

We start by defining a variable `<text>` to hold the ciphertext, `<chars>` to hold those characters we're interested in (letters and the underscore), and `<threes>` as the characters broken up into their letter-parts - so A becomes A1, A2, A3, implemented as {"A"[1], "A"[2], "A"[3]}.

```
In[28]:= text =
  "WJX SUE IXNSON DHZDUFZ_L KU YTL VLGSBBAT XWD JML UWFRO_CHQVH ODZRGKT - EUU
   BDTQXPS ELV MDSGB NDVA IOLQY_NRZ EUXXSOOX TDWKCZTL MU TH. WGW_ AJX
   NZYVT YMWSQTX. G ULPWO QI PFSUVK USNPYFPO GO VTIWX DDFVB _SWCLXO_Q
   FT PUW SAAVTB FA EQK _AB QXO, WKN WW FYWLES PZGOSOUN RQ WB NDVR
   JLZEGQWLP QXD S_IOXMC XUD MMLB NZY X_B MQ ENK PLDUWME. D SLAJWVD
   AQF WLKP VCLAS QI PFSUUK XZLTXUPO UO VTSUK DTZUCLYPV, SFC WGX_ XVUX
   IMD_AAZ O_ DCEYWNMKX OTK M ARB LPVEK WDVF NZ RIILLJI_H VTSWK UUDSN
   ZPOYTD RZWBMMXAR ZENST. TUV OWDBHWFRY JKKALW NAM ZEAOUNKX AQ WGX
   REAJSKLVGMPLA ITO AH NTSZYG NUDUC BFEFIXW AIUILEH NB. YTYU IDEE
   UTCAWW HBA RBCH I NDXS, BKO W DBE GTCAWU IDVW GWIM WGX_ HIOXF RE
   OB RJWG. IHIVB NZYY YFEGO KFP FY UXTSTZT V_JX GMOLQ W KOU_N SVVR
   AAAUSD XNWG L YTV_D OBJUU ITYW DAX NON DAWV NVOZ UCKQOQ LSUO_BS QO.
   VFY _EOXLHJ UHKE XUVG LQWIA PWJFGJ, THNX IKOALCCOX TS WGX RQF YXZHID FU
   QENXWOWBTX. Q AEB OBQVXT RXUN ITYV HAD VMCAXLW NF RFZX CSTJFD WXTWMPF
   IX JOS L IAS QKKZCI LF OFUB MA KQH DSZWJ WR JMUXF SV NBDUWC NZYJ. DHQS
   VBOX TEO VEGUOKWDVF, LAW OG W DVVE HAD QG GZSACKQ ZVQ UGA QJ DAHPXGOZA
   VB L_DB. W DVVE NVOOU BETJP NZ RIILLJISH W OEV WLRGNWKT QZD P OEW AQXL
   UFK SEQ, LRW UCLEOIV HAS FXA VTV UXMMUHCME OYY XNDB TZEE. LHQS OYY AM
   THNF Y_WB ZPJ ENDST IB BC QJ UUA, HMN PIEQWGJ OYY Z_DD W ANBED DCUT
   UUA QJ JXMB OU OTVSTAR O_ NEY O_NELSBPWLU C BDESHCAE. WGXY HRAX ZPLV
   FB TOWGZE SBRX EEQ LRW WE MXS XUVQ EUU FB_VONJGI_U MQ QRKF YSNXYTVV.

   W OO MZKKOI LHQS V SLEH XUD MQ UPFRRZ U TNZ XNMQ ZVQ UGA O_ FRDVW NN
   RWVGDSI UHM ZYQYESGNB MKH RWLL UOXX, M NUGX EEQ DPM+F JWMW. V SLEH
   AGRJL WJX _RQCKUF_NNF HV QFRJUH NLY NCYDDUS FF TUW UUA_O MPO, XUKKS,
   WHFER ZUXCUTJFX J TRNZPIIXA AURWGJ WIX SBW. VX SBO GF RGAeko AKN
   WA TVUMF AITNJKK _FI SIS TDOI WF KLVR FB. WISH MQKNXFR WVPDSIM,
   NWXVVVWMC.
  ";
(*chars holds the characters which are encrypted - that is, letters and _ *)
chars = Select[Characters[text], LetterQ[#] || # === "_" &];
(*threes holds those encrypted characters but broken up into their letter-
parts: "A" → {"A"[1], "A"[2], "A"[3]}*)
threes = Flatten[{#[1], #[2], #[3]} & /@ chars];
(*transpositionStage is a function which carries out
the transposition: reversing the five-tuples of the text*)
```

We also define a function `transpositionStage` which performs the given transformation specified in `<order>` on the given `<listOfChars>`, with a default interpretation of reversing the list - that is, `<order>` is {5, 4, 3, 2, 1}. It works by Partitioning the list into sublists of appropriate length, applying the transformation to them one by one, and then squidging the lists back together again using `Flatten`.

```
In[31]:= transpositionStage[listOfChars_List] :=
  transpositionStage[listOfChars, {5, 4, 3, 2, 1}]
transpositionStage[listOfChars_List, order_List] :=
  Flatten[Extract[#, List /@ order] & /@ Partition[listOfChars, Length[order]]]
```

Finally, we define a variable `<untransposed>` as the ciphertext with the transposition stage removed, and Partitioned into groups of three.

```
In[33]:= (*untransposed holds the letter-
parts of the cipher with the transposition stage removed*)
untransposed = Partition[transpositionStage, 3];
```

This is what the start and end of the list <untransposed> looks like:

```
In[34]:= untransposed // Short
Out[34]/Short= { {J[2], J[1], W[3]}, {W[2], W[1], S[1]}, {X[3], X[2], X[1]}, <<1405>>, {V[3], C[3], C[2]}, {C[1], M[3], M[2]} }
```

Now we begin the cracking process. We formalise our cribs: "TIBERIUS" appears in positions -8 through -1, and "VALENTINEANDPROTEUS" in positions 222 through 240. We represent the cribs as lists of replacement rules:

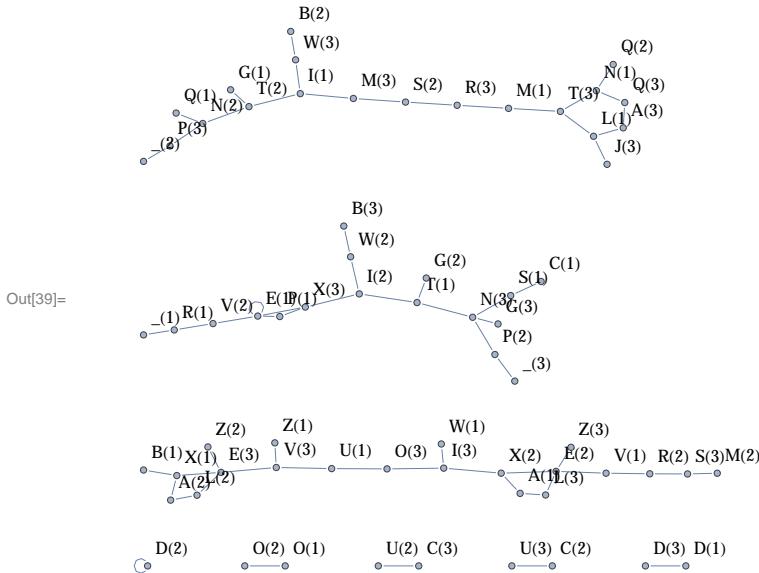
```
In[35]:= (*we have a crib: the word "TIBERIUS" being the last 8 characters;
we split that up into its letter-parts so that the crib
"IUS becomes WMC" is expressed as "C[1] is decrypted to S[1]" etc
Note that we've already de-applied the transposition,
so we're left with a straight substitution
*)
firstCrib = {Thread /@ Thread[untransposed[[-8 ;;]] →
  (Function[{ch}, ch[#] & /@ Range[3]] /@ Characters["TIBERIUS"])];
(*do the same with VALENTINEANDPROTEUS - this is in position 222 to 240*)
secondCrib = {Thread /@
  Thread[untransposed[[222 ;; 240]] → (Function[{ch}, ch[#] & /@ Range[3]] /@
    Characters["VALENTINEANDPROTEUS"])]};
```

So firstCrib looks like this:

```
In[38]:= firstCrib
Out[38]= { {N[3] → T[1], N[2] → T[2], N[1] → T[3]}, {M[3] → I[1], X[3] → I[2], X[2] → I[3]}, {X[1] → B[1], W[3] → B[2], W[2] → B[3]}, {V[2] → E[1], V[1] → E[2], V[3] → E[3]}, {V[2] → R[1], V[1] → R[2], M[1] → R[3]}, {W[3] → I[1], W[2] → I[2], W[1] → I[3]}, {V[3] → U[1], C[3] → U[2], C[2] → U[3]}, {C[1] → S[1], M[3] → S[2], M[2] → S[3]} }}
```

Now we formulate a graph, where the vertices are the letter-parts like "M"[3]. We define two vertices (letter-parts), x and y, to be connected iff the crib has given us a replacement rule from one to the other:  $x \rightarrow y$ . Side note: we have essentially defined an equivalence relation: "letter-parts x and y are related iff their coordinate in the keycube is the same" - so, for example, if A were in position {1, 1, 2} and B were in position {3, 2, 1} in the cube, then "A"[1] is related to "B"[3] and "A"[2]; we later use the fact that equivalence classes partition the set, but we use a Graph structure to represent the equivalence classes.

```
In[39]:= (*the cribs have given us a list of letter-
parts which are the same as each other - for example,
M[3]→S[2]. A graph is a convenient way to express this;
we need to turn the Rules that it is currently expressed as,
into UndirectedEdges;
we also remove duplicates because we are sometimes told the same thing twice
(e.g. A[1]→N[2] appearing twice in the list - I made up that example)
*)
graph = With[{rules = Flatten[{firstCrib, secondCrib}]},
  Graph[Sort /@ UndirectedEdge @@@ rules // DeleteDuplicates,
  VertexLabels → "Name", ImagePadding → 20]]
```



Note that some nodes are on their own (for example, "D"[3]) - this is because our cribs haven't quite given us enough information to solve the cipher completely.

Now, we go through <untransposed>, which is the text with the transposition removed and divided up into chunks of three. For each chunk of three <untransposedTriplet>:

For each of the three letter-parts in <untransposedTriplet>, we use VertexComponent to extract from the graph all those nodes to which the letter-part is indirectly or directly connected (ie. the equivalence class of that letter-part). From those extracted nodes, we select those which could appear in the nth position.

So, for example, say we take in <untransposedTriplet> = {"A"[1], "C"[1], "B"[3]}. Looking at "A"[1], we find its VertexComponent (all those nodes to which "A"[1] is connected indirectly or directly).

From that VertexComponent, we find all the letter-parts that could fit in the first slot - that is, "W"[1] is valid because it can appear in the first slot, but "Z"[3] is not because it must go in the third slot.

Once we've done this for all three of the letter-parts, we may have ended up with something like <possibles> = {{"A"[1], "D"[1]}, {"A"[2]}, {"A"[3], "D"[3], "Z"[3]}}. We select the letter (there can be a maximum of one such letter) which appears in all three of the lists (in this case, "A"), because that is the only letter which will do as the letter that <untransposedTriplet> represents.

```
In[40]:= filtered = Function[{untransposedTriplet}, With[{possibles =
(*for each component of the triplet,
using VertexComponent we select all the vertices which are connected to
that component - this means possibles will contain every letter-part
which can go in each of the three slots in the untransposedTriplet.
Then we use the Select statement to pick out the letter-
parts which can go in each slot. (For example, if we have
{A[2],M[1],L[3]}, we only want anything that ends in a 1 to go
in the first position - no letter consists of {A[2],A[2],A[3]})}
*) (Function[{whichSlot}, Select[VertexComponent[graph,
untransposedTriplet[[whichSlot]]],
First[#] == whichSlot &] ] /@ Range[3])},
(*Select from the possible substitutes for the first letter-
part those elements which have a counterpart in the second letter-
part and the third letter-part - so, for example,
{{A[1]}, {A[2],B[2]}, {A[3],C[3]}} would have A[1] selected*)
Select[possibles[[1]], MemberQ[Head /@ possibles[[2]], Head[#]] &&
MemberQ[Head /@ possibles[[3]], Head[#]] &]]
(*and do this for every triplet*)] /@ untransposed
```

A very large output was generated. Here is a sample of it:

Out[40]=

```
{VertexComponent[], {}, {E[1]}, {}, {A[1]}, {S[1]}, {W[1]}, {E[1]},
{A[1]}, {P[1]}, {}, {}, {D[1]}, {E[1]}, {}, {}, {}, VertexComponent[],
{}, {E[1]}, VertexComponent[], {}, {}, VertexComponent[], {}, {E[1]},
{}, {A[1]}, {B[1]}, {}, <<1350>, {V[1]}, {E[1]}, VertexComponent[],
{N[1]}, {W[1]}, {I[1]}, {T[1]}, VertexComponent[], {}, {}, {},
VertexComponent[], {E[1]}, {S[1]}, {}, {R[1]}, {}, {G[1]}, {A[1]}, {}, {},
{S[1]}, {T[1]}, {I[1]}, {B[1]}, {E[1]}, {R[1]}, {I[1]}, {U[1]}, {S[1]}}
```

Show Less | Show More | Show Full Output | Set Size Limit...

Just to make it look a bit nicer:

```
In[41]:= (*Pick out all the elements which have been definitively found - that is,
those which consist of {A[[1]]} where A is some letter.*)
If[Head[#] === List && Length[#] == 1, Head[#[[1]]], "_"] &/@filtered // StringJoin //
ToLowerCase

Out[41]= _e_asweap_de____e____e_ab_lists_d____i_i_t_____t_et_s_angere_ma_t
____ta_l_te_ve_o_e_e_e_b_t_iswa_t_ir_n_inki_g_t_ga____ac_n_so_t
____e_e____sap_ea_ng_nt_b_i_s____wn_en_i____amea_pa_t_m_t
____valentineandproteus_ad_l_t_gast____en_i_s_a_red____an_ea_st_ga_
____vi_enc_o____a_r_bu_t_e_w_re____le_i_de_t_n_wasneve____et_esta
____is_t_ei____tbe_n_e_s_able_btt____i_e_t_v_l_le_t_ees_b
____s_ment_n_nea_t_s_e_b_tw_e_st_w_n_ure_wm_ne_a_iw_s_nsu
____w_tris_t_e_o_e_o_s_t_w_let_l_e_tainw_a_p_i_t_avel_
____dwit_at_i_dp____di_t_ret____a_ai_stme_w_owe____av_gr_wns_r
____it_i_lue_eatt_et_e_s_ve_mentiw_sw_rne_t_at____e_i_e_t_
____ea_n_gains_e_iwas_e_m_nd_a_i_e_sc_et_tle_t_o
____v_l____ea_s_i_ve_t_pre_a_r_d_a_pe_raswe_i_vet_s_ep_t
____esta_is_ewi_en_it_and_ewli_an_a_es_as_lt_re_s_o_i
____nee_w_at_o_t_isnew_ta_tisup_t_n_wi_o_e_i_du_i
____ien_si_t_i_telligen_s_i_st_e_avenee_peopleli_e_an_wema_av_t
____po_t_it_t_w_et_e_i_a_t_ati_a_ad_s_an_wname_r_i
____ert_pr_pa_t_ments_ill_e_i_p_d_n_in_i_a_t_e_e_p_n_t
____t_gm_e_xe_u_i_witnessse_i_t_ewar
____ewas_w_its_m_i_t_r_i_n_e_l_ve_nwit_es_r_ga_stiberius
```

This, with the word spacings, is enough to tell us that the first letters are THEGASWEAPONDE; we use this as another crib.

```
In[42]:= thirdCrib = {Thread /@ Thread[untransposed[[1 ;; 14]] >
  (Function[{ch}, ch[#] & /@ Range[3]] /@ Characters["THEGASWEAPONDE"])]};

graph = With[{rules = Flatten[{firstCrib, secondCrib, thirdCrib}]},
  Graph[Sort /@ UndirectedEdge @@@ rules // DeleteDuplicates,
  VertexLabels >> "Name", ImagePadding > 20]];

filtered = Function[{untransposedTriplet}, With[{possibles =
  (*for each component of the triplet, using VertexComponent we select
  all the vertices which are connected to that component -
  this means possibles will contain every letter-part which
  can go in each of the three slots in the untransposedTriplet.
  Then we use the Select statement to pick out the letter-
  parts which can go in each slot. (For example, if we have
  {A[2],M[1],L[3]}, we only want anything that ends in a 1 to go
  in the first position - no letter consists of {A[2],A[2],A[3]})}
  *) (Function[{whichSlot}, Select[VertexComponent[graph,
    untransposedTriplet[[whichSlot]]],
    First[#] == whichSlot &]] /@ Range[3]]),

  (*Select from the possible substitutes for the first letter-
  part those elements which have a counterpart in the second letter-
  part and the third letter-part - so, for example,
  {{A[1]}, {A[2], B[2]}, {A[3], C[3]}} would have A[1] selected*)
  Select[possibles[[1]], MemberQ[Head /@ possibles[[2]], Head[#]] &&
  MemberQ[Head /@ possibles[[3]], Head[#]] &]]
  (*and do this for every triplet*) /@ untransposed;
If[Head[#] === List && Length[#] == 1, Head[#[[1]]], "_" ] & /@ filtered // StringJoin // ToLowerCase

Out[45]= thegasweapondev_pe_e_abulistshadone_is_inctiv_e_tu_etc_st_angere_ma_th
_ta_l_te_ever_one_ec_e_b_itthiswast_ir_n_oingibegant_ga_he_acc_n_so
_the_e_sappearing_nthebo_i_so_ou_ownmena_i_ameapparenttom_th
_tvalentineandproteushadsol_t_gastoou_en_ies_abored_o_an_earst_ga_he_evi
_enceo_the_t_eac_r_bu_the_weres_le_indec_t_n_n_wasneve_et
_establishthei_gu_tbe_n_easonable_oubtthe_u_is_o_e_toovalua_le
_otheest_bl_shmentan_anunea_t_c_se_e_between_st_we_eunsurehowmuchi_ne
_a_iw_sunsur_wh_tris_the_po_e_ousbothwhilet_l_n_ertainwhatproo_im
_ghthavelo_gedwit_at_irdpart_th_di_n_t_reta_e_ct_onagainstme_w_owever_he
_havegrownstr_ngwithi_luenceattheto_e_e_s_governmentiwaswarne_thatt_h
_eci_e_to_eact_n_gains_ean_iwas_o_e_t_em_wndeathinor_er_o_sc_pet
_th_tle_t_ou vulne_ea_s_ih_veh_toprepa_e_or_outodisappearaswe_ih_veta
_enstepstoestablishanewi_en_it_andanewli_e_r_ouan_charleshas_lltheresources
_o_i_nee_what_o_ow_t_hisnew_ta_tisupto_oubut_nowing_o_e_i_ou_du_ge
_outojoinm_rien_sint_intelligenc_se_vicest_e_avenee_peopleli_e_ouan
_wema_havethe_pportunit_tow_o_et_eriama_a_thatihavehadtoch_oseanewname
_or_ouin_ertopr_pa_ethe_ments_uwillnee_ihope_oudon_in_ihaveta
_entheoppo_n_t_oh_nourt_c_g_he_oungmanh_r_wh_seexecuti_niwitnesse
_urinthewarhewasn_cowa_a_itse_ms_itt_rhi_na_e_l_ve_nwith_o_es_r_ga
_stiberius
```

And now it's clearly "THEGASWEAPONDEVELOPEDBYTHEFABULISTS":

```
In[46]:= thirdCrib =
  {Thread /@ Thread[untransposed[[1 ;; 35]] → (Function[{ch}, ch[#] & /@ Range[3]] /@
    Characters["THEGASWEAPONDEVELOPEDBYTHEFABULISTS"])]};

graph = With[{rules = Flatten[{firstCrib, secondCrib, thirdCrib}]},
  Graph[Sort /@ UndirectedEdge @@@ rules // DeleteDuplicates,
  VertexLabels → "Name", ImagePadding → 20]];

filtered = Function[{untransposedTriplet}, With[{possibles =
  (*for each component of the triplet, using VertexComponent we select
   all the vertices which are connected to that component -
   this means possibles will contain every letter-part which
   can go in each of the three slots in the untransposedTriplet.
   Then we use the Select statement to pick out the letter-
   parts which can go in each slot. (For example, if we have
   {A[2],M[1],L[3]}, we only want anything that ends in a 1 to go
   in the first position - no letter consists of {A[2],A[2],A[3]})*
  *) (Function[{whichSlot}, Select[VertexComponent[graph,
  untransposedTriplet[[whichSlot]]],
  First[#] == whichSlot &]] /@ Range[3]]),

  (*Select from the possible substitutes for the first letter-
   part those elements which have a counterpart in the second letter-
   part and the third letter-part - so, for example,
   {{A[1]}, {A[2],B[2]}, {A[3],C[3]}} would have A[1] selected*)
  Select[possibles[[1]], MemberQ[Head /@ possibles[[2]], Head[#]] &&
  MemberQ[Head /@ possibles[[3]], Head[#]] &]]
  (*and do this for every triplet*) /@ untransposed;

If[Head[#] === List && Length[#] == 1, Head#[[1]], "_" ] & /@ filtered // StringJoin

Out[49]= THEGASWEAPONDEVELOPEDBYTHEFABULISTSHADONEDISTINCTIVEFEATURETHESTRANGEREDMARKSTHAT
AFFECTEDEVERYONEAFFECTEDBYITTHISWASTHEIRUNDOINGIBEGANTOGATHERACCOUNTSOFTHESEMARKSAPPEARINGONTHEBODIESOFOUROWNMENANDITBECAMEAPPARENTTOMETHATVALENTINEANDPROTEUSHADSOLDTHEGASTOURENEMIESILABOREDFORMANYYEARSTOGATHEREVIDENCEOFTHEIRTREACHERYBUTTHEYWERE_SKILLEDINDECEPTIONANDIWASNEVERABLETOESTABLISHTHEIRGUILTBEOYONDREASONABLEDOUBTTHEFABULISTSPROVEDTOOVALUABLETOTHEESTABLISHMENTANDUNEASYTRUCESETTLEDBETWEENUSTHEYWEREUNSUREHOWMUCHIKNEWANDIWASUNSUREWHATRISKTHEYPOSEDTOUSBOTHWHILETHEYCULDNOTBECERTAINWHATPROOFIMIGHTHAVELODGEDWITHATHIRDPARTYTHEYDIDNOTDARETAKEACTIONAGAINSTMENOWHOWERVERTHEYHAVEGROWNSTRONGWITHINFLUENCEATTHETOPLEVELSGOVERNMENTIWASWARNEDTHATTHEYHADDECIDEDTAKEACTIONAGAINSTMEANDIWASFORCEDTOFAKEMYOWNDEATHINORDERTOESCAPE THEMTHATLEFTYOUVULNERABLEANDSOIHAVEHADTOPREPAREFORYOUUDISAPPEARASWELLIHAVETAKENSTEPSTOESTABLISHANEWIDENTITYANDANEWLIFEFORYOUANDCHARLESHASALLTHERESOURCESYOUWILLNEEDWHATYOUSDWITHTHISNEWSTARTISUPTOYOUBUTKNOWINGYOUWELLIWOULDURGEYOUJOINMYFRIENDSINTHEINTELLIGENCESERVICESTHEYHAVENEEDOFPeopleLIKEYOUANDWEMAYHAVETHEOPPORTUNITYTOWORKTOGETHERIAMAFRAIDTHATIHAVEHADTOCHOOSEANEWNAMEFORYOUINORDERTOPREPARETHEDOCUMENTSYOUWILLNEEDIHOPEYOUNTMINDIHAVETAKENTHEOPPORTUNITYTOHONOURTHECOURAGEOFTHEYOUNGMANHARRYWHOSEEXECUTIONIWITNESSEDURINGTHEWARHEWASNOCOWARDANDITSEEEMSFITTINGFORHISNAMETOLIVEONWITHFONDESTREGARDSTIBERIUS
```

Incidentally, we can deduce that the transposition is {1,2,3,4,5}→{5,4,3,2,1} because if we perform this process with an incorrect transposition, the resulting string does not contain the string “valentineandproteus” - the letter-parts aren’t in the right places to allow this. It turns out that {5,4,3,2,1} is the only permutation which results in “valentineandproteus” appearing somewhere in the text (when the two cribs are applied) for all permutations of length up to 6. mad\_maths\_man gives some good reasoning based on the Kasiski test for why the transposition keylength should be 5.

We can deduce that the ciphertext is read off in rows and not columns because of the string “NZ

RIILLJI\_H", which is repeated (or very nearly) in two different places in the ciphertext. If the ciphertext were read off in columns, the repeated characters would have been flung far and wide over the cipher. In this way, given knowledge that the cipher is ADFGVX-style but with a 3x3x3 grid, we can crack the cipher.

A function to decrypt the whole thing:

```
In[52]:= decrypt8B[txt_] :=

decrypt8B[txt,  (*this is the graph that holds every dependency,
but zoomed out really far*)]

decrypt8B[txt_, graph_] :=
With[{chars = Select[Characters[ToUpperCase@txt], LetterQ[#] || # === "_" &]},
With[{threes = Flatten[{#[1], #[2], #[3]} & /@ chars]},
With[{untransposed = Partition[transpositionStage[threes], 3]},

With[{filtered = Function[{untransposedTriplet}, With[{possibles =
(*for each component of the triplet, using VertexComponent we
select all the vertices which are connected to that component -
this means possibles will contain every letter-part which
can go in each of the three slots in the untransposedTriplet.
Then we use the Select statement to pick out the letter-parts
which can go in each slot. (For example, if we have {A[2],M[1],
L[3]}, we only want anything that ends in a 1 to go in the
first position - no letter consists of {A[2],A[2],A[3]})*
}(Function[{whichSlot}, Select[VertexComponent[
graph, untransposedTriplet[[whichSlot]]],
First[#] == whichSlot &]] /@ Range[3])},

(*Select from the possible substitutes for the first letter-
part those elements which have a counterpart in the second letter-
part and the third letter-part - so, for example,
{{A[1]},{A[2],B[2]},{A[3],C[3]}} would have A[1] selected*)
Select[possibles[[1]], MemberQ[Head /@ possibles[[2]], Head[#]] &&
MemberQ[Head /@ possibles[[3]], Head[#] ] &]] /@ untransposed},
If[Head[#] === List && Length[#] == 1, Head[#[[1]]], "_" ] & /@ filtered //.
StringJoin /@ ToLowerCase]]]]]
```

```
In[54]:= decrypt8B[text]
```

```
Out[54]= thegasweapondevelopedbythefabulistshadonedistinctivefeaturethestrangeredmarksthatafflictededeveryoneaffectedbyitthiswastheirundoingibegantogatheraccountsofthesemarksappearingonthebodyesofourownmenanditbecameapparenttomethatvalentinenandproteushadsoldthegasstoourenemiesilaboredformanyyearstogatherevidenceoftheirtreacherybuttheywereskilledindeceptionandiwasneverabletoestablishtheirguiltbeyondreasonabledoubtthefabulistsprovedtoovaluabletotheestablishmentandanuneasytrucesettledbetweenustheywereunsurehowmuchiknewandiwasunsurewhatriisktheyposedtousbothwhiletheycouldnotbecertainwhatproofimighthavelodgedwithathirdpartytheydidnotdaretakeactionagainstmenowhowevertheyhavegrownstrongwithinfluenceatthetoplevelsofgovernmentiwaswarnedthattheyhaddecidedtotakeactionagainstmeandiwasforcedtofakemyowndeathinordertoescapethatleftyouvulnerableandsoihavehadtoprepareforyoutodisappearaswellihavetakenstepstoestablishanewidentityandanewlifeoryouandcharleshassalltheresourcesyouwillneedwhatyoudowiththisnewstartisuptoyoubutknowingyouwelliwouldurgeyoutojoinmyfriendsintointelligenceservicestheyhaveneedofpeoplelikeyouandwemayhavetheopportunitytoworktogetheriamafraidthatihavehadtochooseanewnameforyouinordertopreparethedocumentsyouwillneedihopeyoudontmindihavetakentheopportunitytohonourthecourageoftheyoungmanharrywhoseexecutioniwitnessedduringthewarhewasnocowardanditseemsfittingforhisnametoliveonwithfondestregardstiberius
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