Yibo Zhu, July 29th, summer semester, CSCI6033

Successful guess, win the game

A screenshot of a cell phone

Description automatically generated

Incorrect guess, lose the game after three strikes

A screenshot of a cell phone

Description automatically generated



I rewrite the code and save it as a C file. So please use the Yibo\_Zhu\_Hangman.c to compile in KLEE

A screenshot of a cell phone

Description automatically generated



A picture containing drawing

Description automatically generated



Generate the Yibo\_Zhu\_Hangman.bc file

A screen shot of a computer

Description automatically generated



A close up of a sign

Description automatically generated



Run klee

A screen shot of a computer

Description automatically generated



Because klee\_assert(0) can’t stop solving when game won. So, I use ctrl-c to stop it by keyboard.

It generate correct answer.

A close up of a keyboard

Description automatically generated



Ktest content:

A screenshot of a cell phone

Description automatically generated



A screen shot of a computer

Description automatically generatedA close up of a screen

Description automatically generated



Answer: ?WARHKS fits WARHAWKS

Graduate question:

1.Explain the meaning for each value associated with each “guess” made in the .ktest file for the winning solution, e.g. name, size, data, ..., text. What does each value represent specifically?

A close up of a sign

Description automatically generated

Name: the symbolic test name I gave: klee\_make\_symbolic(&c, sizeof(c), “c”)

Size: one character size is 1byte

Date: input is ‘W’, it is a python byte strings

Hex: in hexadecimal, 0x57 is 87, in ASCII table is ‘W’

Int: 87, in ASCII table, 87 is ‘W’

Uint: UInt is a 32-bit unsigned integral data type, with values ranging from 0 to 4294967295, inclusive. So, it means int positive 87, in ASCII is ‘W’

Text: ASCII text is W

Reference for Uint:

<http://x10.sourceforge.net/x10doc/2.2.3/x10/lang/UInt.html>

2.Explain how you would calculate the total number of possible sequences of guesses by a user for this problem? (You don’t actually have to solve for a number)

1. First, I assume all the characters that user may input is “n”

2. There are three chances whether user input is correct or not the game will continue: n \* n \* n

3. Now in WARHAWKS, it has six unique character—WARHKS, it means the max input time is 3+6 = 9

4. So between 3 to 9 is the possible input time

5. So the total number of possible sequences of guesses is:

(n\*n\*n) + (n\*n\*n\*n) + (n\*n\*n\*n\*n) + (n\*n\*n\*n\*n\*n)

3-n 4-n 5-n 6-n

+ (n\*n\*n\*n\*n\*n\*n) + (n\*n\*n\*n\*n\*n\*n\*n) + (n\*n\*n\*n\*n\*n\*n\*n\*n)

7-n 8-n 9-n