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Programmer Manual

By: Jeffrey Marron for B. Streller’s Fall 2015 CS132 class

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1 –Driver:

A turtle class object is created, the title function is called, the show choices function is called, and then the main program is run through a switch-case-break statement inside of a do-while statement.

-Show Choices

This function displays the numbers used to toggle the different cases inside the switch-case-break statement, the names of the commands, and the number of inputs that each command takes.

-C Clear

This function is used to prevent errors from the input buffer causing infinite loops & other crashes from occurring.

-Title

This function displays the title.

2 – Turtle:

The turtle object is created so that it has pen, position, and direction objects. The turtle object uses these other objects through their interfaces without explicitly having knowledge of them.

-Movement:

This function uses a switch case break to evaluate the current direction. Based on the direction it will use the appropriate subroutine to adjust the x or y coordinates. It then takes into account the position of the pen. If the pen is down, is uses the current brush which fills the x,y coordinates while it cycles through a for loop else it will cycle through the position through a for loop without changing the floor tiles.

-Place Turtle:

This function sets the current x, y coordinates to the turtle character, effectively placing him on the floor at that location.

-Jump:

This function takes two input values into temps and uses if else input validation to test the validity of the input. If cin enters a fail state, the input is out of bounds of the floor, or if it’s a decimal then the input buffer is cleared. Otherwise, the posx and posy values are set to the temp values.

-Status:

This function uses an if-else statement to test the status of the pen and displays its value along with the direction and posx, posy values to the user.

3 – Position:

The position class constructor initializes the floor. Nested for loops create the 20x20 interior floor, the walls are created using appropriate for loops, and the corners are set directly. The posx and posy variables are set to their initial 1, 1 states here. The functions inside the position object handle most of the processing related to the floor.

-Print Floor

This function prints the entire 22x22 array (floor & walls) using a nested for loop.

-Set Default Position

This function sets the current x and y coordinates to their default 1, 1 values.

-Clear Position

This function clears the x,y coordinates of the turtle marker by checking the pen down status. If the pen is down then the coordinates will leave behind a current brush marker, else it will leave behind a clean floor tile. A prompt is then displayed to the user indicating success.

-Clear Floor

This function sets all coordinates within the walls to their default clean floor tile value through a nested for loop.

4 – Pen:

The pen constructor initializes the pen down variable as false and sets the current brush to the block option. The pen class contains the different brush types as well as the pen down Boolean.

-Change Brush

This function opens a sub menu which is operated via a switch case break statement. Selecting the different options will change the options and then display a prompt to the user regarding the current brush. Option 5 returns to the main console input.

-Pen Msg

This function uses an if-else statement to test the Boolean value of pen down. It then prompts the user with the appropriate status of the pen.

4 – Direction:

The direction constructor sets the default current direction value to ‘E’. The direction class is used by the turtle while moving to determine what for loop to use to modify either the posx or posy variables.

-Direction Validation

This function takes an input value into temp and uses if else input validation to test the validity of the input. It will then set the current dir value to the temp value and prompt the user with the current direction. Else it will prompt the user with an invalid direction message.