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Discussion 1G

Lecture 1

Programming Assignment 3 Report

1. One of the largest obstacles I had to overcome was first fully understanding the project specifications, ensuring that the objective of the assignment was clear in my mind. I needed to be clear about the requirements I had to fulfill as well as the errors I had to look out for in user input in order to come up with a complete program design that would cover all requirements. Another major obstacle I had to overcome was to write code that would check for a large number of errors. Keeping track of each error for each possible command was difficult to comprehend, but I eventually overcame this obstacle through writing down the errors and checking them off as each was systematically taken care of.

The *plotLine* function:

*check if the direction, foreground/background, and plotChar variables are valid*

*if direction is horizontal,*

*check that the line does not exceed left/right grid boundaries*

*if direction is vertical,*

*check that the line does not exceed top/bottom grid boundaries*

*call plotPoints function*

The *plotPoints* function:

*if distance is negative,*

*set starting column and row at the left/top endpoint of the line*

*if in foreground mode,*

*set points in line in grid to character requested*

*if in background mode,*

*set points in line in grid to character requested only if point is empty*

The *performCommands* function:

*verify that the command string is not empty*

*repeatedly, iterating through each command in the command string:*

*if command is “H,”*

*repeatedly, iterating through each digit value,*

*convert the string distance to an integer value*

*report syntax error if not an integer or if there is no integer*

*if plotLine returns false,*

*if there is no preexisting command error*

*report command error, otherwise, plot it*

*if command is “V,”*

*(instructions same as if command is “H”)*

*if command is “B,”*

*if the char after “B” is printable,*

*set new plotChar and change to background mode or report syntax error*

*if command is “F,”*

*if the char after “F” is printable,*

*set new plotChar and change to foreground mode or report syntax error*

*if command is “C,”*

*verify that the next char after “C” is a command letter or the end of the string*

*clear the grid*

*reset pen to top left of grid*

*change mode to foreground*

*change plotChar to “\*”*

*check FIRST whether there is a syntax error, report it*

*check whether there is a command error, report it ONLY if there is no syntax error*

*draw the grid*

1. (below)

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| --- | --- |
| COMMAND | REASON |
| *blank (no input)* | Check how the program handles no input |
| *Q1j3* | Check that the first error is reported |
| *F1h10b v3* | Check that upper and lower case is valid |
| *F1h10b v* | Check that syntax error reported at end of the command string |
| *F1v-3* | Check that program cannot perform command |
| *bbffv10* | Check that program distinguishes command from characters |
| *F@h10b\*v9* | Check that program handles foreground and background mode correctly |
| *H10v10h-3* | Check that program handles negative distance correctly |
| *H10cv3* | Check that program handles clear command correctly |
| *C1h10* | Check that program catches error when there is a non-command value after clear command |
| *V80H60* | Check that the program catches the first command error |