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Why1

1. If we choose to store the indices in one dimension, the (11×11)=121 indices of the first tiling will be numbered 0 through 120. The numbering of the other tilings will go after the previous tiling. Thus the second tiling goes from 121 to 121+((11×11)-1)=242.

2. For the first seven tilings, the point (0.1,0.1) falls in the first index (starting at bottom left). The range for the first tiling for both the x and y axis is [0,0.6], so the point (0.1,0.1) falls in this range. In the next six tilings the range is offset by -1/8 in both the x and y axis, so we get the ranges:

[-3/40,21/40], [-3/20,9/20],[-9/40,3/8],[-3/10,3/10],[-3/8,9/40],[-9/20,3/20]

As we can see the point (0.1,0.1) falls in these ranges, so it is the first index of each tiling. Following the pattern of the indices of the first tile in each tiling discussed in question 1, these are 0, 121, 242, 363, 484, 605, 726.

3. In the eight tiling, the range of the 13th tiling for both the x and y axis is :

[(0.6)-(7*(3/40)),(1.2)-(7*(3/40))]
[3/40,27/40]

Point (0.1,0.1) falls in this range.

4. Following the pattern in the first question, the first tile of the eighth tiling is at index 7*(11×11)=847. The thirteenth tile in this tiling has index 847+12=859.

5. The last tile in the last tiling is the largest possible tile index. Since there are eight tilings, and from question 4 we know that the last tiling starts at index 847, the last possible index is 847+120=967.

6. The second and fourth points share many tiles because the distance between the two points is closer than between any other two points tested. The point of tiling is generalization, inputs that are close together will share more tiles than inputs that are far apart.