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import java.util.*;

public class acsl_c3_2222
{
    public static void main (String [] args)
    {
        Scanner scan = new Scanner (System.in);
        System.out.println("INPUT: ");
        String in = scan.next();

        int [][] board = new int [4][4];
        String [] arr = in.split("WW+");

        int [][] merge = new int [4][4];
        for(int i = 0; i < arr.length; i++)
        {
            String now = arr[i];
            ArrayList <String> sep = new ArrayList <String> ();
            sep = separate(now);

            int [][] letters = new int [4][4];
            for (int j = 0; j < sep.size(); j++)
            {
                String character = sep.get(j);

                if (character.equals("A"))
                {
                    int [][] a = {{1, 1, 0, 0}, {1, 1, 0, 0}, {1, 1, 0, 0}, {1, 1, 0, 0}};
                    letters = a;
                }
                else if (character.equals("~A"))
                {
                    int [][] na = {{0, 0, 1, 1}, {0, 0, 1, 1}, {0, 0, 1, 1}, {0, 0, 1, 1}};
                    letters = na;
                }
                else if (character.equals("B"))
                {
                    int [][] b = {{1, 1, 1, 1}, {1, 1, 1, 1}, {0, 0, 0, 0}, {0, 0, 0, 0}};

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        letters = b;
    }
    else if (character.equals("~B"))
    {
        int [][] nb = {{0, 0, 0, 0}, {0, 0, 0, 0}, {1, 1, 1, 1}, {1, 1, 1, 1}};
        letters = nb;
    }
    else if (character.equals("C"))
    {
        int [][] c = {{0, 1, 1, 0}, {0, 1, 1, 0}, {0, 1, 1, 0}, {0, 1, 1, 0}};
        letters = c;
    }
    else if (character.equals("~C"))
    {
        int [][] nc = {{1, 0, 0, 1}, {1, 0, 0, 1}, {1, 0, 0, 1}, {1, 0, 0, 1}};
        letters = nc;
    }
    else if (character.equals("D"))
    {
        int [][] d = {{0, 0, 0, 0}, {1, 1, 1, 1}, {1, 1, 1, 1}, {0, 0, 0, 0}};
        letters = d;
    }
    else if (character.equals("~D"))
    {
        int [][] nd = {{1, 1, 1, 1}, {0, 0, 0, 0}, {0, 0, 0, 0}, {1, 1, 1, 1}};
        letters = nd;
    }

    if (j == 0)
    {
        merge = letters;
    }
    else
    {
        merge = combine(merge, letters, 'm');
    }
}
board = combine(board, merge, 'a');

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}

ArrayList <String> a = new ArrayList <String> ();
for (int i = 0; i < board.length; i ++)
{
    String answers = "";

    for (int j = 0; j < board.length; j ++)
    {
        answers += board[i][j];
    }

    int dec = Integer.parseInt(answers, 2);
    answers = Integer.toString(dec, 16);
    a.add(answers);
}

for (int i = 0; i < a.size(); i++)
{
    System.out.print(a.get(i));
}
}

public static ArrayList <String> separate(String word)
{
    ArrayList <String> tempArrl = new ArrayList <String> ();
    int cnt = 0;
    for (int i = 0; i < word.length(); i++)
    {
        if (word.charAt(i) != '~')
        {
            tempArrl.add(word.substring(i-cnt, i+1));
            cnt = 0;
        }
        else
        {
            cnt+=1;
            continue;
        }
    }
}

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    }  
  }  
  return tempArr;  
}
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public static int [][] combine(int[][] arr1, int[][] arr2, char mode)
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{  
    int [][] combined = new int [4][4];  
  
    for (int i = 0; i < combined.length; i ++)  
    {  
        for (int j = 0; j < combined.length; j ++)  
        {  
            if (mode == 'm' && (arr1[i][j] == 1 && arr2[i][j] == 1))  
            {  
                combined[i][j] = 1;  
            }  
            if (mode == 'a' && (arr1[i][j] == 1 || arr2[i][j] == 1))  
            {  
                combined[i][j] = 1;  
            }  
        }  
    }  
    return combined;  
}  
}
```