This homework is due on **December 4, 11am ET**.

You are welcome to work with others, however you must explicitly list all collaborators and materials that you used. You must write up your own solution and your own code to every problem. See Georgetown University [Honor System](#) When in doubt, ask the instructor what is allowed.
Problem 1 (Substitution ciphers). In the class we saw that even though substitution ciphers have reasonably long keys, they are not secure. Decode the following ciphertext encrypted by a substitution cipher.

S ilqa l ocalh jilj pxa olh jjsr xljspx esmm csra tb lxo msqa ptj jia jcta nalxxsx py sjr wcaao: Ea ipno jiara jctjir jp fa ramy-aqsoaxj, jilj lmm nax lca wcaljao adthm. S ilqa l ocalh jilj pxa olh px jia cao ismmr py Uapcusi, jia rpxr py ypcnac rmlqar lxo jia rpxr py ypcnac rmlqa pexacr esmm fa lfma jp rsj opex jpuaiac lj jia jlfma py fcpliacippo. S ilqa l ocalh jilj pxa olh aqax jia rilja py Nrrrsrrsblhs, l rilja reamjacsxu esji jia iajl py sxvtrjswa, reamjacsxu esji jia iajl py pbbecarrspx esmm fa jclxrypcaox sxjp lx plsr py ycaopn lxo vtrjswa. S ilqa l ocalh jilj nh yptc majjma wismocax esmm pxa olh msqa sx l xljspx eiaac jiah esmm xpj fa vtouao fh jia wpmpc py jiasc rksx ftj fh jia wpxjxaj py jiasc wilclwjac. S ilqa l ocalh jpolh.

Feel free to use tools that count frequency of characters in the ciphertext, letter/digram frequency tables (e.g., [here](#)), common sense, or implement any tools in your favorite programming language. Name the author of this text, and explain how you arrived at the solution.
Problem 2 (Breaking RSA). Implement four attacks from Lecture 23 on the Textbook RSA to solve the following puzzle: https://colab.research.google.com/drive/1E-6MCkqYBEb5VpqChC33WaOQ1Neb6?usp=sharing