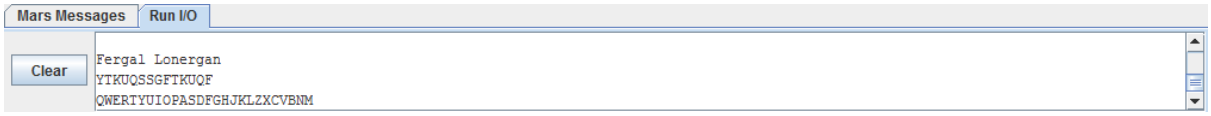
Assignment 2

Fergal Lonergan 13456938

Question 1

This program is supposed to encrypt a hardcoded input message from you program using a cypher of your choice.

The following is the output of my program. As you can see spaces are removed and upper and lowercase letters are translated to uppercase.



It prints the input string, output string and Cypher.

This is how my cypher matches up to our alphabet.

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
q	w	e	r	t	y	u	i	o	p	a	s	d	f	g	h	j	k	l	z	x	c	v	b	n	m

My program first checks if the current character in the string is equal to a “\n”. If it is it will exit the program.

It then checks if our character is Uppercase ie between the ASCII values 65 – 90. If it is less than 65 then it isn’t a character so it moves to next character in string. If it is above 90 there is a possibility that it may be lowercase so it jumps to that round of checks. If it is uppercase it finds the appropriate cypher value and saves it in our output string.

If the value is less than 97 then we know it is not a letter due to previous checks so we search the next character in string. If it is greater than 122 it is also not a letter so we check for next character in string. If it lies between this range we translate it from lowercase to uppercase and then locate the associated cypher before saving this to our output string.

Once we have found our encrypted message we then print our input output and cypher strings before exiting program.

Question 2

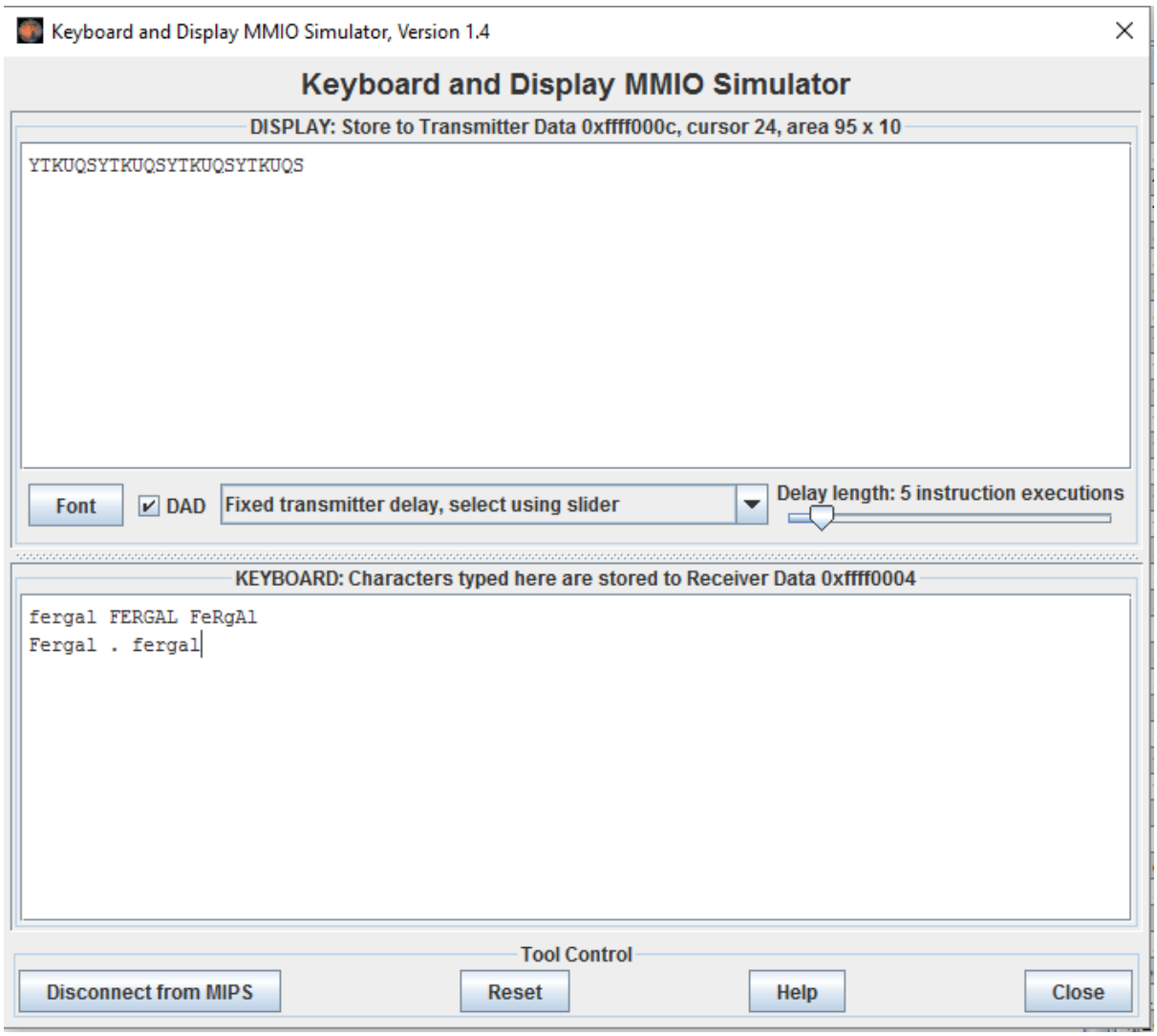
This program either encrypts or decrypts a message input by user from the keyboard.

We first poll the keyboard to see if a key has been pressed, if so we then take the value of the keystroke and compare it to see if it is a “.” If it is program stops. If not we check as in q 1 to see if it

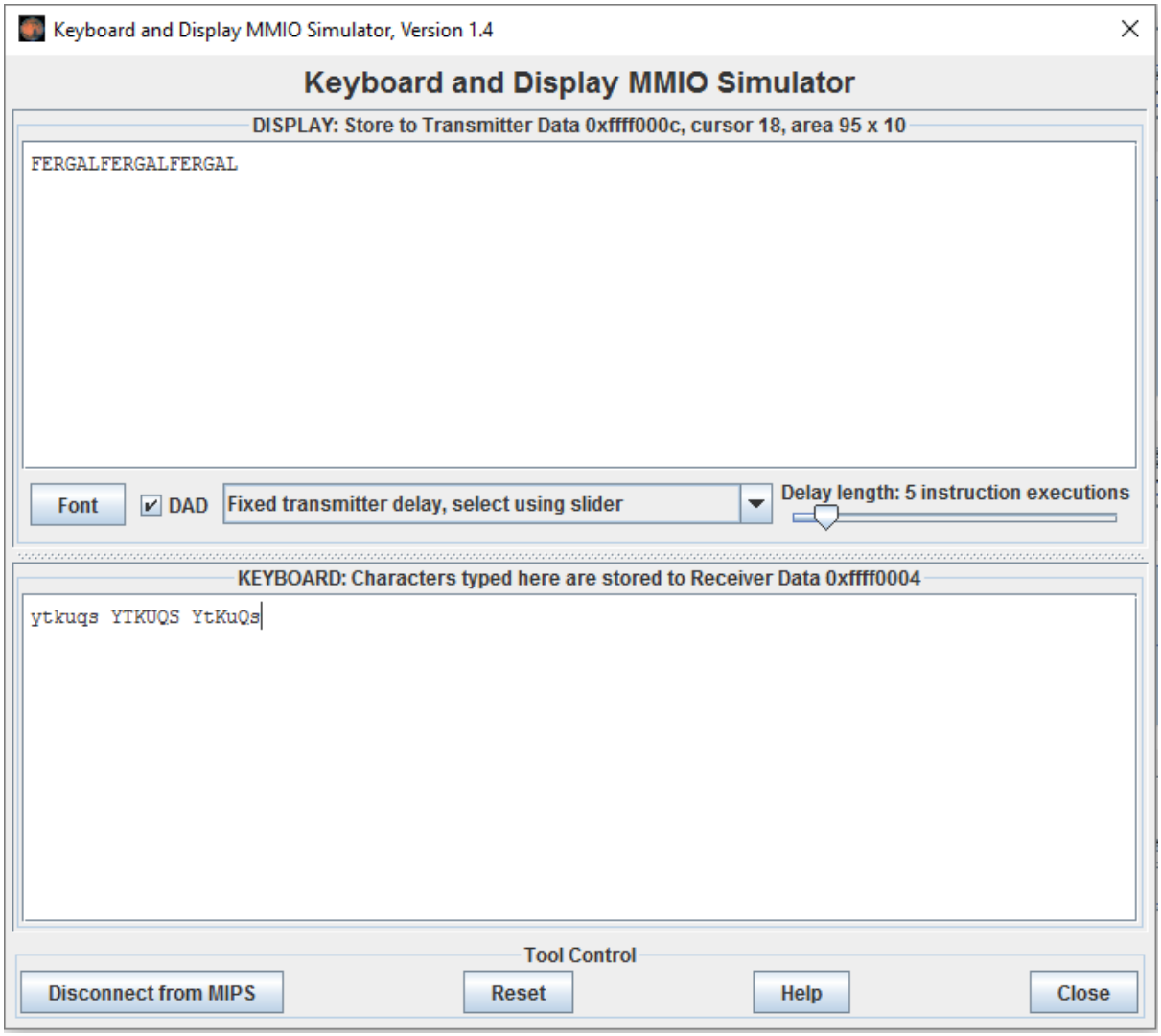
is upper case or lower case. Encryption works the exact same as above for upper case however instead of storing value in output string it stores it in our Transmit register to display to user.

If decrypt we cycle through our encrypt string to find the corresponding value if not there we skip the input and search for next keypress. If the value is there, then it is a letter. If it is uppercase we immediately find the corresponding decrypted value and substitute. If it is lowercase we take away 26 from its value to make it an uppercase equivalent and then substitute decrypted value before printing.

The following is encryption same cypher as before.



And this shows our decryption using same cypher.


Keyboard and Display MMIO Simulator, Version 1.4
Keyboard and Display MMIO Simulator
DISPLAY: Store to Transmitter Data 0xffff000c, cursor 18, area 95 x 10
FERGALFERGALFERGAL
Font
DAD
Fixed transmitter delay, select using slider
Delay length: 5 instruction executions
KEYBOARD: Characters typed here are stored to Receiver Data 0xffff0004
ytkuqs YTKUQS YtKuQs
Tool Control
Disconnect from MIPS
Reset
Help
Close