User inputs are highlighted in **red**. The “s” command should work consistently – at least 85% of the time.

$ ./ciphers\_solution

Welcome to Ciphers!

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Ciphers Menu

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C - Encrypt with Caesar Cipher

D - Decrypt Caesar Cipher

E - Compute English-ness Score

A - Apply Random Substitution Cipher

S - Decrypt Substitution Cipher from Console

F - Decrypt Substitution Cipher from File

R - Set Random Seed for Testing

X - Exit Program

Enter a command (case does not matter): **c**

Enter the text to Caesar encrypt:

**Hello, world!**

Enter the number of characters to rotate by:

**10**

ROVVY GYBVN

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Enter a command (case does not matter): **d**

Enter the text to Caesar decrypt:

**nk**

BY

HE

IF

Ciphers Menu

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X - Exit Program

Enter a command (case does not matter): **d**

Enter the text to Caesar decrypt:

**ai nyug**

GO TEAM

Ciphers Menu

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Enter a command (case does not matter): **e**

Enter a string to score: **SAFE**

Englishness: -4.21802

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Enter a command (case does not matter): **e**

Enter a string to score: **SCHOOL**

Englishness: -10.7195

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Enter a command (case does not matter): **e**

Enter a string to score: **AAAAAAAAAAAAAAAAA**

Englishness: -81.1907

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Enter a command (case does not matter): **r**

Enter a non-negative integer to seed the random number generator: **1000**

Ciphers Menu

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X - Exit Program

Enter a command (case does not matter): **a**

Enter the text to substitution-cipher encrypt: **ABCDEFGHIJKLMNOPQRSTUVWXYZ**

NGYIJUKVEMDSFBZQAPRWOTCLXH

Ciphers Menu

------------

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S - Decrypt Substitution Cipher from Console

F - Decrypt Substitution Cipher from File

R - Set Random Seed for Testing

X - Exit Program

Enter a command (case does not matter): **a**

Enter the text to substitution-cipher encrypt: **ABCDEFGHIJKLMNOPQRSTUVWXYZ**

BJPCTQVRYHEUZOSLNDAIXKMGWF

Ciphers Menu

------------

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X - Exit Program

Enter a command (case does not matter): **a**

Enter the text to substitution-cipher encrypt: **Design, usage and analysis of data structures: review of lists, stacks and queues; hash tables, priority queues, search trees, introduction to graphs; searching and sorting; runtime analysis; programming projects and lab exercises.**

WPTSBX, ITHBP HXW HXHNVTST QR WHJH TJGIFJIGPT: GPESPK QR NSTJT, TJHFMT HXW LIPIPT; OHTO JHANPT, DGSQGSJV LIPIPT, TPHGFO JGPPT, SXJGQWIFJSQX JQ BGHDOT; TPHGFOSXB HXW TQGJSXB; GIXJSUP HXHNVTST; DGQBGHUUSXB DGQCPFJT HXW NHA PZPGFSTPT.

Ciphers Menu

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Enter a command (case does not matter): s

Enter text to substitution-cipher decrypt: **WPTSBX, ITHBP HXW HXHNVTST QR WHJH TJGIFJIGPT: GPESPK QR NSTJT, TJHFMT HXW LIPIPT; OHTO JHANPT, DGSQGSJV LIPIPT, TPHGFO JGPPT, SXJGQWIFJSQX JQ BGHDOT; TPHGFOSXB HXW TQGJSXB; GIXJSUP HXHNVTST; DGQBGHUUSXB DGQCPFJT HXW NHA PZPGFSTPT.**

DESIGN, USAGE AND ANALYSIS OF DATA STRUCTURES: REVIEW OF LISTS, STACKS AND QUEUES; HASH TABLES, PRIORITY QUEUES, SEARCH TREES, INTRODUCTION TO GRAPHS; SEARCHING AND SORTING; RUNTIME ANALYSIS; PROGRAMMING PROJECTS AND LAB EXERCISES.

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Enter a command (case does not matter): **f**

Enter filename with text to substitution-cipher decrypt: **cryptogram.txt**

Enter filename to write results to: **plaintext.txt**

Not input, just comments: Ethan’s computer takes around 2 minutes. The file plaintext.txt now contains the decrypted contents of cryptogram.txt, which could be multiple lines.

Ciphers Menu

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X - Exit Program

Enter a command (case does not matter): **x**