**PROGRAMMING FUNDAMENTALS PROJECT**

**FIREWORKS PRINTING**

**SHAPE ASSIGNED: SPINNER**

**GROUP MEMBERS:**

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This program is coded to print a spinner firework. The logic of this is code is that a 2D (dimensional) array is initialized to zero. Then, when the conditions are satisfied and wherever the output is need to be printed, the 0 in the array is changed to -1. To do this, different functions are created. First of all, up, down, left and right functions are created to print in the respective directions. The center point is set in the 2d array from where the spiral starts to print. It is fixed by setting the rows and columns of 2d array to 12,12 respectively. Then, for the spiral to print in right direction, increment is done in the column of the center point, similarly, increment is done in rows to print downward, decrement is done in the rows to move upward and in the columns to move left. In each function, when the increment or decrement is done, the 0 element of the array is changed to -1. In order to designate in which direction the output should be printed, next step function is created. In this function, switch is used. According to the number listed in each case, the up, down, left and right functions are called and then the next step is specified but assigning the variable the next value for example when next step direction is 1, the direction is changed to right and then the next step direction becomes 2 so that the direction becomes downward. A print function is created which h is called in every direction function. In this function, nested for loops are used, in which the whole array is printed. The positions where it is -1, a dot is printed whereas the rest of the positions have 0 and space is printed. Star function is created to print asterisks in the end of the spiral. <unistd.h> library is used call “usleep” function to print the firework slowly.at last, all the functions are called in the main function. While loop is used to print the firework infinite times. A for loop is used, in which the next step function is called, and thus specifies that for how long many times the function is called and how big the spiral is.