

Congratulations! You have discovered the impossible tribar. The smallest room number in the 3rd passageway of one of the trails is one of the clues for one of the other trails. On this latter trail you should take the 1st serial number, divide it by 49, and take the remainder. Do the same with the 2nd serial number except with 61 instead of 49. Do the same with the 3rd number except with 89, with the 4th number except with 53, with the 5th number except with 91, and with the 6th number except with 64. This will give you 6 numbers that you should convert to letters to spell out a clue for the remaining trail. On this final trail, obtain the clue for the 1st trail mentioned above by using the right-hand column when you reach the Boston Edison Company. Take row 3 letter 5, row 1 letter 26, row 2 letter 3, row 4 letter 7, row 5 letter 8, row 7 letter 1, row 6 letter 13, and row 5 letter 2.

Answers:

G trail clue from B trail: 6-207 (doors in intersections don't count)

E trail clue from G trail: SYZGY

B trail clue from E trail: Ode to Joy

This trail consists of ten checkpoints which you must visit in order. Augustus cipher answers (not in the correct order):

Each checkpoint consists of an MIT room together with a piece of fire equipment that is located in or on one of the walls of the corridor just outside the room. The white serial number on the blue number plate associated with the piece of fire equipment at a checkpoint specifies (according to the rules given below) the building number of the next checkpoint on the trail. The rules below also tell you the room numbers (by a room number we mean that the building number is excluded, e.g., the room number of 26-100 is 100) of the checkpoints and the order in which the rooms must be visited. To get you started: the first building number is building 2.

The fifth digit of the current serial number plus the building number of the next checkpoint is divisible by three.

Take the difference between the sixth digit of the current serial number and the building number of the next checkpoint; this difference will be divisible by four.

The 3rd digit of the current serial number equals the "twelves" digit of the building number of the next checkpoint when said building number is written in base twelve.

Add an "E" to the front of any building number containing a "5." If the third and fourth digits of the current serial number are "20" then the piece of fire equipment associated with the next checkpoint is a fire extinguisher; otherwise, it is a fire hose.

Go to room 551 immediately before going to room 207.

Room 282 should be visited immediately after room 321E.

Immediately after visiting room 034, head for room 001. Visit room 562 before room 282, but not necessarily immediately before.

After (but not necessarily immediately after) visiting room 001, visit room 321E. Stop by room 044 immediately before room 023.

Between your trips to rooms 365 and 034 (not necessarily in that order) you should make trips to three other rooms.

You should go to room 207 exactly five checkpoints after room 023.

Be sure to visit room 365 immediately before room 044.

Visit room 562 before room 551, but not necessarily immediately before.

The checkpoints are as follows:

2-365	hose	752512
26-044	hose	750996
6-023	hose	752076
26-562	ext	751088
16-034	hose	750484
4-001	hose	752089
E25-551	ext	754797
E51-207	hose	753872
38-321E	hose	751332
18-282	hose	750646

The final answer is 254-5025.

Begin_at_the_Escher_painting_next_to_24-608.___
At_no_time_from_now_on_should_you_walk_up_a_flight_of_stairs.___
Walk_toward_the_dark_green_lizard.___Exit_to_your_left.___
Find_the_floor_with_the_A.P.C._Project_P.E.P.R._sign.___
Go_through_the_forest_of_carpets.___
Exit_left.___Find_Board_#AK220833.___Find_the_wheelchair_elevator_close_by.___
Go_past_the_flying_man.___Exit_building_by_the_exit_closest_to_755733.___
Go_through_the_swinging_double_doors.___
Stand_underneath_the_seventh_sprinkler.___
Walk_toward_the_pair_of_dragon_eyes.___Keep_going.___
Go_up_a_story_when_it's_time.___Go_in_the_direction_of_the_xylotone.___
Keep_going.___Turn_away_from_the_Marriott.___
Immediately_after_passing_the_teal_arch,_go_through_the_door_on_your_right.___
Go_through_the_first_door_on_your_left.___Pass_bulletin_boards_on_your_right.___
Stand_under_the_exit_sign.___Go_straight_until_the_third_light_fixture.___
Walk_to_the_Boston_Edison_Company.___
Keep_going;_at_the_next_choice,_choose_blue_over_green.___
Soon,_you_will_be_tempted_to_go_up_a_story,_but_don't.___
Instead,_keep_following_the_white_strip.___
Enter_next_building,_then_open_door_slowly.___
Take_the_next_door_on_the_left_after_passing_by_a_blackboard.___Keep_going.___
Go_down_stairs_at_the_next_opportunity.___
Make_a_hairpin_turn_at_Halsey_Taylor.___
Exit_building.___Walk_toward_the_Blue_Fearsome_Idol.___
Enter_double_door_immediately_behind_the_Blue_Fearsome_Idol.___
Go_up_two_stories_at_the_next_chance_you_get.___
Walk_toward_the_coke_machine.___
Pass_underneath_chilled_water_supply_pipes.___
Pass_through_double_doors.___Go_by_XYZ.___
Go_through_double_doors.___Stop_at_the_mail_drop.___
Walk_to_the_drinking_fountain.___Go_through_green_door.___
Enter_the_next_corridor_on_your_left.___Go_through_the_sixth_door_on_the_left.___
Take_an_immediate_right,_then_an_immediate_left.___
Look_for_a_wolf,_a_castle_with_gates,_and_a_dove_on_your_left.___
Take_the_next_available_left.___Walk_toward_BOSTON.___Walk_toward_Boston.___
Stop_before_the_closed_double_doors.___
The_inscription_just_on_your_right_gives_the_teleport_spot.___
Teleport_to:_75_26_50_40_14_72_105_18_102_11_67_107_106_37_22_45_49.___
Enter_where_it_says_Do_Not_Enter.___
Go_through_the_first_available_double_doors_on_your_left.___
Go_up_three_stories.___
Find_signs_with_black_on_white_arrows.___
Follow_the_direction_pointed_to_by_more_arrows.___

At_the_next_intersection,_turn_toward_the_direction_of_the_light_switch.___
Keep_going.___At_the_next_intersection,_pick_the_locks.___
Keep_picking_locks_until_you_run_out_of_locks.___
Don't_enter_the_hallway_with_David_waiting_at_the_end.___
At_the_next_fork,_take_the_blue_door.___
After_passing_the_green_door,_go_through_the_next_door.___
Go_to_the_nearest_elevator.___Walk_toward_the_other_elevator.___
Find_the_regular_pentagon.___Go_to_it.___
Go_through_the_door_located_on_the_left_of_the_pentagon.___
26_16_46_9_29_36_18_2_18_38_12_47_32_14_39_13_10_29_11_5_4

The trail ends in the elevator in the lobby of Building E51, next to the sculpture by Frank Stella.

Final answer:
fingeryoyoatgapplecom

In other words, finger yoyo@atg.apple.com.

The plan file for yoyo@atg.apple.com says:

196 333 25 176 211 150 419 413 100 389 252 4 317 22 427 30 266 84 435
104 329 70 306 293 138 48 243 151 60 277 112 26 305 58 236 73 99 48
325 241 118 49 301 253 335 12 164 48 327 230 5 107 388 283 341 256
155 13 91 70 116 389 187 224 279 29 376 79 437 92 343 212 7 280

To decode this, one must replace each number by the first letter of the corresponding word on page 302 of the book. (These instructions were found on the 254-5025 answering machine.)

Decoded, it reads:

copyafsmathlsaumichedugroupfactimhsujunkfooathenaaddpgppgpfoo

In other words, copy /afs/math.lsa.umich.edu/group/fac/timhsu/junk/foo to athena, then add pgp, then pgp foo.

The PGP passphrase is the solution to the third trail (the little harmonic labyrinth).

Gershwin, Elgar, Brahms: An Excruciating, Grotesque, Botch

				\	\			\	\			\	\	
/	/	/	/	/	.	/	O	/	.	/	O	/	/	O
G	F#	F	E	E	G	F#	G	A	E	E ^b	D			

\	\					\	\					\	\			
/	/	/	/	/	/	/	.	/	/	/	/	/	.	/	O	.
B	C ⁻	D ⁻	D ⁻	D ⁻	C ⁻	B	A	E ^b	A	G	F	G				

\	\		\	\			\	\							
/	/	/	/	/	/	O	.	/	/	/	/	/	/	O	.
B	C ⁻	B	A	A ^b	D ⁻	G	E	C	F	E	D	C			

Hooray...help at last!! So Mr. Crab did send someone to look for us! This is really a relief; I don't know what I would have done otherwise. But I should explain myself since you're probably not expecting to see me here.

When Achilles and I pushed into the manual some months ago, we made slow but steady progress. Eventually, we did succeed in decoding the manual, so we drank the popping potion we had brought with us and popped out on the MIT campus to follow the trails, as you have just done. But when we arrived at this computer file, it simply said, "The coin may be found at the Coney Island Ferris Wheel." Elated, we made our way there at once, only to be kidnapped by the evil Hexachlorophene J. Goodfortune (see page 103 of the book). Only then did we realize that Goodfortune had been spying on Mr. Crab ever since he carted off his IHIFP bed. He had found out about the accident and through his dastardly cleverness had beaten us to the computer file, presumably downloading it onto a disk, and replacing its contents with the trap that we fell into.

We were dismayed, but while Goodfortune was busy sharpening his knives in the kitchen, we had a chance to look around. Achilles found a disk in the book Chess and Umbrella-Twirling Made Easy entitled "IHIFP coin computer file." At the same time, I discovered that the popcorn Goodfortune had given us was actually pushcorn. Seeing our chance, Achilles seized the book with the disk, and we escaped into cyberspace via Goodfortune's computer by eating the pushcorn. Unfortunately, in his customary haste, Achilles tripped over a zipper and a uuencoder and landed in a severely damaged heap. Worse, he had the popping potion, our only means of escape from cyberspace. I was unable to extricate Achilles from his predicament and didn't know what to do. Finally, it occurred to me to come back to this computer file and hope that Mr. Crab would send someone after us. It took me a long time, what with dragging Achilles around and what with the natural slowness of my kind, but we finally made it.

And indeed, here you are! Can you help extricate Achilles from the mess below? The only clue I have is the following page from the umbrella book that flew out when Achilles took his tumble.

When I see a big umbrella,
I whirl it round and round;
It swishes and swooshes and opens up
But never makes a sound.

Rotate it once, rotate it twice;
You'll get a brellaum.
Rotate it back and a laumbrel
is what it does become.

Parasol-twirling is easy,
As easy as Q.E.D.,
Or the Marshall Attack in the Ruy Lopez
Or overboiling the sea.

So if you see a U, M, B,
An R, E, L, or A,
Spin it along and sing a song
Of joy to the world today.

If you can help us out, we will be immensely grateful. At the moment I
am truly at a loss.

Yours faithfully,

The Tortoise.

begin 600 Big_Heap.zip
U4\$E#!!0 (E@+"K+J1@-P(*\\$! 1VA32W+;, S=\Q18)C-J
U%NVZ"B?3]@*^ "1!(J<4J1*4%=^^ \$DI[F?L\8CXO ^ 2TH89H)EY;>3OQ'\
UM#22!Z8LNQ@8XR2M"X8-;/L0OF(:*>G';UA@S66PSGUMP#"6^#6F'!T3W!B[
U3.5QZ4I8M@@"P-*...// "CZYQ-RXBRGZ-ECB!KP227I_LQ,R1XL]1NF\$PO/7
U1F&@4R04U" [\ G#5]@6UUL3\$%@1Z'VC-!<>CP"@AUF[*X#), ,>V81C9-+OK5
U8D]96>@W;WW%S:W?X<O!IH,]X;JZ, .FN(71:)0\$HVD[. [H) @W\$C.DNC)^N
U=F-]?.P&/<A.1G%Y?>U,)7DY.2JG5_@*G]6663J^=0]M7O_(>Y.\+BW/?'UY
U!OCNPU@=[!/QYK.2?G25/-TH',9AA;*J.RO,1G02MJ,>,XF1?AG6B&Q]3CLD
U(=#; \3?%17S6"5DG<RR+3)WMMF?+@7>*6G:.7%]#O3^O[Q.-J;NGWG@!P>_
U);(MA[GY^T&TBOO4*D[LBLK'T33AXIGP->9Z[,N_\\$T&L&WI#VQ]*UZQQK @
UFI8@Q2X(IHU)G)_+E57",+@T>-+JT=W<2'HABF"">]S*T1@NU.1Z1 [%BC1*7
U4ZV*U'I;)DJGD#'L+L/QDECE>FD]V*C[/<00]-!RY"N*_1]W4ONWQD_(O"V:
U50C6W?B(&XEW75)YD+XE?QQK9HLM>Z*F?8^B'"KZ!5POMBUB'[,5FG?#@M#<
U2R-1S*+\%.3I^<7\!R!+ P04 " N("P@1AL?MU\ "' 0 0 \$5U
UD,%Q# ,1._YMKRQ*:E)\ GE"2A7SFYK-F;;) \$I<20\>)AA60M!%MN(\SXQ]
UHE'C5 ;/&84'R1@0WZ&>,5-8:(*G @IVBFJ,>R)(J\3^PQI:Q5%*3+R # \$22
U09?,52>&=NT&#P5KS=-&58,^QNE!>,NMC#&NP=5JH@EC+'//IK='*?BC68Q_
UC:EI*.>46<%A@#UVZW,A\^A1W7JB/_62=7EE\U6![M' . \$U@FX_1G 6Y?0\$AH
UJ25<_R<:Q]_>6%*'>9R4TK2LW_#2.0H-"HA^.LYQYCRFE>T^9_GD@_E&4\$E#
U!!0 (!E@+"#@=X!*[P\$ /D# ! OGA3W6K=, B^]A/HEH4U@ZZP

UZ\,*9;!!8><%Y%M)31T[V/+)B=U/=I*A:[=!+N+(WX\^*2=CH,S RM#%.\$\$H
UDZ:4(0Z WK?O)E;Z(;2#=\B>P&*:8G]>-1K<H&U8HE,"B6"DED 1YL3-*6G
ULGUZ?((^&OH ;@Q1\$" -@6,\$3<Y5K8)QGRJ1<>&E'=&%PH?%5&"UZN)\.VPW
U.H";;V*YF05Y4#7\@GFS,\54C6"01E22:-"5\$_9\\$+XBB)!U+-Z)K7A(O4^
UID1YCN&5:DV)W409%DU!KDQSV0R=LRPFE?40M_:DUL#[6(+TF<5HRGE29 F.
UNAN KAO: UNIKYA29WS>TF.;M#YN8<\$2D)D"6V.!3*T;CVFDWW%:-AI '2\
UKML(J[5U&4JR<V%PHKEAY4B-*S<BN2@"WZ/6*WB!(4F"/S#G#DX7ZU1/ZP9N
U!(-+F7<A&&):,)D,^^#0SQ8A,0L)/4E.+:@#IS 8>108@G&CX[9E5XGJL3]3
U+T\$? LK[Y[\JJ/<*+XQO=^CFOPUTJW;(\V8>)(D*EG)]Y:F5<B=ZX3S[K!
U]P^+0TD"3NJ?5H\P/\$IPS>31];GZI%B\K'LNK]K2K3:./C!D^;/J1LP4[ZE[
U6K@F=,'41:F6KY_N:E6XMS.BBF+C_O[N<Z=^ 5!+ P04 " T(BP@\7_L
UT'@! "; @ \$@ \$YO=&5?9G)O;5)!8VLI;&QR<W62,8[<, Q%>Y_MITE
US]PL:8(I@C1[8Y,6\)(HM%1X_7U0VRV@12)*LGZ_/^1))NG_, I#560FO-8
UI:!P=2WD#:A^ 6Z@9,^RG#@8CG(6154Z07F!\Z0S[DVG7^6*-X0*%:483_"[
UIA:5RB&\(;-=5:#T8/M0^ITB0RY#263VI)#E^#K].*>H2'Q@"U,5NG-VPM.
U\$"/N;%)(*S@,Y.O)=7Z!DU-.?@3A2.?D#\$"&N2=#^7:Y7#047@8B*JV,U4@:
U<2XV=9XK9,5/D<5&H2WSU8^@,D]JK;Z\$DI6S#F'_RL*VD"G:0]J;<E\$:HN%W
U_5]&]KP'7M:K%01FRR ?H,+(<H">%"+=>YWTIN>^DE]V().31]8Z@@H[>7(Y
UIP\")Z\$/EU<5;!9I[>:R7J?IUPT4U%'(<W?K:0OS;NO9"MFO+8Z5CT+/<1_
U>UD_\#\!O.5/A+?=_8PP,>O+AS@3]A59&OYA;MG9 ,8OT6/J_!]=/] ^=US@V
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U 1A!+ 0(3 Q0 ("X@+"!'6%^*WP (<! ! \$ "
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end

Note - From - Achilles

Thank you so much for rescuing us! I am sorry we cannot stay and chat, but Mr. T is totally exhausted and I need to take him to an infirmary at once. By the time you read this we will be on our way (yes, I am acting with my customary haste)---tired, but safe from the clutches of Goodfortune. I see that the contents of the original computer file that Goodfortune copied onto his disk are now available to you, so we will leave the final recovery of the coin in your good hands.

Once again, we are deeply grateful for your help. I hope that we will have a chance to meet again sometime.

Immortally yours,

Achilles.

G

Arrange the twelve Goedel sections of the manual in the order in which Achilles and the Tortoise visited them, and in each case take the first letter of the first speech by Achilles to obtain a sequence of twelve letters. Take each of these letters except the last and shift it forwards in the alphabet by the subsequent letter in the sequence, wrapping around the end of the alphabet if necessary. (Thus if the sequence begins ABC, shift A forwards by $B = 2$ to get C, and shift B forwards by $C = 3$ to get E.) Find, in the resulting sequence of eleven letters, the letter that appears latest in the alphabet, and subtract eight from it. This is the first part of the answer. To obtain the next part of the answer, find the letter that appears most frequently in the eleven-letter sequence and add eleven to it.

The last part of the answer is the number that is ten less than the number of interior regions that a circle is divided into if you take seven random points on the circumference and draw all possible chords connecting pairs of these seven points (assuming that the seven points have been chosen so that no more than two such chords pass through any single point inside the circle).

E

Each Escher section of the manual has an answer that is an object that appears in a picture of one of Escher's works in the book. Write down the page numbers of these pictures. Now interpret each of these numbers as a number in base thirty-six, as in the Minesweeper section of the manual. Working in base thirty-six, add these numbers up, multiply by K, and then add 400 Memorial Drive.

B

Add up the room numbers of all the doors on the little harmonic labyrinth that were used to produce the PGP code, ignoring any letters that appear in the room number but including the building number. (If a door or a room was used more than once in extracting the PGP code, it should be used the corresponding number of times when computing this sum. Double doors count as a single unit.) Call this number x .

Take the three-letter word that you see in large letters high above the entrance to the infinite corridor as you enter Lobby 7 from Mass. Ave. Shift the first letter forwards in the alphabet by the sum of the first and fifth digits of x . Shift the second letter backwards in the alphabet by the sum of the digits of the room number (including the building number) of the Department of Alchemy. Then shift this second letter further backwards in the alphabet by the last digit of x . The result is the first part of the answer.

The last part of the answer is the remainder when $x/2$ is divided by 4423.