CS31 Project 3 Report

Andrew Sun

006159649

Notable obstacles:

One notable obstacle that I had to overcome was figuring out a way to read integers after the h and v commands. It was really difficult for me to figure out an efficient way to have my program recognize that the first character of the code could be ‘-’ and not have the program output an error from !isdigit. It was also very difficult for me to keep track of cases where the number is negative and when the number is positive, as that would lead to a difference in the number of characters that I would have to check (max 2 for positive, max 3 for negative). Since I used stoi to convert the characters into an integer, it would also lead to situations where the last character (which would not be a command) would get ignored by my code. For example, I had an issue where ‘-2-’ would just get turned into -2 and no error would be produced. I would eventually overcome these issues by creating multiple booleans and checkpoints to take each of these scenarios into consideration. While the code did become significantly more complicated, I was eventually able to fix all of these errors.

Int performcommands

If character can not be plot

Find badpos

Cleargrid to remove previous edits to grid (assuming there was code that ran before)

Return 2 error

Else

Repeat while commandstring has words in it

If commandstring first character is not a command

Find badpos

cleargrid

Return 1 error

Else

If command is H

Get all the characters until the next command

Check if all the characters after command is numbers

If the first character is negative we ignore it

If first character is negative

Check character after is not a digit

If the counter reaches max length we dont do anything

If there is a nonprintable character

Output error

If there wasnt a negative character

We start from all characters from 0 instead of 1

Check if there are no characters between h and next command

Convert the characters to integer

Check if the number meets digit limit (2 for positive, 3 for negative)

If the line goes out of bounds

Check if there has already been out of bounds error

Store error position into variable

If there are no syntax errors we will output this as error

Remove the command to perform rest of line

Update position

Else

Perform the function and plot line

Update variables

If command is V

Same as H but change columns for rows

If command is F

Get the character right after command

Check if there is a character after command

Check if the character is printable

If no errors

Remove the code so we can run the rest of the line

Update variables

If command is B

Same as F but mode updated to background

Else if command is C

Cleargrid

Check if there was a syntax error

If yes output syntax error position and return 3

Int commandGetter //function to get the code after the command and before the next command (up to 3)

Gets the first 3 characters

Repeat until end of the substring

Get a char

Check if the char is one of the commands

Return the char position

Check if the length of substring is less than 3

Return length of the entire substring

Return output

Bool plotline

Check if the input char is printable

Check which mode the function is in (foreground background)

Check which axis the function is in (horizontal or vertical)

Check the direction of the function (positive or negative)

Check if the function goes out of bounds

Else

Plot the command (if the command is background, additional check to make sure the character is a space)

Test cases code

1. H12 and h12 //check if horizontal command works
2. V12 and v12 //check if vertical command works
3. F@ and f@ //check if foreground command works
4. B@ and b@ //check if background command works
5. H12c and h12C //check if clear command works
6. H2 h2 //check error for non character
7. Hh2 //check error for no character
8. H-2 //check out of bounds
9. V-2 //check out of bounds
10. H-2h, //check error priority
11. H-2-2 //check command error
12. Fhh2 //check if foreground/background takes in 1 letter
13. Fh2 //check if foreground command works properly
14. Fhh2ch2 //check clear command
15. h2h#c2h? //check error priority
16. F\nh2 //check nonprintable characters
17. H2h-1-2 //check badPos accuracy
18. H+2h //check inaccurate command and badPos accuracy
19. H2h3f\n //check badPos accuracy
20. h2C2 //check error after C command