Answer on Question #49265 – Math – Other

$A - e;\quad B - c;\quad C - b;\quad D - a;\quad E - d.$

Solution

	a	b	c	d	e
A	160	130	175	190	200
B	135	120	130	160	175
C	140	110	155	170	185
D	50	50	80	80	110
E	55	35	70	80	105

Description of general idea of code below:

1. We have matrix $n \times n$.
2. Exhaustive search.
3. Every chosen element of row exclude whole corresponding column.
4. Thus, total number of different configurations $n!$.
5. For every configuration we calculate sum of the distances.
6. Among this sums we looking for minimal.

$C\#$

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace calculate_minimal_way
{
    class Program
    {
        static void Main(string[] args)
        {
            string temp = "";
            int[][] arr = new int[5][];
            for (int i = 0; i < 5; i++)
            {
                temp = Console.ReadLine();
                arr[i] = new int[5];
                for(int j =0; j<5;j++)
                {
                    arr[i][j] = Int32.Parse(temp.Split(' ')[j]);
                }
            }

            int temp_sum = 0;
            int min_sum = 9999999;
            string pos_min = "";
            for (int i = 0; i < 5; i++)
            {
                temp_sum = 0;
                List<int> B = new List<int>(5);
                List<int> C = new List<int>(5);
                List<int> D = new List<int>(5);
                List<int> E = new List<int>(5);
                B.AddRange(arr[1]);
                C.AddRange(arr[2]);
                D.AddRange(arr[3]);
                E.AddRange(arr[4]);
                B.RemoveAt(i);
                C.RemoveAt(i);
                D.RemoveAt(i);
                E.RemoveAt(i);
                for (int j = 0; j < 4; j++)
                {
                    List<int> C_2 = new List<int>(4);
                    List<int> D_2 = new List<int>(4);
                    List<int> E_2 = new List<int>(4);
                    C_2.AddRange(C);
                    D_2.AddRange(D);
                    E_2.AddRange(E);
                    C_2.RemoveAt(j);
                    D_2.RemoveAt(j);
                    E_2.RemoveAt(j);
                    for (int k = 0; k < 3; k++)
                    {
                        List<int> D_3 = new List<int>(3);
                        List<int> E_3 = new List<int>(3);
                        D_3.AddRange(D_2);
                        E_3.AddRange(E_2);
                        D_3.RemoveAt(k);
                        E_3.RemoveAt(k);
                        for (int h = 0; h < 2; h++)
                        {
                            List<int> E_4 = new List<int>(2);
                            E_4.AddRange(E_3);
                            E_4.RemoveAt(h);
                            temp_sum = arr[0][i] + B[j] + C_2[k] + D_3[h] + E_4[0];
                            if (temp_sum < min_sum)
                            {
                                min_sum = temp_sum;
                                pos_min = (i+1) + " " + (j+1) + " " + (k+1) + " " + (h+1)
+ " ";

                            }
                        }
                    }
                }
            }
            Console.WriteLine(min_sum);
            Console.WriteLine(pos_min);
            Console.ReadLine();
        }
    }
}
```

Result: min_sum 570.

Pos_min $= 5\ \ 3\ \ 2\ \ 1$, which means e, c, b, a respectively.

Thus, desirable distribution:

$$A - e$$

$$B-c$$

$$C-b$$

$$D-a$$

$$E-d$$