Torres López Marco Antonio 2BM1 Boleta: 2020380541

O:-

```
int main(int argc, char *argv[])
{
  int u=13, v=11, w=5, x=17, y=19, z=23, *q=NULL, *arr=NULL;
  int *a=&v; *b=&y, *c=&w, *d=&x, *e=&u, *f=&z;
  int k=0, N=10;
 arr=(int*) malloc (N*sizeof(int));
                                                          N:
 For (q=arr, K=0; K<N; q++, K++)                          K=3→9    K=6→18
      (*q)=3*K+(K%3) ⟨ N=10 K=0 → *q=0                    K=4→13   K=7→22
                       N=10 K=1 → *q = 3*1 + (1) = 4      K=5→17   K=8→26
                       N=10 K=2 → *q = 3*2+(2) = 8
                           ⋮
 for(K=0; K<N; K++){   N=10 K=9 → *q= 3*9 +(0) = 27

   switch(arr[K]%6){             arr[0]=0 %6 = 0    *a = *a•0=0
        Case 0: (*a)*=0; break;  arr[1]= 4 %6 = 4   *f = 23-4=19
       Case 1:(*c)+=1; Break;    arr[2]=8 %6 =2     *e= 13-2= 11
       Case 2: (*e)-=2; break;   arr[3]=9 %6 = 3    *b = 19+3= 22
       Case 3: (*b)+=3; break;   arr[4]= 13%6 = 1   *c = 5+1=6
       Case 4: (*f)-=4; break;   arr[5]= 17 %6 =5   *d= 17+5= 22
       Case 5: (*d)+=5; break;   arr[6]= 18 %6 =0   *a= 11•0=0
                                 arr[7]= 22%6 = 4   *f= 19-4=15
                                 arr[8]= 26 %6 = 2  *e= 11-2=9
                                 arr[9]= 27 %6 = 3  *b= 22+3= 25

   printf("u=%d, v=%d, w=%d \n", u, v, w);
        u=9 , V=0 , W=6

   printf("x=%d, y=%d, z=%d \n", x, y, z);
        X=22   Y=25   Z=15

}
```

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1.-

Creando un hipercubo con 4 dimensiones (N=4) apartando memoria

```
int ****hipercubo (int M, int N, int O, in P){
    int ****hiper =NULL;
    int i=0 , j=0, K=0; l=0;
    hiper =(int ****)malloc(M*sizeof(int ***));
    for(i=0 ; i<M; i++){
        hiper [i]=(int ***)malloc(N*sizeof(int **));
        For(j=0; j<N; j++){
            hiper [i][j]=(int **)malloc (O*sizeof(int*));
            for(K=0; K<O; K++){
                hiper [i][j][K]=(int*)malloc(P*sizeof(int));
                for (l=0; L<P; L++){
                    hiper [i][j][K][L] = i*j*K*L;
                }
            }
        }
    }
    retorn(hiper);
}
```

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1: Para liberar la memorsa

```
Void destruirhiper(int ****hiper, int M, in N, int O, int P){
     int i=0, j=0, k=0, l=0;
     for (i=0; i<M ; i++){
        for(j=0; j<N; j++){
           for(k=0; k<O; k++){
              for (l=0; l<P; l++){
                 free (hiper [i][j][k]);
                 }
              free(hiper [i][j]);
           }.
           free(hiper[i]);
        }
       free(hiper);
     }
}
```

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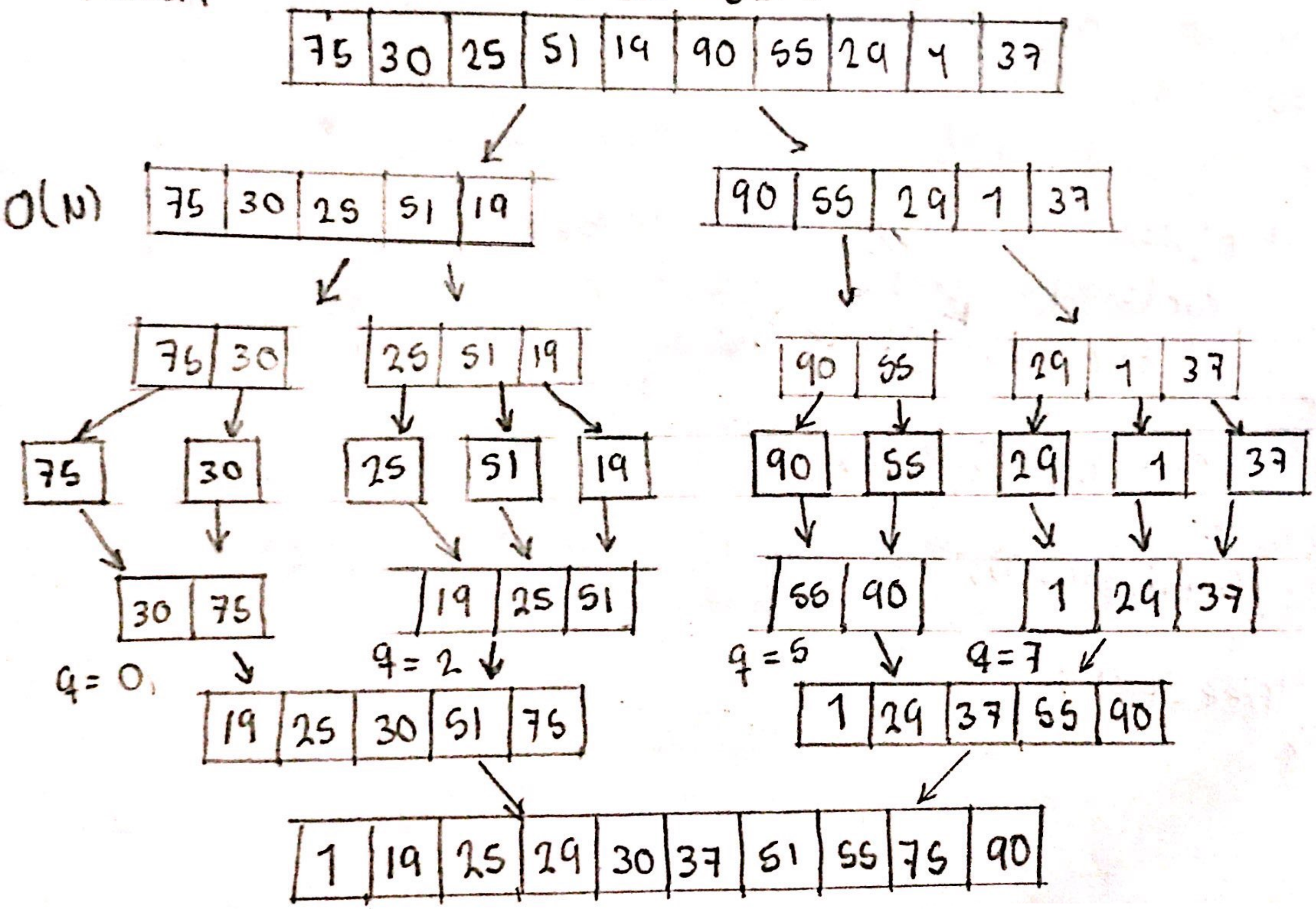
3:- Tomemos un arreglo de 10 elementos

int array[10] = {75, 30, 25, 51, 19, 90, 55, 29, 1, 37}

Mezcla $O(N \operatorname{Log}_2 N)$



75 30 25 51 19 90 55 29 1 37
O(N)
75 30 25 51 19
90 55 29 1 37
75 30
25 51 19
90 55
29 1 37
75
30
25
51
19
90
55
29
1
37
30 75
19 25 51
55 90
1 29 37
q = 0
q = 2
q = 5
q = 7
19 25 30 51 75
1 29 37 55 90
1 19 25 29 30 37 51 55 75 90