LOGIC TRACE TABLE FOR CUBE PROBLEMS:

a)The first showing a cube with holes in it

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b)The second showing a cube with raised holes in it

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c)The third showing a cube with raised bumps on it

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FOR EACH OF THE FOLLOWING CUBES, I HAVE USED THE SAME GENERAL FUNCTIONS WITH SMALL MODIFICATIONS AS REQUIRED AND CHANGE IN COORDINATES AS PER THE EXCEL FILE ATTACHED.

I HAVE MADE USE OF A 2 DIMENSIONAL ARRAY IN ORDER TO PRINT THE PATTERN

1. CLEAR PATTERN:

THIS FUNCTION SETS EACH VALUE OF THE 2-DIMENSIONAL ARRAY TO ‘ ’ SO THAT THE

GARBAGE VALUES PRESENT IN THE ARRAY ARE ELIMINATED.

1. PRINT PATTERN:

THIS FUNCTION PRINTS EACH OF THE VALUE OF THE 2-DIMENSIONAL ARRAY ON THE SCREEEN

1. Diamond1:

THIS FUNCTION SPECIFICALLY PRINTS TYPE 1 DIAMOND PRESENT IN THE CUBE AS PER THE EXCEL SHEET.

THIS FUNCTION HAS THE ARGUMENTS:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| pattern | middleLineIndex1Pattern | middleLineIndex2Pattern | patternIndex1 | PatternIndex2 | PatternIndex3 | PatternIndex4 | ROW1 | ROW2 | ROW3 | ROW4 | MIDDLE ROW |
| ARRAY | MIDDLE LINE FIRST INDEX | MIDDLE LINE SECOND INDEX | APEX 1 INDEX1 | APEX 2 INDEX 2 | MIDDLE START | MIDDLE END | APEX ROW | MIDDLE ROW | MIDDLEROW+1 | END | MIDDLE ROW |

1. PATTERN1:

THIS FUNCTION BUILD 1/3RD PART OF THE PATTERN, i.e. PATTERN1

THIS FUNCTION MAINLY INCLUDES THE VARIABLES OF EACH DIAMOND AND FUNCTION CALLS DIAMOND1 A NUMBER OF TIMES. IN TYPE A, B,C THIS FUNCTION PUTS THE OUTER PART

1. DIAMOND2:

THIS FUNCTION SPECIFICALLY PRINTS TYPE 2 DIAMOND PRESENT IN THE CUBE AS PER THE EXCEL SHEET.

THIS FUNCTION HAS THE ARGUMENTS:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| pattern | patternLine1Index1 | patternLine1Index2 | patternLine2Index1 | patternLine2Index2 | patternLine3 | patternLine4 | patternLine5 | ROW1 | ROW2 | ROWEND1 | ROWEND2 |
| ARRAY | UPPER LINE INDEX1 | UPPERLINE INDEX2 | BOTTOMLINE INDEX1 | BOTTOMLINEINDEX2 | LINE LEFT UPPERINDEX | LINE RIGHT UPPERINDEX | LINE DIAGONAL UPPERINDEX | LINE ROW START | LINE ROW END | UPPER ROW | BOTTOM ROW |

1. PATTERN2:

THIS FUNCTION BUILD 1/3RD PART OF THE PATTERN, i.e. PATTERN2

THIS FUNCTION MAINLY INCLUDES THE VARIABLES OF EACH DIAMOND AND FUNCTION CALLS DIAMOND2 A NUMBER OF TIMES. IN TYPE A, B,C THIS FUNCTION PUTS THE OUTER PART

1. Diamond3:

THIS FUNCTION SPECIFICALLY PRINTS TYPE 1 DIAMOND PRESENT IN THE CUBE AS PER THE EXCEL SHEET.

THIS FUNCTION HAS THE ARGUMENTS:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| pattern | patternLine1Index1 | patternLine1Index2 | patternLine2Index1 | patternLine2Index2 | patternLine3 | patternLine4 | patternLine5 | row1 | row2 | Row3 | Row4 | Rowend1 | Rowend2 |
| ARRAY | TOP LINE INDEX1 | TOP LINE INDEX2 | BOTTOM LINE INDEX1 | BOTTOM LINE INDEX2 | LEFT LINE INDEX1 | RIGHT LINE INDEX2 | DIAGONAL INDEX1 | LINE TOP | LINE BOTTOM | DIAGONAL TOP | DIAGONAL BOTTOM | TOP ROW | BOTTOM ROW |

1. PATTERN3:

THIS FUNCTION BUILD 1/3RD PART OF THE PATTERN, i.e. PATTERN3

THIS FUNCTION MAINLY INCLUDES THE VARIABLES OF EACH DIAMOND AND FUNCTION CALLS DIAMOND3 A NUMBER OF TIMES. IN TYPE A, B,C THIS FUNCTION PUTS THE OUTER PART

IN EACH OF THE FOLLOWING FUNCTIONS A SLANT/ DIAGONAL IS PRINTED USING THE FOLLOWING LOGIC:

if(i>=row3 && i<=row4){

pattern[i][patternLine5] = '\\';

patternLine5++;

}

HERE A VARIABLE INDEX IS CREATED AND IS INCREMENTED AND DECREMENETED AS PER THE REQUIREMENT

FOR PRINTING OF CONTINOUS LINE \_\_\_\_\_\_\_\_\_\_\_\_\_ AS SO A WHILE LOOP HAS BEEN IMPLEMENTED

WE TAKE THE START AND END INDEX. WHILE START IS NOT EQUAL TO END WE PRINT THE LINE AND THIS IS HOW A CONTINUOS LINE IS BEING PRINTED.

1. OUTER ROW :

THE OUTER ROW PRINTING WHICH IS ONLY PRESENT IN THE FOURTH CUBE SOURCE CODE IS USED TO JUST PRINT THE OUTER ROW PART WHICH IS SAME AS PRESENT IN PATTERN1, PATTERN2, PATTERN3.