COE4DS4 – LAB REPORT 4

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Exercise 1:

Continuing on from experiment 1b, where we have the columns of color squares of 32x32 pixels followed in the sequence by the case statements for colors above and then in the next row the color starts as the color from the next color from last color on the row prior (not expanding on the details). Using that platform,` we have created a cursor which is basically the inverse of the color that's in the square block, initially 16 by 16. Keeping everything in global variables, we implemented it by having the size of the cursor as 32 minus size of the color region divided by 2 to have it centered and cursor row and Column to keep track of the position and square its on. For each of the color block, in the main function, we use the two for loops, in which the inner for loops which does the whole Colum then the next row, etc to make sure each color block is assigned a color (using module since the reminder is the same as the number the color block is in) For enabling the keys, we simplify have conditions checking in the first case if the cursor row is greater than 0, then decrement the cursor row by 1 to move up (which makes sure it doesn't go under 0 meaning it doesn't roll over), and for moving down check if its less than 14 (since 15 for rows, its from 0-14) and increment, similar method for right and left. For incrementing size, we check if the cursor size is less than the max size which is 32, and if so then increase by 4 pixels, whereas for decrementing, we check if its greater than the min which is 4, if so increment by 4.

Exercise 2:

Offset 5,6,7 has been created in Nios_imageline_Interface.v file in order to load 3 group of different coefficients. We received coefficient values from NIOS and use the value as input to the filter_pipe.v. we defined all the new variables we created in LCD_Camera_Component .sv. coefficients were stored as array of integers in the c file. Every integer contains 4 coefficients. To make the 0.5 integer to 1 we timed all the coefficients in the same set by 2. We added up all the values and divided by the factor.