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The Lecture Contains:

 One-dimensional orderings

- One-dimensional orderings
- Examples
- Properties

Module 3: Hashing

Lecture 12: One-dimensional Orderings

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One-dimensional orderings

- Transformation from d-dimensional grid locations to 1-dimensional points
- Mostly, from 2-dimensional regular square grid of size $2^m \times 2^m$
- Also called **space-filling curves**

Module 3: Hashing

Lecture 12: One-dimensional Orderings

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One-dimensional orderings

- Transformation from d-dimensional grid locations to 1-dimensional points
- Mostly, from 2-dimensional regular square grid of size $2^m \times 2^m$
- Also called **space-filling curves**
- Desirable properties
 - Curve passes through each location **once and only once**
 - Both transformation and inverse operations are **simple**
 - **Stable**, i.e., relative ordering is preserved when resolution is changed
 - **Degree of locality** is high, i.e., two neighbors in d dimensions are neighbors along the curve and vice versa
 - **Admissible**, i.e., one d-dimensional neighbor in each of the directions is already encountered

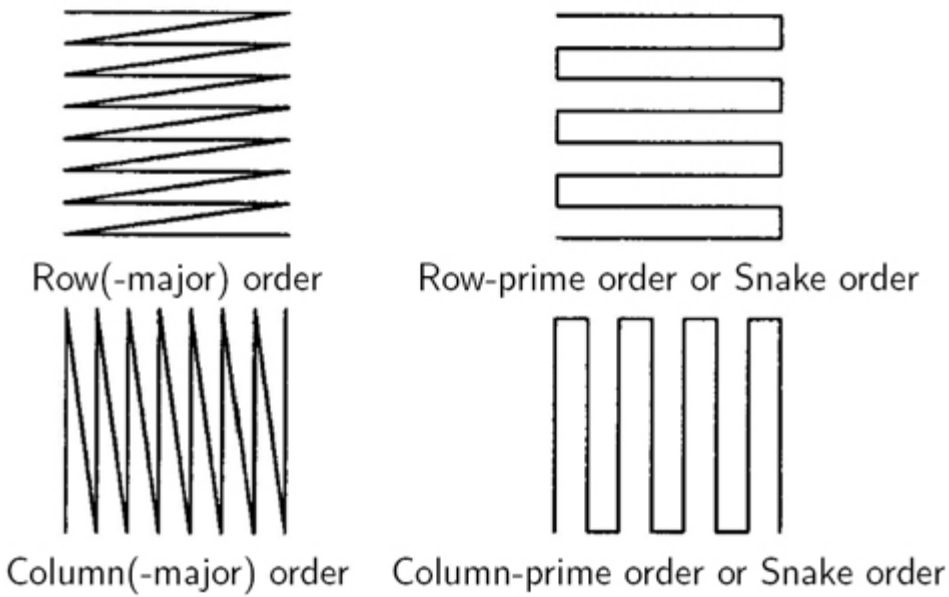
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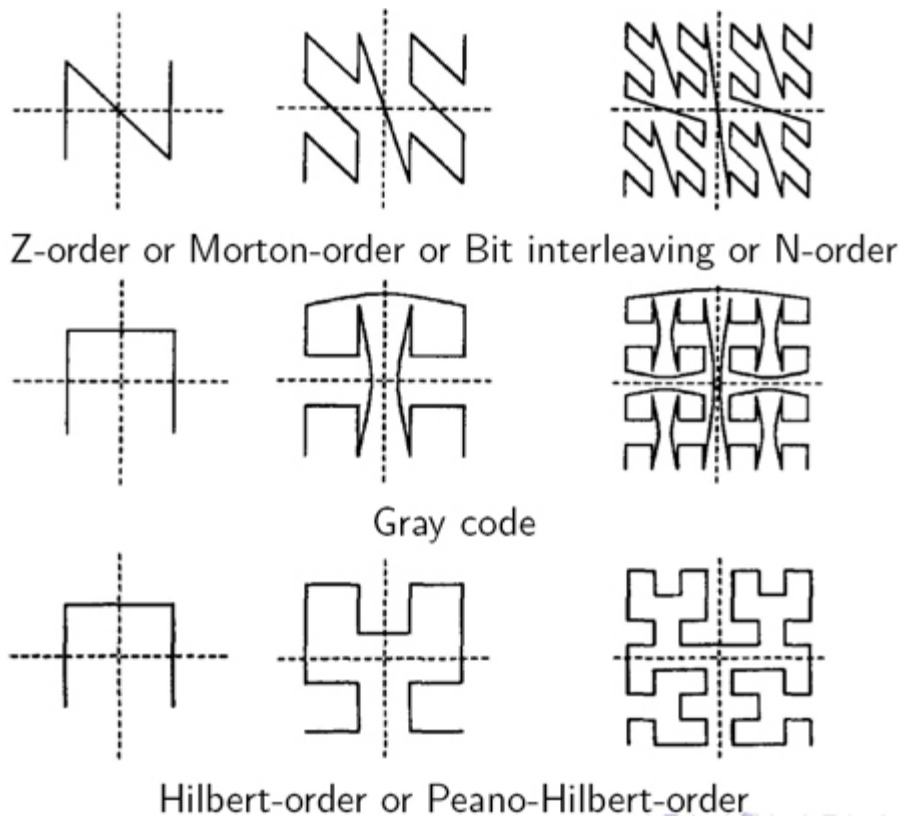
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Examples



Examples



Properties

Property	Order				
	Row	Row-prime	Z	Gray	Hilbert
Once and only once	Yes	Yes	Yes	Yes	Yes
Simple	Yes	Yes	Yes	Yes	No
Stable	No	No	Yes	Yes	Yes
Degree of locality	Low	High	Low	Low	High
Admissible	Yes	No	Yes	No	No
Distance between successive locations	2	1	1.67	1.5	1

Properties

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