Hilbert Curve

ERA Praktikum

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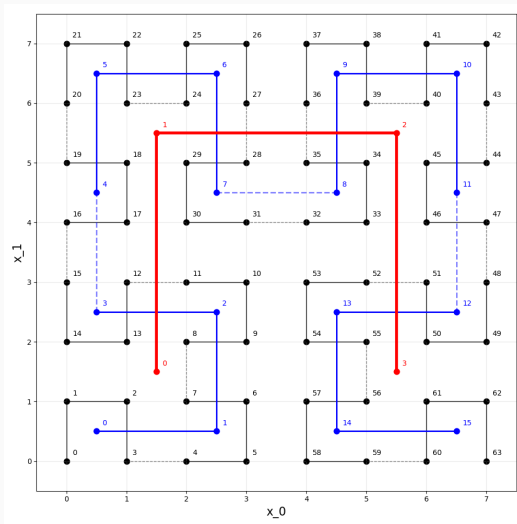
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Introduction

Introduction

- space filling curve (fills a square)
- store 2D Data in 1D linear order
- used in CS image processing
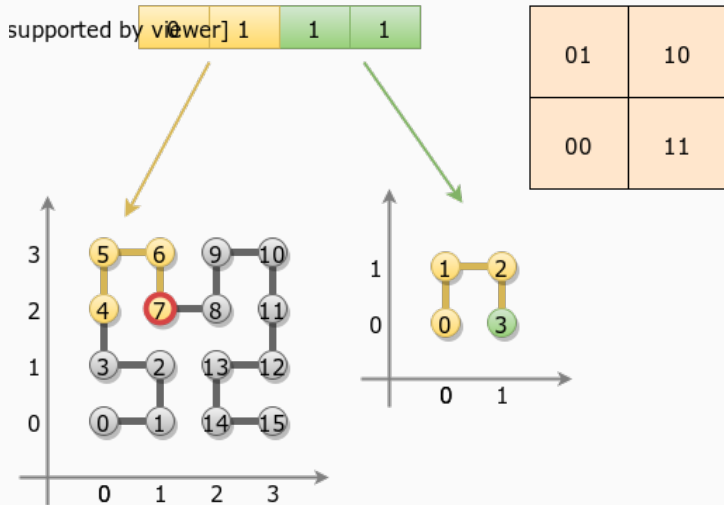- can also be extruded to fill 3D space (cube)

Visualization

Visualization

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Algorithm

Algorithm - visualized

Algorithm - explained

- Default coordinates are (0,0) (0,1) (1,1) (1,0)
- Hilbert curve of degree N has 4^n coordinate pairs
- Every coordinate number has $2n$ bits or n pairs each 2 bits
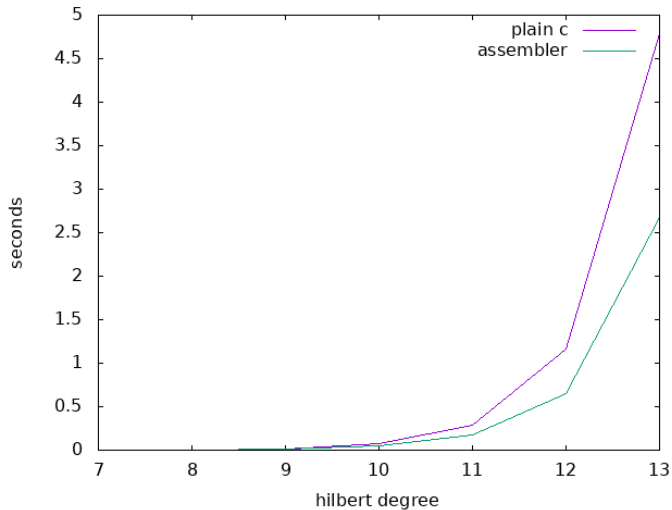- Bottom-up approach: Bit pairs represent position in the $A, B, CorD$ domain

Result and Tests

Time Measurement

```
clock_t start, end;
start = clock();
hilbert(n, x_points, y_points);
end = clock();
cpu_time_used = ((double) (end - start));
cpu_time_used = cpu_time_used / CLOCKS_PER_SEC;
printf("%.5f\n", cpu_time_used);
```

Results

Demo