h \rightarrow$ E3CAEF	$r_2 \rightarrow$ fawn



+4/2/53+

Question 1 ♣ In the example table, which operations are necessarily performed to search for **AF2280** (line 1)?

- | | | |
|--|--|--|
| <input type="checkbox"/> r_0 (F00538) | <input checked="" type="checkbox"/> r_2 (F00538) | <input checked="" type="checkbox"/> h (enamor) |
| <input checked="" type="checkbox"/> h (branding) | <input checked="" type="checkbox"/> r_1 (AF2280) | <input type="checkbox"/> r_1 (enamor) |
| <input type="checkbox"/> r_1 (F00538) | <input type="checkbox"/> r_1 (207C0E) | <input type="checkbox"/> h (AF2280) |
| <input type="checkbox"/> h (mongeese) | <input type="checkbox"/> h (lark) | <input checked="" type="checkbox"/> r_0 (9E6750) |
| <input type="checkbox"/> h (fancying) | <input checked="" type="checkbox"/> r_2 (AF2280) | <input type="checkbox"/> r_1 (9E6750) |
| <input type="checkbox"/> r_2 (9E6750) | <input type="checkbox"/> r_0 (AF2280) | <input type="checkbox"/> h (sieve) |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **B88014** (line 0)?

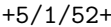
- | | | |
|--|--|--|
| <input type="checkbox"/> r_0 (B88014) | <input type="checkbox"/> r_1 (02243B) | <input type="checkbox"/> h (shank) |
| <input checked="" type="checkbox"/> h (omitted) | <input type="checkbox"/> r_1 (A94DBC) | <input checked="" type="checkbox"/> r_2 (B88014) |
| <input type="checkbox"/> h (B88014) | <input type="checkbox"/> r_0 (4CE3BC) | <input type="checkbox"/> r_0 (armada) |
| <input checked="" type="checkbox"/> h (armada) | <input checked="" type="checkbox"/> r_0 (A94DBC) | <input type="checkbox"/> r_0 (29DA18) |
| <input checked="" type="checkbox"/> r_1 (29DA18) | <input type="checkbox"/> h (encoding) | <input type="checkbox"/> r_1 (B88014) |
| <input type="checkbox"/> r_2 (A94DBC) | <input type="checkbox"/> r_2 (29DA18) | <input type="checkbox"/> h (ringworm) |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **FD05D9** (line 2)?

- | | | |
|--|---|--|
| <input type="checkbox"/> h (CAB3E) | <input type="checkbox"/> h (retailed) | <input type="checkbox"/> r_1 (52A69A) |
| <input type="checkbox"/> h (gannet) | <input type="checkbox"/> r_0 (62760E) | <input type="checkbox"/> r_2 (CAB3E) |
| <input type="checkbox"/> r_2 (31D7B0) | <input type="checkbox"/> r_0 (CAB3E) | <input checked="" type="checkbox"/> h (grounded) |
| <input checked="" type="checkbox"/> r_2 (52A69A) | <input type="checkbox"/> r_2 (gannet) | <input checked="" type="checkbox"/> r_1 (FD05D9) |
| <input checked="" type="checkbox"/> r_0 (FD05D9) | <input type="checkbox"/> r_0 (52A69A) | <input checked="" type="checkbox"/> h (frigid) |
| <input checked="" type="checkbox"/> r_2 (FD05D9) | <input type="checkbox"/> h (deplaned) | <input checked="" type="checkbox"/> r_1 (CAB3E) |

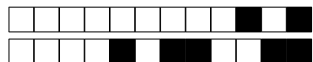
Question 4 ♣ In the example table, which operations are necessarily performed to search for **7A675A** (not in the table)?

- | | | |
|---|--|--|
| <input type="checkbox"/> h (sizzle) | <input type="checkbox"/> r_1 (1C185A) | <input type="checkbox"/> r_2 (sizzle) |
| <input type="checkbox"/> r_0 (1C185A) | <input type="checkbox"/> r_0 (D0DBC4) | <input type="checkbox"/> r_2 (D0DBC4) |
| <input type="checkbox"/> r_1 (D0DBC4) | <input type="checkbox"/> r_0 (7713F0) | <input type="checkbox"/> h (commit) |
| <input type="checkbox"/> h (dumfound) | <input checked="" type="checkbox"/> r_2 (7A675A) | <input type="checkbox"/> r_1 (7713F0) |
| <input type="checkbox"/> h (reap) | <input type="checkbox"/> r_2 (7713F0) | <input checked="" type="checkbox"/> r_1 (7A675A) |
| <input type="checkbox"/> h (7713F0) | <input checked="" type="checkbox"/> r_0 (7A675A) | <input type="checkbox"/> r_2 (1C185A) |



Explain here what is a rainbow table, with a simple example provided below. Example of a chain: the row starting at **hobbling** and ending with **brisked**. Explain the search algorithm.

	W_0	E_0	W_1	E_1	W_2	E_2	W_3
(0)	hobbling	$h \rightarrow$ 19E847	$r_0 \rightarrow$ tattooed	$h \rightarrow$ 22DD1D	$r_1 \rightarrow$ triter	$h \rightarrow$ 560F0F	$r_2 \rightarrow$ brisked
(1)	restart	$h \rightarrow$ 646C2C	$r_0 \rightarrow$ looping	$h \rightarrow$ C28CC1	$r_1 \rightarrow$ footmen	$h \rightarrow$ 2AB0B5	$r_2 \rightarrow$ digit
(2)	unloose	$h \rightarrow$ FAC74E	$r_0 \rightarrow$ thieving	$h \rightarrow$ E0E0C6	$r_1 \rightarrow$ lathe	$h \rightarrow$ 62AE0D	$r_2 \rightarrow$ codify
(3)	runoff	$h \rightarrow$ A07261	$r_0 \rightarrow$ raffled	$h \rightarrow$ C3F97F	$r_1 \rightarrow$ ashy	$h \rightarrow$ 4B782B	$r_2 \rightarrow$ haymow
(4)	riverbed	$h \rightarrow$ 95092F	$r_0 \rightarrow$ fracking	$h \rightarrow$ 1A05E6	$r_1 \rightarrow$ woodcut	$h \rightarrow$ 8A88D5	$r_2 \rightarrow$ strobe
(5)	balsam	$h \rightarrow$ 9D5948	$r_0 \rightarrow$ womanize	$h \rightarrow$ 14424C	$r_1 \rightarrow$ highland	$h \rightarrow$ FF4ECD	$r_2 \rightarrow$ creating
(6)	heppest	$h \rightarrow$ E09FE8	$r_0 \rightarrow$ glacial	$h \rightarrow$ 989C5C	$r_1 \rightarrow$ bosh	$h \rightarrow$ 0BB7AD	$r_2 \rightarrow$ purblind
(7)	gunned	$h \rightarrow$ BBE427	$r_0 \rightarrow$ compose	$h \rightarrow$ FDB58F	$r_1 \rightarrow$ jutting	$h \rightarrow$ 05FE6F	$r_2 \rightarrow$ glimpse
(8)	cagy	$h \rightarrow$ 343E13	$r_0 \rightarrow$ ablution	$h \rightarrow$ D97113	$r_1 \rightarrow$ imputing	$h \rightarrow$ F33B76	$r_2 \rightarrow$ fighter
(9)	bucket	$h \rightarrow$ 6597FB	$r_0 \rightarrow$ ply	$h \rightarrow$ 14A3A1	$r_1 \rightarrow$ hack	$h \rightarrow$ A3D1FC	$r_2 \rightarrow$ copulae



+5/2/51+

Question 1 ♣ In the example table, which operations are necessarily performed to search for **C28CC1** (line 1)?

- | | | |
|---|--|--|
| <input type="checkbox"/> $h(\text{warlord})$ | <input type="checkbox"/> $r_1(646C2C)$ | <input checked="" type="checkbox"/> $r_2(2AB0B5)$ |
| <input checked="" type="checkbox"/> $h(\text{footmen})$ | <input type="checkbox"/> $h(\text{digit})$ | <input type="checkbox"/> $r_0(2AB0B5)$ |
| <input type="checkbox"/> $r_1(\text{footmen})$ | <input type="checkbox"/> $h(\text{looping})$ | <input type="checkbox"/> $r_2(646C2C)$ |
| <input type="checkbox"/> $h(\text{geometry})$ | <input type="checkbox"/> $h(\text{C28CC1})$ | <input type="checkbox"/> $r_1(9B3B78)$ |
| <input checked="" type="checkbox"/> $r_0(646C2C)$ | <input checked="" type="checkbox"/> $h(\text{restart})$ | <input checked="" type="checkbox"/> $r_2(\text{C28CC1})$ |
| <input type="checkbox"/> $r_0(\text{C28CC1})$ | <input checked="" type="checkbox"/> $r_1(\text{C28CC1})$ | <input type="checkbox"/> $r_1(2AB0B5)$ |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **FAC74E** (line 2)?

- | | | |
|--|--|--|
| <input type="checkbox"/> $r_1(62AE0D)$ | <input type="checkbox"/> $r_0(62AE0D)$ | <input type="checkbox"/> $h(\text{E0E0C6})$ |
| <input checked="" type="checkbox"/> $h(\text{thieving})$ | <input type="checkbox"/> $h(\text{codify})$ | <input type="checkbox"/> $r_2(\text{unloose})$ |
| <input checked="" type="checkbox"/> $h(\text{lathe})$ | <input type="checkbox"/> $h(\text{unloose})$ | <input type="checkbox"/> $r_2(\text{E0E0C6})$ |
| <input checked="" type="checkbox"/> $r_2(62AE0D)$ | <input checked="" type="checkbox"/> $r_1(\text{FAC74E})$ | <input type="checkbox"/> $r_2(2E7D2C)$ |
| <input checked="" type="checkbox"/> $r_0(\text{FAC74E})$ | <input type="checkbox"/> $r_0(\text{A3A453})$ | <input checked="" type="checkbox"/> $r_1(\text{E0E0C6})$ |
| <input checked="" type="checkbox"/> $r_2(\text{FAC74E})$ | <input type="checkbox"/> $r_0(\text{E0E0C6})$ | <input type="checkbox"/> $h(\text{cook})$ |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **C8FAAC** (not in the table)?

- | | | |
|---|--|--|
| <input type="checkbox"/> $h(\text{runoff})$ | <input checked="" type="checkbox"/> $r_0(\text{C8FAAC})$ | <input checked="" type="checkbox"/> $r_2(\text{C8FAAC})$ |
| <input type="checkbox"/> $h(\text{ashy})$ | <input type="checkbox"/> $r_2(\text{C3F97F})$ | <input type="checkbox"/> $h(\text{raffled})$ |
| <input type="checkbox"/> $r_1(4B782B)$ | <input type="checkbox"/> $r_0(\text{C3F97F})$ | <input type="checkbox"/> $r_2(4B782B)$ |
| <input type="checkbox"/> $r_2(\text{runoff})$ | <input type="checkbox"/> $r_2(\text{A07261})$ | <input type="checkbox"/> $h(4B782B)$ |
| <input type="checkbox"/> $r_0(\text{A07261})$ | <input type="checkbox"/> $r_1(\text{A07261})$ | <input checked="" type="checkbox"/> $r_1(\text{C8FAAC})$ |
| <input type="checkbox"/> $r_0(4B782B)$ | <input type="checkbox"/> $r_1(\text{C3F97F})$ | <input type="checkbox"/> $h(\text{haymow})$ |

Question 4 ♣ In the example table, which operations are necessarily performed to search for **560F0F** (line 0)?

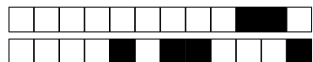
- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> $r_1(22DD1D)$ | <input type="checkbox"/> $r_1(560F0F)$ | <input type="checkbox"/> $r_1(18A113)$ |
| <input checked="" type="checkbox"/> $h(\text{hobbling})$ | <input type="checkbox"/> $h(\text{designed})$ | <input type="checkbox"/> $r_2(22DD1D)$ |
| <input type="checkbox"/> $h(560F0F)$ | <input type="checkbox"/> $r_2(19E847)$ | <input type="checkbox"/> $h(\text{triter})$ |
| <input type="checkbox"/> $r_1(19E847)$ | <input type="checkbox"/> $r_0(22DD1D)$ | <input checked="" type="checkbox"/> $h(\text{tattooed})$ |
| <input type="checkbox"/> $r_0(9C12BE)$ | <input type="checkbox"/> $r_0(\text{hobbling})$ | <input type="checkbox"/> $r_0(560F0F)$ |
| <input type="checkbox"/> $h(\text{brisked})$ | <input checked="" type="checkbox"/> $r_2(560F0F)$ | <input checked="" type="checkbox"/> $r_0(19E847)$ |



SAMPLE EXAM #6

Explain here what is a rainbow table, with a simple example provided below. Example of a chain: the row starting at **equaled** and ending with **garrote**. Explain the search algorithm.

	W_0	E_0	W_1	E_1	W_2	E_2	W_3
(0)	equaled	$h \rightarrow$ 517129	$r_0 \rightarrow$ cerebral	$h \rightarrow$ 41E9E6	$r_1 \rightarrow$ loin	$h \rightarrow$ 8ECA6D	$r_2 \rightarrow$ garrote
(1)	runnel	$h \rightarrow$ 750818	$r_0 \rightarrow$ moderate	$h \rightarrow$ E68266	$r_1 \rightarrow$ admen	$h \rightarrow$ 7CB2AC	$r_2 \rightarrow$ balm
(2)	reciting	$h \rightarrow$ BEE1DB	$r_0 \rightarrow$ tasking	$h \rightarrow$ 61E8C8	$r_1 \rightarrow$ thesauri	$h \rightarrow$ CCC618	$r_2 \rightarrow$ lamming
(3)	sackful	$h \rightarrow$ 01B121	$r_0 \rightarrow$ nominee	$h \rightarrow$ 7655AE	$r_1 \rightarrow$ clad	$h \rightarrow$ FC5D4C	$r_2 \rightarrow$ modish
(4)	drachma	$h \rightarrow$ 7A2A7E	$r_0 \rightarrow$ minima	$h \rightarrow$ 61B639	$r_1 \rightarrow$ triply	$h \rightarrow$ 88A924	$r_2 \rightarrow$ wheezier
(5)	garment	$h \rightarrow$ 48EA7F	$r_0 \rightarrow$ freshly	$h \rightarrow$ D74A06	$r_1 \rightarrow$ slide	$h \rightarrow$ 4F3944	$r_2 \rightarrow$ bate
(6)	bemuse	$h \rightarrow$ 1F1A5F	$r_0 \rightarrow$ catsup	$h \rightarrow$ 541828	$r_1 \rightarrow$ atonal	$h \rightarrow$ 8D978D	$r_2 \rightarrow$ speedup
(7)	despite	$h \rightarrow$ 9BF100	$r_0 \rightarrow$ tacked	$h \rightarrow$ C79454	$r_1 \rightarrow$ churl	$h \rightarrow$ F1C197	$r_2 \rightarrow$ epsilon
(8)	footsie	$h \rightarrow$ E43737	$r_0 \rightarrow$ denim	$h \rightarrow$ 782B97	$r_1 \rightarrow$ dapple	$h \rightarrow$ 11AB21	$r_2 \rightarrow$ polished
(9)	clucked	$h \rightarrow$ 26F31D	$r_0 \rightarrow$ arisen	$h \rightarrow$ D2AD51	$r_1 \rightarrow$ tenting	$h \rightarrow$ 9A34D2	$r_2 \rightarrow$ noodling



+6/2/49+

Question 1 ♣ In the example table, which operations are necessarily performed to search for **31A2C4** (not in the table)?

- | | | |
|--|--|--|
| <input type="checkbox"/> $h(\text{FC5D4C})$ | <input type="checkbox"/> $r_0(\text{FC5D4C})$ | <input type="checkbox"/> $h(\text{sackful})$ |
| <input checked="" type="checkbox"/> $r_2(\text{31A2C4})$ | <input type="checkbox"/> $r_2(\text{FC5D4C})$ | <input checked="" type="checkbox"/> $r_0(\text{31A2C4})$ |
| <input type="checkbox"/> $r_1(\text{7655AE})$ | <input type="checkbox"/> $r_2(\text{sackful})$ | <input type="checkbox"/> $r_1(\text{01B121})$ |
| <input type="checkbox"/> $h(\text{nominee})$ | <input type="checkbox"/> $h(\text{clad})$ | <input type="checkbox"/> $r_1(\text{FC5D4C})$ |
| <input type="checkbox"/> $r_0(\text{01B121})$ | <input type="checkbox"/> $r_0(\text{7655AE})$ | <input type="checkbox"/> $h(\text{modish})$ |
| <input type="checkbox"/> $r_2(\text{7655AE})$ | <input checked="" type="checkbox"/> $r_1(\text{31A2C4})$ | <input type="checkbox"/> $r_2(\text{01B121})$ |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **BEE1DB** (line 2)?

- | | | |
|--|--|--|
| <input type="checkbox"/> $r_0(\text{DBF3D6})$ | <input type="checkbox"/> $h(\text{brattier})$ | <input type="checkbox"/> $r_2(\text{41AC68})$ |
| <input checked="" type="checkbox"/> $r_1(\text{61E8C8})$ | <input type="checkbox"/> $r_0(\text{61E8C8})$ | <input type="checkbox"/> $r_2(\text{reciting})$ |
| <input type="checkbox"/> $r_0(\text{CCC618})$ | <input checked="" type="checkbox"/> $h(\text{thesauri})$ | <input type="checkbox"/> $r_1(\text{CCC618})$ |
| <input type="checkbox"/> $h(\text{reciting})$ | <input type="checkbox"/> $h(\text{61E8C8})$ | <input checked="" type="checkbox"/> $r_0(\text{BEE1DB})$ |
| <input checked="" type="checkbox"/> $r_1(\text{BEE1DB})$ | <input checked="" type="checkbox"/> $h(\text{tasking})$ | <input type="checkbox"/> $r_2(\text{61E8C8})$ |
| <input checked="" type="checkbox"/> $r_2(\text{CCC618})$ | <input type="checkbox"/> $h(\text{lamming})$ | <input checked="" type="checkbox"/> $r_2(\text{BEE1DB})$ |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **E68266** (line 1)?

- | | | |
|--|--|--|
| <input type="checkbox"/> $r_0(\text{7CB2AC})$ | <input checked="" type="checkbox"/> $r_0(\text{750818})$ | <input checked="" type="checkbox"/> $r_1(\text{E68266})$ |
| <input checked="" type="checkbox"/> $r_2(\text{E68266})$ | <input type="checkbox"/> $h(\text{E68266})$ | <input checked="" type="checkbox"/> $r_2(\text{7CB2AC})$ |
| <input type="checkbox"/> $r_0(\text{E68266})$ | <input type="checkbox"/> $r_2(\text{750818})$ | <input type="checkbox"/> $h(\text{moderate})$ |
| <input checked="" type="checkbox"/> $h(\text{admen})$ | <input checked="" type="checkbox"/> $h(\text{runnel})$ | <input type="checkbox"/> $r_1(\text{admen})$ |
| <input type="checkbox"/> $h(\text{mushing})$ | <input type="checkbox"/> $h(\text{balm})$ | <input type="checkbox"/> $h(\text{mulching})$ |
| <input type="checkbox"/> $r_1(\text{750818})$ | <input type="checkbox"/> $r_1(\text{6E946A})$ | <input type="checkbox"/> $r_1(\text{7CB2AC})$ |

Question 4 ♣ In the example table, which operations are necessarily performed to search for **8ECA6D** (line 0)?

- | | | |
|--|---|--|
| <input type="checkbox"/> $r_0(\text{8ECA6D})$ | <input type="checkbox"/> $h(\text{garrote})$ | <input checked="" type="checkbox"/> $r_1(\text{41E9E6})$ |
| <input type="checkbox"/> $r_1(\text{8ECA6D})$ | <input checked="" type="checkbox"/> $h(\text{equaled})$ | <input checked="" type="checkbox"/> $r_2(\text{8ECA6D})$ |
| <input type="checkbox"/> $r_0(\text{equaled})$ | <input type="checkbox"/> $r_2(\text{517129})$ | <input type="checkbox"/> $r_1(\text{F59619})$ |
| <input type="checkbox"/> $r_1(\text{517129})$ | <input type="checkbox"/> $h(\text{sharped})$ | <input type="checkbox"/> $h(\text{loin})$ |
| <input checked="" type="checkbox"/> $r_0(\text{517129})$ | <input type="checkbox"/> $r_0(\text{41E9E6})$ | <input type="checkbox"/> $r_0(\text{D78496})$ |
| <input type="checkbox"/> $h(\text{8ECA6D})$ | <input type="checkbox"/> $r_2(\text{41E9E6})$ | <input checked="" type="checkbox"/> $h(\text{cerebral})$ |



SAMPLE EXAM #7

Explain here what is a rainbow table, with a simple example provided below. Example of a chain: the row starting at **warrior** and ending with **rickshaw**. Explain the search algorithm.

	W_0	E_0	W_1	E_1	W_2	E_2	W_3
(0)	warrior	$h \rightarrow$ 9B477B	$r_0 \rightarrow$ segment	$h \rightarrow$ 5E9D3F	$r_1 \rightarrow$ homage	$h \rightarrow$ 6ED1C3	$r_2 \rightarrow$ rickshaw
(1)	almanac	$h \rightarrow$ F4B8C4	$r_0 \rightarrow$ waved	$h \rightarrow$ 01283D	$r_1 \rightarrow$ palpable	$h \rightarrow$ AA8CB3	$r_2 \rightarrow$ fidget
(2)	reddish	$h \rightarrow$ 28BCF9	$r_0 \rightarrow$ husband	$h \rightarrow$ 934BD3	$r_1 \rightarrow$ hemline	$h \rightarrow$ 85D6D4	$r_2 \rightarrow$ coking
(3)	ski	$h \rightarrow$ D1E6A1	$r_0 \rightarrow$ geode	$h \rightarrow$ 2D972A	$r_1 \rightarrow$ decree	$h \rightarrow$ D6DE21	$r_2 \rightarrow$ barge
(4)	buckshot	$h \rightarrow$ CEC811	$r_0 \rightarrow$ scruff	$h \rightarrow$ E6686C	$r_1 \rightarrow$ sobbing	$h \rightarrow$ C5C686	$r_2 \rightarrow$ bigoted
(5)	stew	$h \rightarrow$ DB361A	$r_0 \rightarrow$ sighted	$h \rightarrow$ 223A7D	$r_1 \rightarrow$ fabric	$h \rightarrow$ CE7E84	$r_2 \rightarrow$ found
(6)	wingtip	$h \rightarrow$ EF502C	$r_0 \rightarrow$ sauna	$h \rightarrow$ 184B00	$r_1 \rightarrow$ hound	$h \rightarrow$ 5BB9B0	$r_2 \rightarrow$ cigar
(7)	gangling	$h \rightarrow$ 77AE40	$r_0 \rightarrow$ plainest	$h \rightarrow$ 46F81B	$r_1 \rightarrow$ mystic	$h \rightarrow$ 785B2B	$r_2 \rightarrow$ shirking
(8)	canard	$h \rightarrow$ BC85C2	$r_0 \rightarrow$ bulimia	$h \rightarrow$ C35397	$r_1 \rightarrow$ nattily	$h \rightarrow$ 72A76B	$r_2 \rightarrow$ indigo
(9)	punitive	$h \rightarrow$ DD0E8A	$r_0 \rightarrow$ flare	$h \rightarrow$ FFB139	$r_1 \rightarrow$ crafty	$h \rightarrow$ 53ACAO	$r_2 \rightarrow$ greasier



+7/2/47+

Question 1 ♣ In the example table, which operations are necessarily performed to search for **E814F2** (not in the table)?

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> r_2 (E814F2) | <input type="checkbox"/> r_2 (ski) | <input checked="" type="checkbox"/> r_0 (E814F2) |
| <input type="checkbox"/> r_0 (2D972A) | <input type="checkbox"/> h (ski) | <input type="checkbox"/> h (decree) |
| <input type="checkbox"/> r_1 (D1E6A1) | <input type="checkbox"/> r_0 (D6DE21) | <input type="checkbox"/> r_2 (2D972A) |
| <input type="checkbox"/> r_2 (D1E6A1) | <input type="checkbox"/> h (geode) | <input type="checkbox"/> h (barge) |
| <input type="checkbox"/> r_2 (D6DE21) | <input type="checkbox"/> r_1 (D6DE21) | <input type="checkbox"/> r_1 (2D972A) |
| <input checked="" type="checkbox"/> r_1 (E814F2) | <input type="checkbox"/> r_0 (D1E6A1) | <input type="checkbox"/> h (D6DE21) |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **01283D** (line 1)?

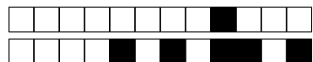
- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> r_2 (AA8CB3) | <input checked="" type="checkbox"/> h (almanac) | <input type="checkbox"/> h (boldest) |
| <input type="checkbox"/> r_1 (AA8CB3) | <input checked="" type="checkbox"/> h (palpable) | <input checked="" type="checkbox"/> r_1 (01283D) |
| <input type="checkbox"/> r_0 (AA8CB3) | <input type="checkbox"/> r_1 (palpable) | <input type="checkbox"/> h (waved) |
| <input checked="" type="checkbox"/> r_0 (F4B8C4) | <input type="checkbox"/> h (01283D) | <input type="checkbox"/> r_1 (F4B8C4) |
| <input type="checkbox"/> h (fidget) | <input type="checkbox"/> r_1 (8BBC16) | <input checked="" type="checkbox"/> r_2 (01283D) |
| <input type="checkbox"/> r_0 (01283D) | <input type="checkbox"/> h (scherzi) | <input type="checkbox"/> r_2 (F4B8C4) |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **6ED1C3** (line 0)?

- | | | |
|--|---|---|
| <input type="checkbox"/> h (homage) | <input checked="" type="checkbox"/> r_1 (5E9D3F) | <input type="checkbox"/> r_0 (6ED1C3) |
| <input type="checkbox"/> r_1 (6ED1C3) | <input type="checkbox"/> r_2 (9B477B) | <input type="checkbox"/> r_0 (3DFC01) |
| <input type="checkbox"/> r_1 (892D25) | <input type="checkbox"/> h (6ED1C3) | <input checked="" type="checkbox"/> r_0 (9B477B) |
| <input checked="" type="checkbox"/> h (segment) | <input type="checkbox"/> r_2 (5E9D3F) | <input checked="" type="checkbox"/> r_2 (6ED1C3) |
| <input checked="" type="checkbox"/> h (warrior) | <input type="checkbox"/> r_1 (9B477B) | <input type="checkbox"/> r_0 (warrior) |
| <input type="checkbox"/> h (rickshaw) | <input type="checkbox"/> r_0 (5E9D3F) | <input type="checkbox"/> h (remedy) |

Question 4 ♣ In the example table, which operations are necessarily performed to search for **28BCF9** (line 2)?

- | | | |
|---|---|---|
| <input type="checkbox"/> h (coking) | <input checked="" type="checkbox"/> r_2 (85D6D4) | <input type="checkbox"/> r_2 (reddish) |
| <input checked="" type="checkbox"/> r_2 (28BCF9) | <input type="checkbox"/> h (934BD3) | <input checked="" type="checkbox"/> r_0 (28BCF9) |
| <input checked="" type="checkbox"/> r_1 (28BCF9) | <input type="checkbox"/> r_0 (934BD3) | <input checked="" type="checkbox"/> h (hemline) |
| <input type="checkbox"/> r_2 (934BD3) | <input type="checkbox"/> r_1 (85D6D4) | <input type="checkbox"/> r_0 (85D6D4) |
| <input type="checkbox"/> h (discover) | <input type="checkbox"/> r_2 (318BE2) | <input type="checkbox"/> r_0 (9BEECA) |
| <input type="checkbox"/> h (reddish) | <input checked="" type="checkbox"/> r_1 (934BD3) | <input checked="" type="checkbox"/> h (husband) |



+8/2/45+

Question 1 ♣ In the example table, which operations are necessarily performed to search for **7B6D2E** (line 0)?

- | | | |
|--|--|--|
| <input type="checkbox"/> $h(\text{odor})$ | <input type="checkbox"/> $h(\text{beater})$ | <input type="checkbox"/> $r_0(402\text{CEB})$ |
| <input checked="" type="checkbox"/> $h(\text{softly})$ | <input checked="" type="checkbox"/> $r_0(938\text{CA1})$ | <input checked="" type="checkbox"/> $r_1(402\text{CEB})$ |
| <input type="checkbox"/> $r_1(938\text{CA1})$ | <input type="checkbox"/> $r_0(\text{renewing})$ | <input type="checkbox"/> $r_2(402\text{CEB})$ |
| <input type="checkbox"/> $r_1(7\text{B6D2E})$ | <input type="checkbox"/> $r_0(7\text{B6D2E})$ | <input checked="" type="checkbox"/> $r_2(7\text{B6D2E})$ |
| <input type="checkbox"/> $r_0(9678\text{A2})$ | <input type="checkbox"/> $h(7\text{B6D2E})$ | <input checked="" type="checkbox"/> $h(\text{renewing})$ |
| <input type="checkbox"/> $h(\text{powerful})$ | <input type="checkbox"/> $r_1(\text{DF50E0})$ | <input type="checkbox"/> $r_2(938\text{CA1})$ |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **F9932F** (line 2)?

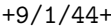
- | | | |
|--|--|--|
| <input type="checkbox"/> $r_2(\text{drummer})$ | <input type="checkbox"/> $h(\text{drummer})$ | <input type="checkbox"/> $r_0(59\text{F59C})$ |
| <input checked="" type="checkbox"/> $r_2(\text{F9932F})$ | <input checked="" type="checkbox"/> $r_1(82\text{CAB5})$ | <input checked="" type="checkbox"/> $r_2(59\text{F59C})$ |
| <input checked="" type="checkbox"/> $r_0(\text{F9932F})$ | <input checked="" type="checkbox"/> $h(\text{proven})$ | <input type="checkbox"/> $r_2(82\text{CAB5})$ |
| <input type="checkbox"/> $h(82\text{CAB5})$ | <input type="checkbox"/> $h(\text{heap})$ | <input type="checkbox"/> $h(\text{mown})$ |
| <input checked="" type="checkbox"/> $h(\text{cheat})$ | <input type="checkbox"/> $r_0(\text{A315AE})$ | <input checked="" type="checkbox"/> $r_1(\text{F9932F})$ |
| <input type="checkbox"/> $r_1(59\text{F59C})$ | <input type="checkbox"/> $r_0(82\text{CAB5})$ | <input type="checkbox"/> $r_2(22268\text{F})$ |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **F13F08** (not in the table)?

- | | | |
|--|--|---|
| <input type="checkbox"/> $r_0(956\text{EFF})$ | <input type="checkbox"/> $r_1(956\text{EFF})$ | <input type="checkbox"/> $r_2(999964)$ |
| <input checked="" type="checkbox"/> $r_0(\text{F13F08})$ | <input type="checkbox"/> $h(\text{socking})$ | <input type="checkbox"/> $h(\text{belly})$ |
| <input type="checkbox"/> $r_0(519984)$ | <input type="checkbox"/> $h(956\text{EFF})$ | <input type="checkbox"/> $h(\text{fiesta})$ |
| <input checked="" type="checkbox"/> $r_1(\text{F13F08})$ | <input checked="" type="checkbox"/> $r_2(\text{F13F08})$ | <input type="checkbox"/> $r_2(\text{stowaway})$ |
| <input type="checkbox"/> $r_1(519984)$ | <input type="checkbox"/> $r_1(999964)$ | <input type="checkbox"/> $r_2(956\text{EFF})$ |
| <input type="checkbox"/> $r_2(519984)$ | <input type="checkbox"/> $h(\text{stowaway})$ | <input type="checkbox"/> $r_0(999964)$ |

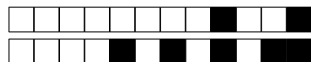
Question 4 ♣ In the example table, which operations are necessarily performed to search for **8E2F15** (line 1)?

- | | | |
|--|--|---|
| <input type="checkbox"/> $r_0(09464\text{B})$ | <input type="checkbox"/> $h(\text{disdain})$ | <input type="checkbox"/> $r_0(8\text{E2F15})$ |
| <input type="checkbox"/> $r_1(\text{consular})$ | <input checked="" type="checkbox"/> $r_2(8\text{E2F15})$ | <input type="checkbox"/> $h(\text{audio})$ |
| <input type="checkbox"/> $r_1(92\text{E49C})$ | <input checked="" type="checkbox"/> $h(\text{consular})$ | <input type="checkbox"/> $r_1(94\text{A37D})$ |
| <input type="checkbox"/> $h(8\text{E2F15})$ | <input type="checkbox"/> $h(\text{misjudge})$ | <input type="checkbox"/> $r_1(09464\text{B})$ |
| <input checked="" type="checkbox"/> $r_1(8\text{E2F15})$ | <input checked="" type="checkbox"/> $r_2(09464\text{B})$ | <input type="checkbox"/> $h(\text{academy})$ |
| <input checked="" type="checkbox"/> $h(\text{arrival})$ | <input checked="" type="checkbox"/> $r_0(94\text{A37D})$ | <input type="checkbox"/> $r_2(94\text{A37D})$ |



Explain here what is a rainbow table, with a simple example provided below. Example of a chain: the row starting at **trumpery** and ending with **skirt**. Explain the search algorithm.

	W_0	E_0	W_1	E_1	W_2	E_2	W_3
(0)	trumpety	$h \rightarrow$ 034356	$r_0 \rightarrow$ imputing	$h \rightarrow$ DCBF8D	$r_1 \rightarrow$ whisk	$h \rightarrow$ 1656A1	$r_2 \rightarrow$ skirt
(1)	zinging	$h \rightarrow$ 0C51BC	$r_0 \rightarrow$ doorman	$h \rightarrow$ 8ACF8C	$r_1 \rightarrow$ jibe	$h \rightarrow$ 2BB412	$r_2 \rightarrow$ health
(2)	flourish	$h \rightarrow$ 7F5DAD	$r_0 \rightarrow$ cranky	$h \rightarrow$ 502AD8	$r_1 \rightarrow$ paint	$h \rightarrow$ 91D962	$r_2 \rightarrow$ sixteen
(3)	insisted	$h \rightarrow$ A34759	$r_0 \rightarrow$ women	$h \rightarrow$ ABD6C2	$r_1 \rightarrow$ conciser	$h \rightarrow$ EE2057	$r_2 \rightarrow$ excised
(4)	coax	$h \rightarrow$ 7134AB	$r_0 \rightarrow$ ado	$h \rightarrow$ 598C31	$r_1 \rightarrow$ plectrum	$h \rightarrow$ D61764	$r_2 \rightarrow$ presided
(5)	carrying	$h \rightarrow$ EF80BC	$r_0 \rightarrow$ minuter	$h \rightarrow$ 4F8D0A	$r_1 \rightarrow$ yodeller	$h \rightarrow$ C7B288	$r_2 \rightarrow$ browse
(6)	snooped	$h \rightarrow$ 4B3FA8	$r_0 \rightarrow$ billowy	$h \rightarrow$ 369017	$r_1 \rightarrow$ wigwam	$h \rightarrow$ F5DFDB	$r_2 \rightarrow$ tacking
(7)	acerbic	$h \rightarrow$ 045413	$r_0 \rightarrow$ pen	$h \rightarrow$ 88F9F8	$r_1 \rightarrow$ rueful	$h \rightarrow$ CB3F4B	$r_2 \rightarrow$ carbide
(8)	cascade	$h \rightarrow$ 7F1A89	$r_0 \rightarrow$ caddying	$h \rightarrow$ 8545E0	$r_1 \rightarrow$ mallard	$h \rightarrow$ E27340	$r_2 \rightarrow$ protozoa
(9)	typified	$h \rightarrow$ 421D76	$r_0 \rightarrow$ actively	$h \rightarrow$ 750012	$r_1 \rightarrow$ barrette	$h \rightarrow$ 224205	$r_2 \rightarrow$ course



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Question 1 ♣ In the example table, which operations are necessarily performed to search for **E786CE** (not in the table)?

- | | | |
|---|--|---|
| <input type="checkbox"/> r_0 (A34759) | <input type="checkbox"/> r_1 (ABD6C2) | <input checked="" type="checkbox"/> r_1 (E786CE) |
| <input type="checkbox"/> r_2 (ABD6C2) | <input type="checkbox"/> r_0 (ABD6C2) | <input type="checkbox"/> r_0 (EE2057) |
| <input type="checkbox"/> r_2 (insisted) | <input type="checkbox"/> r_2 (EE2057) | <input type="checkbox"/> r_1 (EE2057) |
| <input type="checkbox"/> r_1 (A34759) | <input type="checkbox"/> r_2 (A34759) | <input type="checkbox"/> h (EE2057) |
| <input checked="" type="checkbox"/> r_0 (E786CE) | <input type="checkbox"/> h (insisted) | <input type="checkbox"/> h (excised) |
| <input type="checkbox"/> h (women) | <input type="checkbox"/> h (conciser) | <input checked="" type="checkbox"/> r_2 (E786CE) |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **8ACF8C** (line 1)?

- | | | |
|--|---|---|
| <input type="checkbox"/> h (harpy) | <input type="checkbox"/> r_0 (2BB412) | <input type="checkbox"/> h (beau) |
| <input type="checkbox"/> r_1 (jibe) | <input type="checkbox"/> r_1 (2BB412) | <input type="checkbox"/> h (8ACF8C) |
| <input type="checkbox"/> r_1 (EED91D) | <input checked="" type="checkbox"/> r_2 (2BB412) | <input type="checkbox"/> h (doorman) |
| <input checked="" type="checkbox"/> h (jibe) | <input type="checkbox"/> r_2 (0C51BC) | <input checked="" type="checkbox"/> r_0 (0C51BC) |
| <input type="checkbox"/> h (health) | <input checked="" type="checkbox"/> r_1 (8ACF8C) | <input type="checkbox"/> r_0 (8ACF8C) |
| <input checked="" type="checkbox"/> h (zinging) | <input type="checkbox"/> r_1 (0C51BC) | <input checked="" type="checkbox"/> r_2 (8ACF8C) |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **7F5DAD** (line 2)?

- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> r_1 (502AD8) | <input type="checkbox"/> r_0 (578898) | <input type="checkbox"/> r_2 (flourish) |
| <input checked="" type="checkbox"/> r_2 (91D962) | <input type="checkbox"/> r_2 (502AD8) | <input checked="" type="checkbox"/> h (paint) |
| <input type="checkbox"/> h (502AD8) | <input type="checkbox"/> h (rapt) | <input type="checkbox"/> h (flourish) |
| <input type="checkbox"/> r_0 (502AD8) | <input checked="" type="checkbox"/> r_0 (7F5DAD) | <input checked="" type="checkbox"/> h (cranky) |
| <input type="checkbox"/> r_2 (6075A1) | <input type="checkbox"/> h (sixteen) | <input type="checkbox"/> r_0 (91D962) |
| <input checked="" type="checkbox"/> r_1 (7F5DAD) | <input checked="" type="checkbox"/> r_2 (7F5DAD) | <input type="checkbox"/> r_1 (91D962) |

Question 4 ♣ In the example table, which operations are necessarily performed to search for **1656A1** (line 0)?

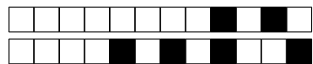
- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> r_2 (1656A1) | <input type="checkbox"/> h (1656A1) | <input type="checkbox"/> r_0 (BE2F98) |
| <input type="checkbox"/> h (skirt) | <input type="checkbox"/> h (whisk) | <input type="checkbox"/> r_2 (DCBF8D) |
| <input type="checkbox"/> r_0 (DCBF8D) | <input type="checkbox"/> h (skewer) | <input type="checkbox"/> r_2 (034356) |
| <input checked="" type="checkbox"/> r_0 (034356) | <input checked="" type="checkbox"/> r_1 (DCBF8D) | <input checked="" type="checkbox"/> h (imputing) |
| <input type="checkbox"/> r_0 (trumpery) | <input type="checkbox"/> r_1 (7E2F5C) | <input checked="" type="checkbox"/> h (trumpery) |
| <input type="checkbox"/> r_0 (1656A1) | <input type="checkbox"/> r_1 (1656A1) | <input type="checkbox"/> r_1 (034356) |



SAMPLE EXAM #10

Explain here what is a rainbow table, with a simple example provided below. Example of a chain: the row starting at **lurched** and ending with **meeker**. Explain the search algorithm.

	W_0	E_0	W_1	E_1	W_2	E_2	W_3
(0)	lurched	$h \rightarrow$ C63279	$r_0 \rightarrow$ rope	$h \rightarrow$ 34362F	$r_1 \rightarrow$ cost	$h \rightarrow$ 6981DA	$r_2 \rightarrow$ meeker
(1)	topping	$h \rightarrow$ 4FAC92	$r_0 \rightarrow$ rumbaing	$h \rightarrow$ FA64F1	$r_1 \rightarrow$ tingled	$h \rightarrow$ 673779	$r_2 \rightarrow$ laconic
(2)	easing	$h \rightarrow$ OC5B05	$r_0 \rightarrow$ obviated	$h \rightarrow$ B60473	$r_1 \rightarrow$ floodlit	$h \rightarrow$ BA9C76	$r_2 \rightarrow$ croquet
(3)	punted	$h \rightarrow$ BABFA6	$r_0 \rightarrow$ leaner	$h \rightarrow$ 5F245B	$r_1 \rightarrow$ sancta	$h \rightarrow$ F3B243	$r_2 \rightarrow$ gunsmith
(4)	snobbier	$h \rightarrow$ 92C9DC	$r_0 \rightarrow$ bison	$h \rightarrow$ 2AA43F	$r_1 \rightarrow$ cohered	$h \rightarrow$ CAE77E	$r_2 \rightarrow$ doggiest
(5)	gong	$h \rightarrow$ ASBF57	$r_0 \rightarrow$ forcibly	$h \rightarrow$ BDB1ED	$r_1 \rightarrow$ pun	$h \rightarrow$ 605C57	$r_2 \rightarrow$ banjoist
(6)	foraying	$h \rightarrow$ BF4B25	$r_0 \rightarrow$ fuel	$h \rightarrow$ 54E7D2	$r_1 \rightarrow$ heretic	$h \rightarrow$ 8DC7AF	$r_2 \rightarrow$ plank
(7)	shlocky	$h \rightarrow$ CF1117	$r_0 \rightarrow$ kaput	$h \rightarrow$ 655504	$r_1 \rightarrow$ awfuller	$h \rightarrow$ 6D1093	$r_2 \rightarrow$ stoned
(8)	righting	$h \rightarrow$ E88295	$r_0 \rightarrow$ workload	$h \rightarrow$ 8DD4C4	$r_1 \rightarrow$ outsell	$h \rightarrow$ 593FB2	$r_2 \rightarrow$ chopping
(9)	frilly	$h \rightarrow$ EE620D	$r_0 \rightarrow$ alluring	$h \rightarrow$ E168FC	$r_1 \rightarrow$ overjoy	$h \rightarrow$ 74F980	$r_2 \rightarrow$ dolt



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Question 1 ♣ In the example table, which operations are necessarily performed to search for **OC5B05** (line 2)?

- | | | |
|--|--|--|
| <input type="checkbox"/> r_2 (easing) | <input type="checkbox"/> r_0 (B60473) | <input type="checkbox"/> r_2 (34AE5F) |
| <input checked="" type="checkbox"/> h (floodlit) | <input type="checkbox"/> h (easing) | <input type="checkbox"/> h (croquet) |
| <input checked="" type="checkbox"/> r_1 (B60473) | <input checked="" type="checkbox"/> r_1 (OC5B05) | <input checked="" type="checkbox"/> h (obviated) |
| <input type="checkbox"/> r_0 (E6E86F) | <input type="checkbox"/> h (B60473) | <input checked="" type="checkbox"/> r_2 (BA9C76) |
| <input checked="" type="checkbox"/> r_2 (OC5B05) | <input type="checkbox"/> r_1 (BA9C76) | <input type="checkbox"/> r_0 (BA9C76) |
| <input checked="" type="checkbox"/> r_0 (OC5B05) | <input type="checkbox"/> h (lanker) | <input type="checkbox"/> r_2 (B60473) |

Question 2 ♣ In the example table, which operations are necessarily performed to search for **6981DA** (line 0)?

- | | | |
|--|--|--|
| <input type="checkbox"/> r_1 (95A003) | <input type="checkbox"/> h (cost) | <input type="checkbox"/> r_1 (C63279) |
| <input checked="" type="checkbox"/> r_2 (6981DA) | <input checked="" type="checkbox"/> r_1 (34362F) | <input type="checkbox"/> r_0 (lurched) |
| <input type="checkbox"/> r_0 (38E455) | <input type="checkbox"/> r_0 (6981DA) | <input checked="" type="checkbox"/> r_0 (C63279) |
| <input type="checkbox"/> r_0 (34362F) | <input type="checkbox"/> r_1 (6981DA) | <input checked="" type="checkbox"/> h (lurched) |
| <input type="checkbox"/> r_2 (C63279) | <input type="checkbox"/> r_2 (34362F) | <input type="checkbox"/> h (rotation) |
| <input type="checkbox"/> h (6981DA) | <input checked="" type="checkbox"/> h (rope) | <input type="checkbox"/> h (meeker) |

Question 3 ♣ In the example table, which operations are necessarily performed to search for **FA64F1** (line 1)?

- | | | |
|--|--|--|
| <input type="checkbox"/> r_1 (AE939D) | <input checked="" type="checkbox"/> r_2 (673779) | <input type="checkbox"/> r_1 (673779) |
| <input type="checkbox"/> r_2 (4FAC92) | <input checked="" type="checkbox"/> h (tingled) | <input type="checkbox"/> r_1 (tingled) |
| <input type="checkbox"/> h (towelng) | <input checked="" type="checkbox"/> r_0 (4FAC92) | <input type="checkbox"/> r_0 (673779) |
| <input type="checkbox"/> r_0 (FA64F1) | <input type="checkbox"/> h (rumbaing) | <input type="checkbox"/> h (laconic) |
| <input checked="" type="checkbox"/> h (topping) | <input checked="" type="checkbox"/> r_1 (FA64F1) | <input type="checkbox"/> r_1 (4FAC92) |
| <input checked="" type="checkbox"/> r_2 (FA64F1) | <input type="checkbox"/> h (bacteria) | <input type="checkbox"/> h (FA64F1) |

Question 4 ♣ In the example table, which operations are necessarily performed to search for **A0F70E** (not in the table)?

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> r_0 (A0F70E) | <input type="checkbox"/> r_2 (F3B243) | <input checked="" type="checkbox"/> r_1 (A0F70E) |
| <input type="checkbox"/> h (F3B243) | <input type="checkbox"/> r_1 (5F245B) | <input type="checkbox"/> r_0 (5F245B) |
| <input checked="" type="checkbox"/> r_2 (A0F70E) | <input type="checkbox"/> r_0 (BABFA6) | <input type="checkbox"/> h (leaner) |
| <input type="checkbox"/> h (sancta) | <input type="checkbox"/> h (punted) | <input type="checkbox"/> r_2 (BABFA6) |
| <input type="checkbox"/> r_2 (5F245B) | <input type="checkbox"/> r_2 (punted) | <input type="checkbox"/> r_0 (F3B243) |
| <input type="checkbox"/> r_1 (BABFA6) | <input type="checkbox"/> r_1 (F3B243) | <input type="checkbox"/> h (gunsmith) |