

ANSI C Solution for Problem #1

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#include <stdio.h>

/* ===== */
long distsq( long x1, long y1, long z1, long x2, long y2, long z2 ) {
    return (x2 - x1) * (x2 - x1) + (y2 - y1) * (y2 - y1) + (z2 - z1) * (z2 - z1);
}

/* ===== */

int main( void ) {

    struct { int r, g, b; } c[ 16 ];
    int i, j, r, g, b;
    long k;
    FILE *in = fopen( "colors.in", "r" ), *out = fopen( "colors.out", "w" );
    for (i = 0; i < 16; i++)
        fscanf( in, "%d %d %d\n", &c[i].r, &c[i].g, &c[i].b );
    while (fscanf( in, "%d %d %d\n", &r, &g, &b ) != EOF) {
        k = 999999L;
        for (i = 0; i < 16; i++)
            if (distsq( r, g, b, c[i].r, c[i].g, c[i].b ) < k) {
                j = i;
                k = distsq( r, g, b, c[i].r, c[i].g, c[i].b );
            }
        fprintf( out, "%3d %3d %3d maps to %3d %3d %3d\n", r, g, b,
                c[j].r, c[j].g, c[j].b );
    }
    fcloseall();
    return 0;
}
```