

- Doris Index

- **index**
- **segment** **index**
- **segment** **index**
  - **index**
  - 
  - **index**
  -
- - **Ordinal** 
    - 
    - 
    - 
    -
  - **Zone Map** 
    - 
    - 
    - 
    -
  - **Short Key Index**
    - 
    - 
    - 
    -

# Doris Index

11

Apache Doris 索引类型包括 Short Key Index、Ordinal Zone Map、Bitmap、Bloom Filter、Ngram Bloomfilter、inverted index、Ordinal Zone Map、Bitmap、Bloom Filter。

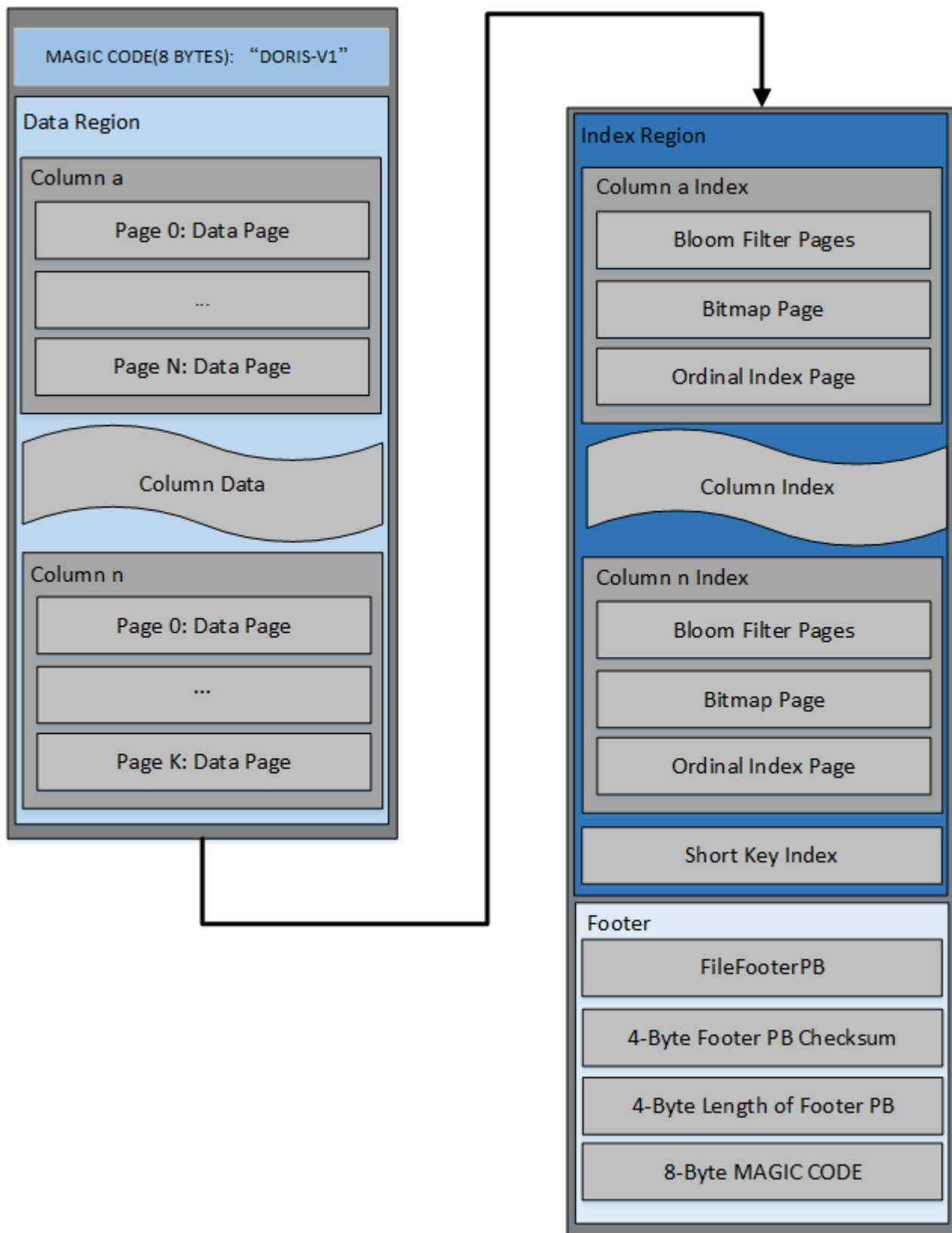
# segment和index

doris的segment和Segment 大小是256MB Segment v2 的命名是  
\${rowset\_id}\_\${segment\_id}.dat

```
[lcz@nn1 segment]$ tree storage/data/10/31765/610265476 -h
storage/data/10/31765/610265476
├── [4.5M]  0200000000000000099b47cf624aae3cacfc8a4d3680f849bb_0_31761.idx
├── [ 19M]  0200000000000000099b47cf624aae3cacfc8a4d3680f849bb_0.dat
├── [4.5M]  0200000000000000388d4bccd0cd2579e87b3e774d17d3de96_0_31761.idx
└── [ 19M]  0200000000000000388d4bccd0cd2579e87b3e774d17d3de96_0.dat
```

xxx.dat是segment的idx是xxx.idx是segment的segment是xxx

doris的segment是



0000000000000000

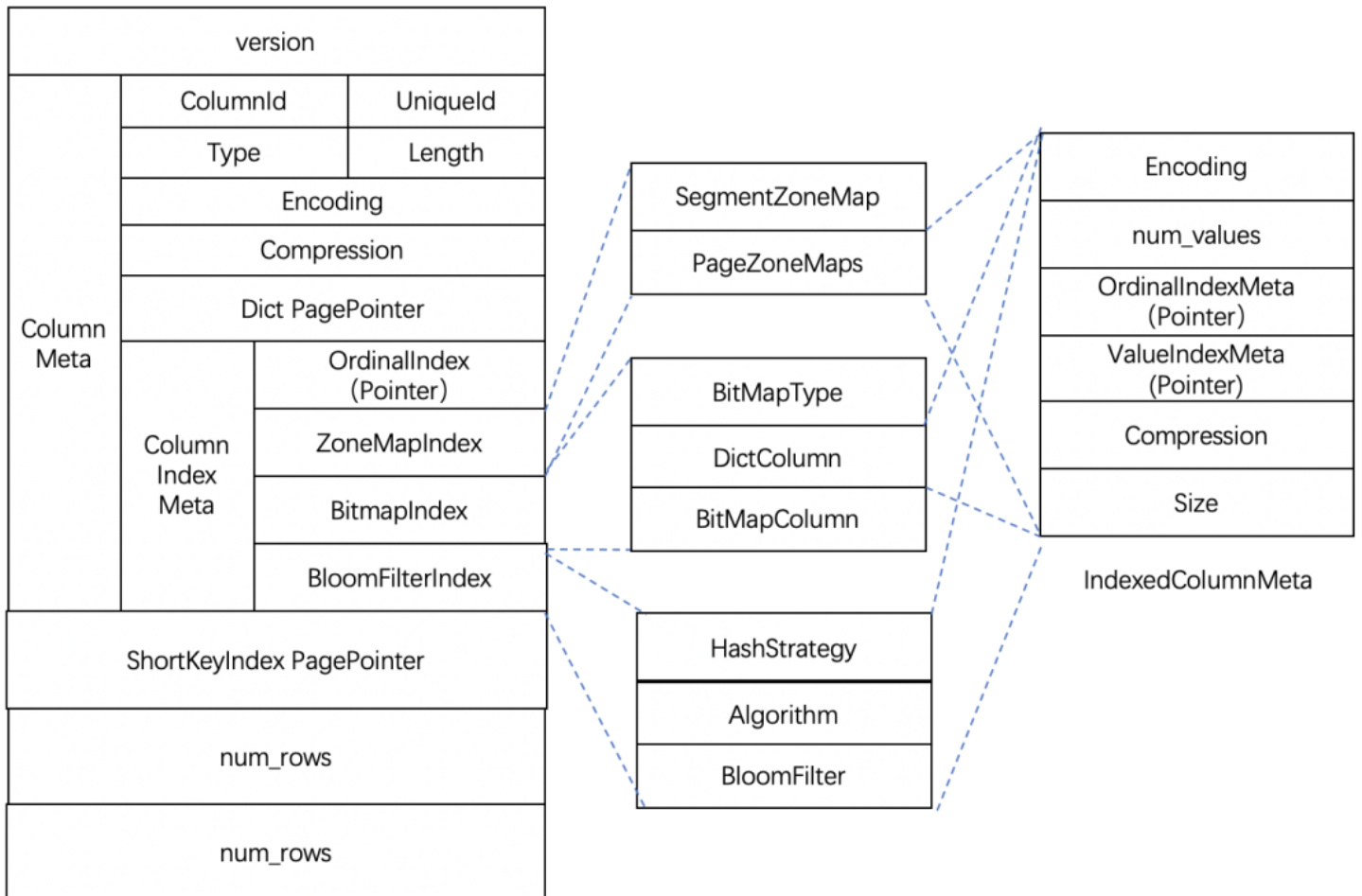
Data Region	Column a	Page 0: Data Page
		...
		Page N: Data Page
	Column b	Page 0: Data Page
		...
		Page N: Data Page
	...	
	Column n	Page 0: Data Page
		...
		Page N: Data Page
Index Region	Column a Index	Bloom Filter Pages
		Bitmap Pages
		Ordinal Index Pages
	...	
	Short Key Index	
Footer	FileFooterPB	
	PB Checksum	PB Length

	MAGIC CODE
--	------------

555

- 前8个字节magic code
- Data Region: 数据页page
- Index Region: doris索引Index Region
- Footer
  - FileFooterPB
  - 4字节footer pb checksum
  - 4字节FileFooterPB
  - 8字节MAGIC CODE

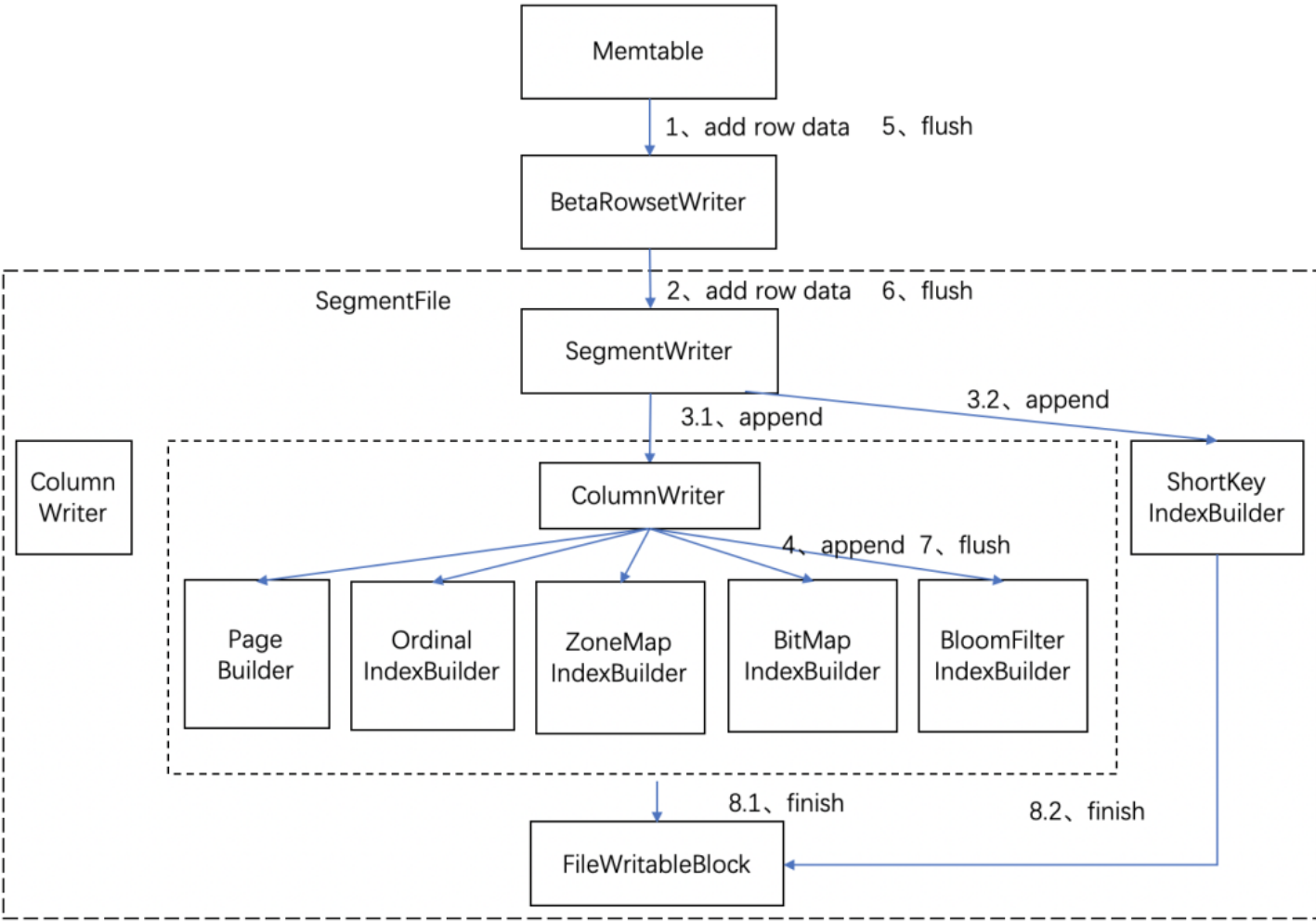
## FileFooterPB

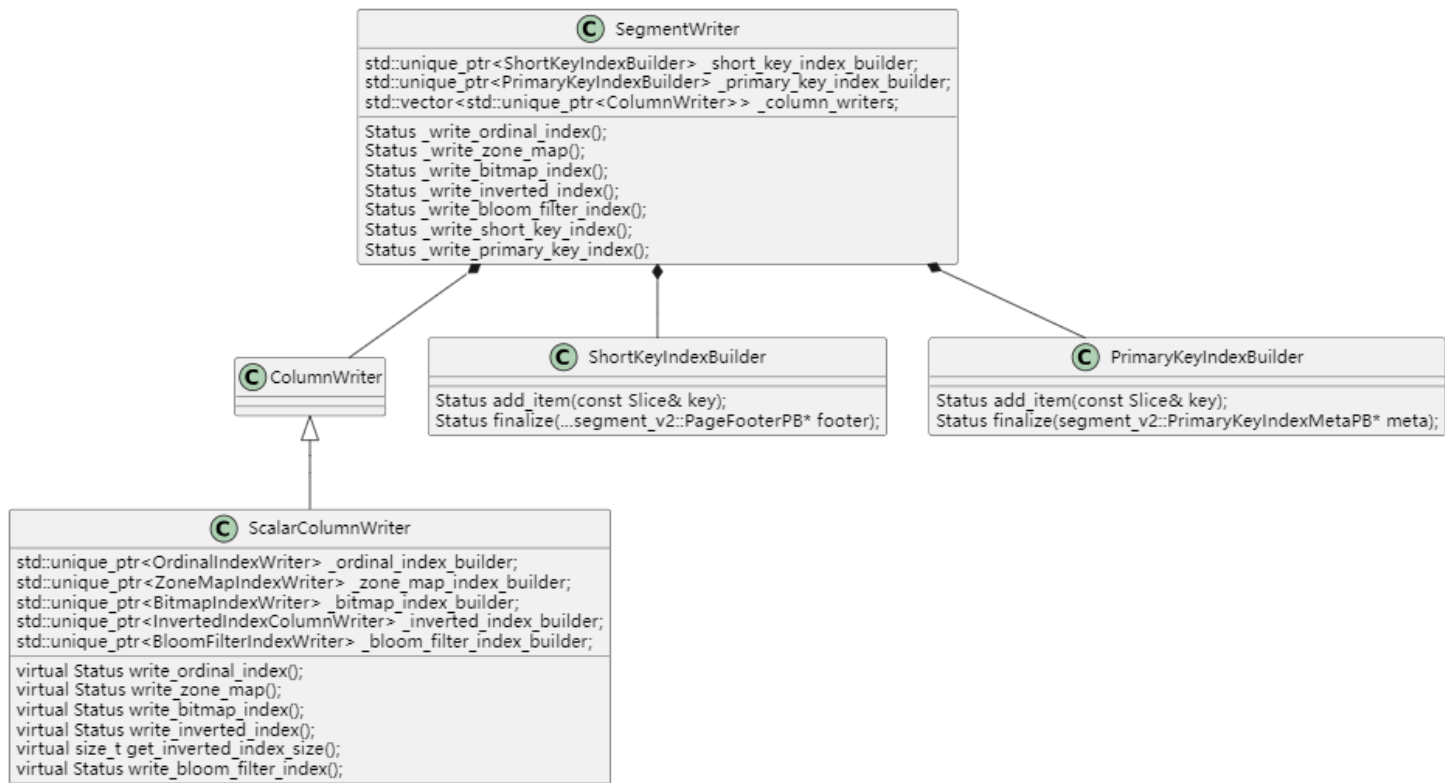


ZoneMapIndex BitMapIndex BloomFilterIndex Page IndexColumnMeta  
 Page Page Page 1 Page Page Page Root Page Page

# segment index

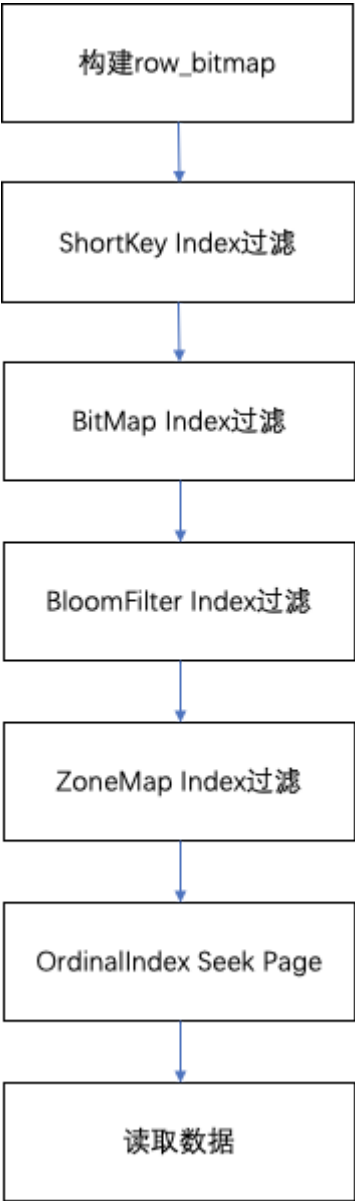
## index



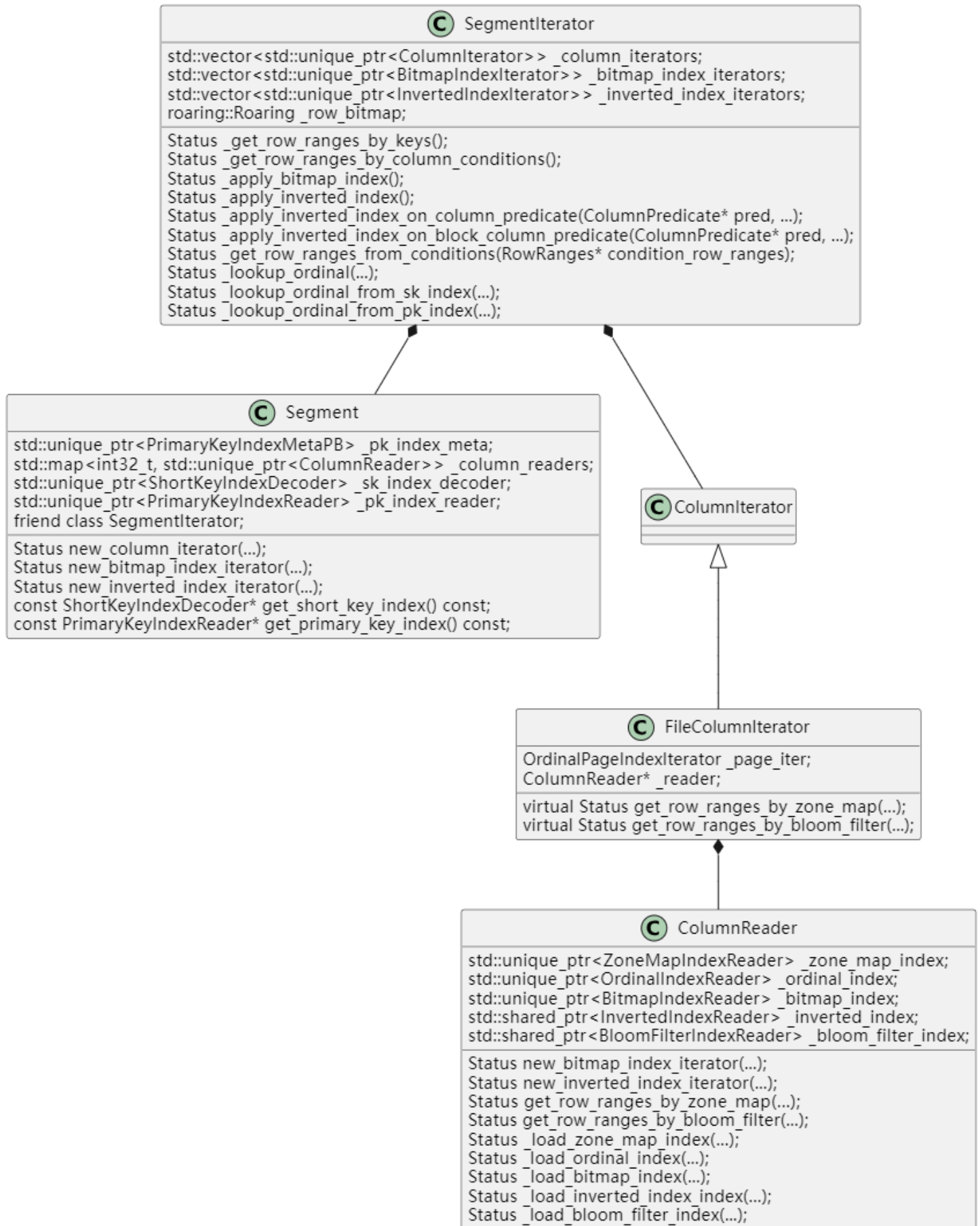


SegmentWriter□□\_column\_writers□\_short\_key\_index\_builder□□short key index□□□□□□SegmentWriter□□  
□□□□index□□□□□ColumnWriter□□□

# index







0000

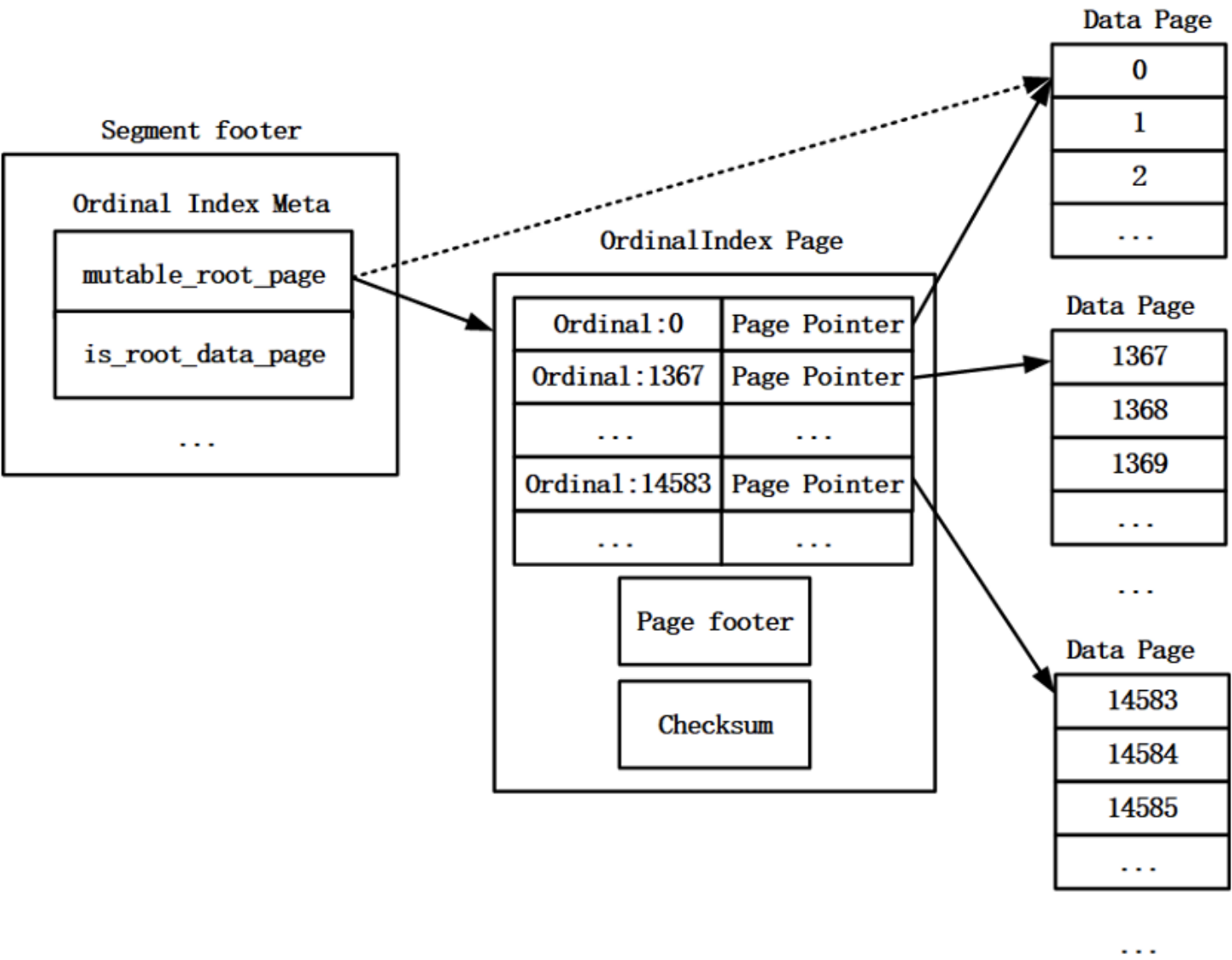
00000000000000000000

Ordinal

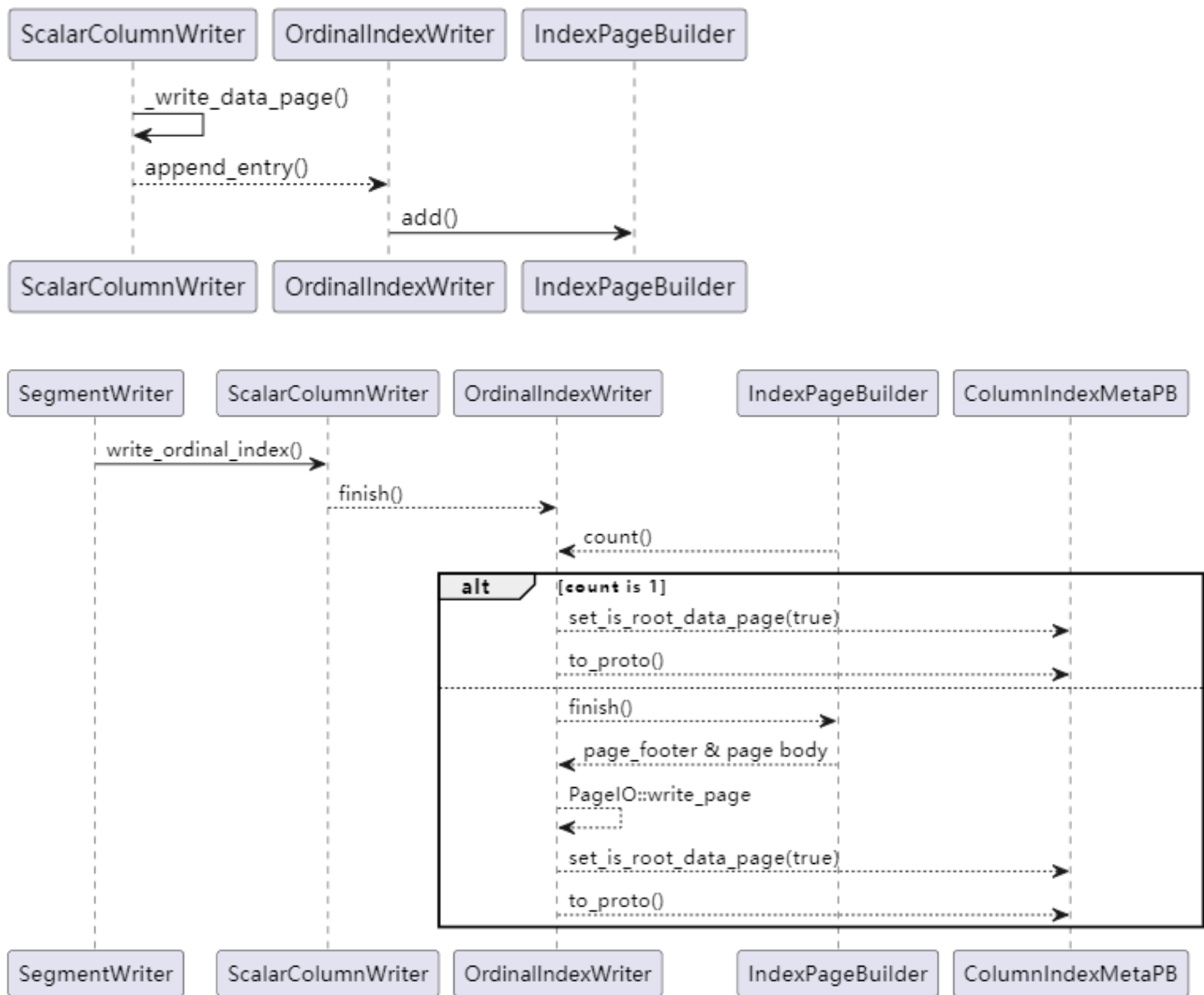
0000

Apache Doris 000000000000000000000000Data Page

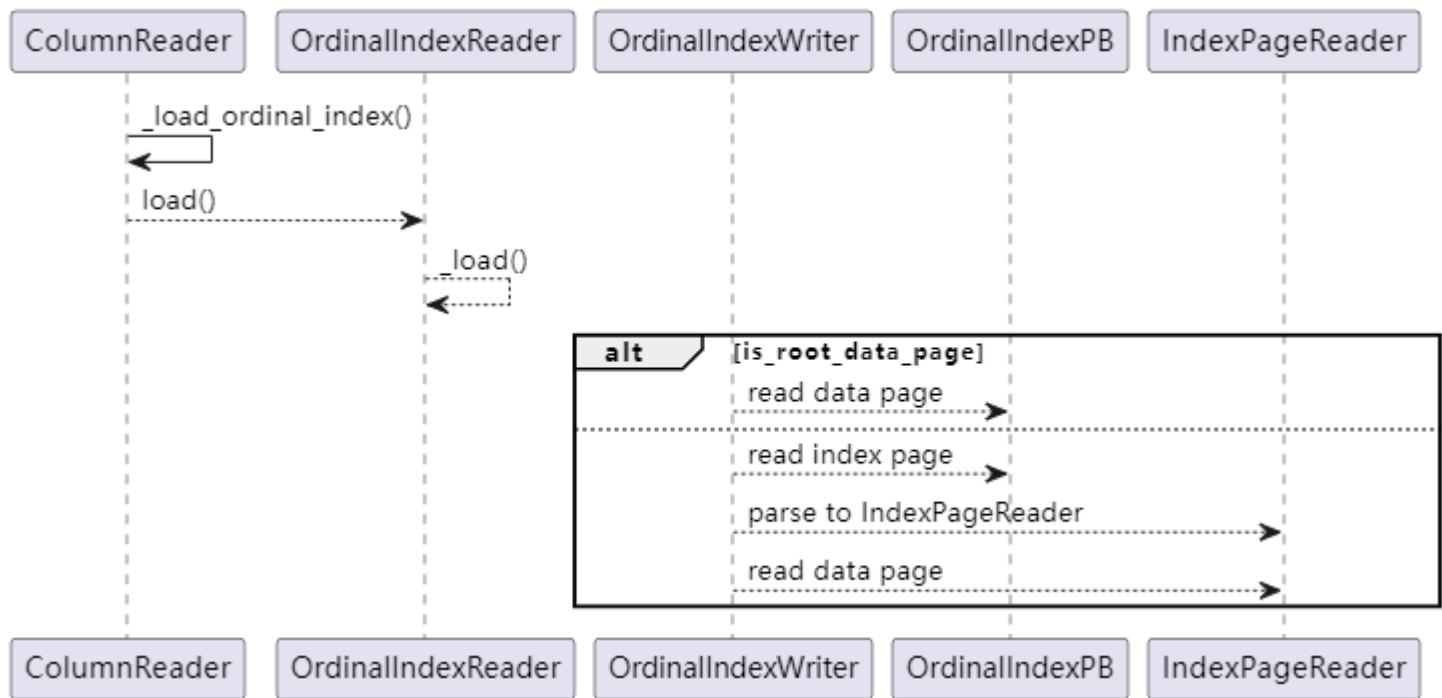
0000000000Data Page0000Ordinal00000000Data PageSegment0000offsetData Page0000Data Page00000000  
Data PageOrdinal00000000Ordinal Index PageOrdinal Index PageSegment0000offsetOrdinal Index  
Page00000000Segment0000footer00000000000000000000Data Page00000000Segment0000footerOrdinal Index Page  
0000Ordinal Index Page00000000Data Page



Ordinal Index PageOrdinalIndexPB



0000



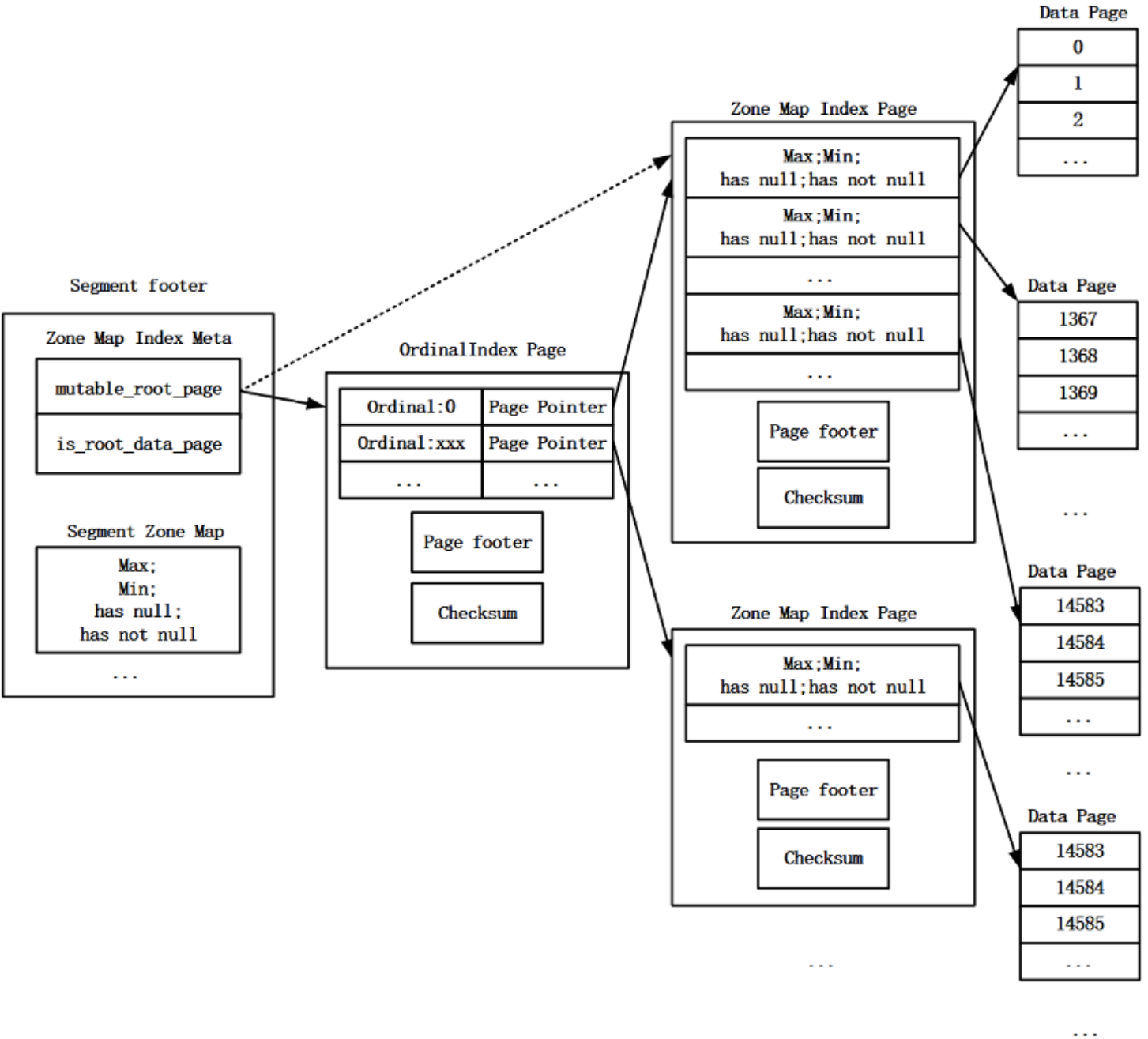
0000

0000000000000000page0000page point000000Ordinal000000datapage0000index000000000000Ordinal000000  
0IndexedColumnWriter00

Zone Map 00

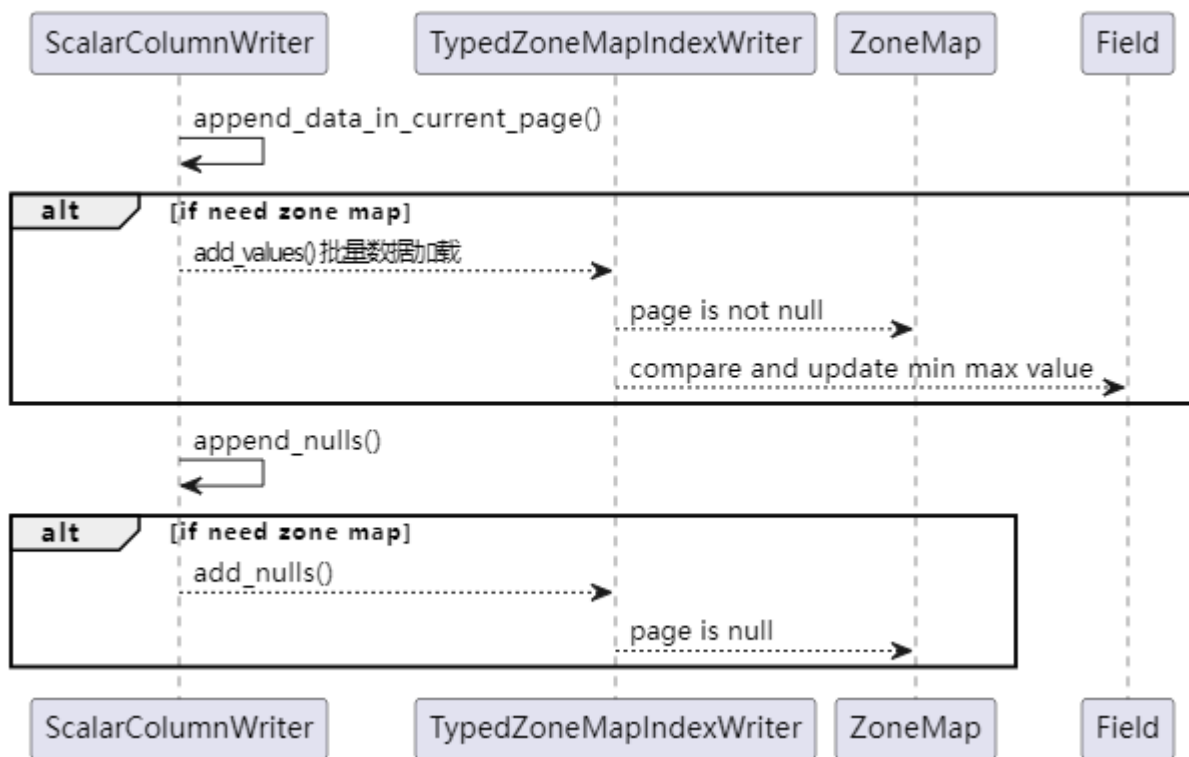
0000

Apache Doris 00Segment000000000000Zone Map000000000000Data Page00Zone Map0000Zone Map0000000000000000  
Data Page0000(max value)0000(min value)0000null0(has null)000000null0(has not null)00000000max value000000  
00000000min value0000000000000000has null0has not null000000false

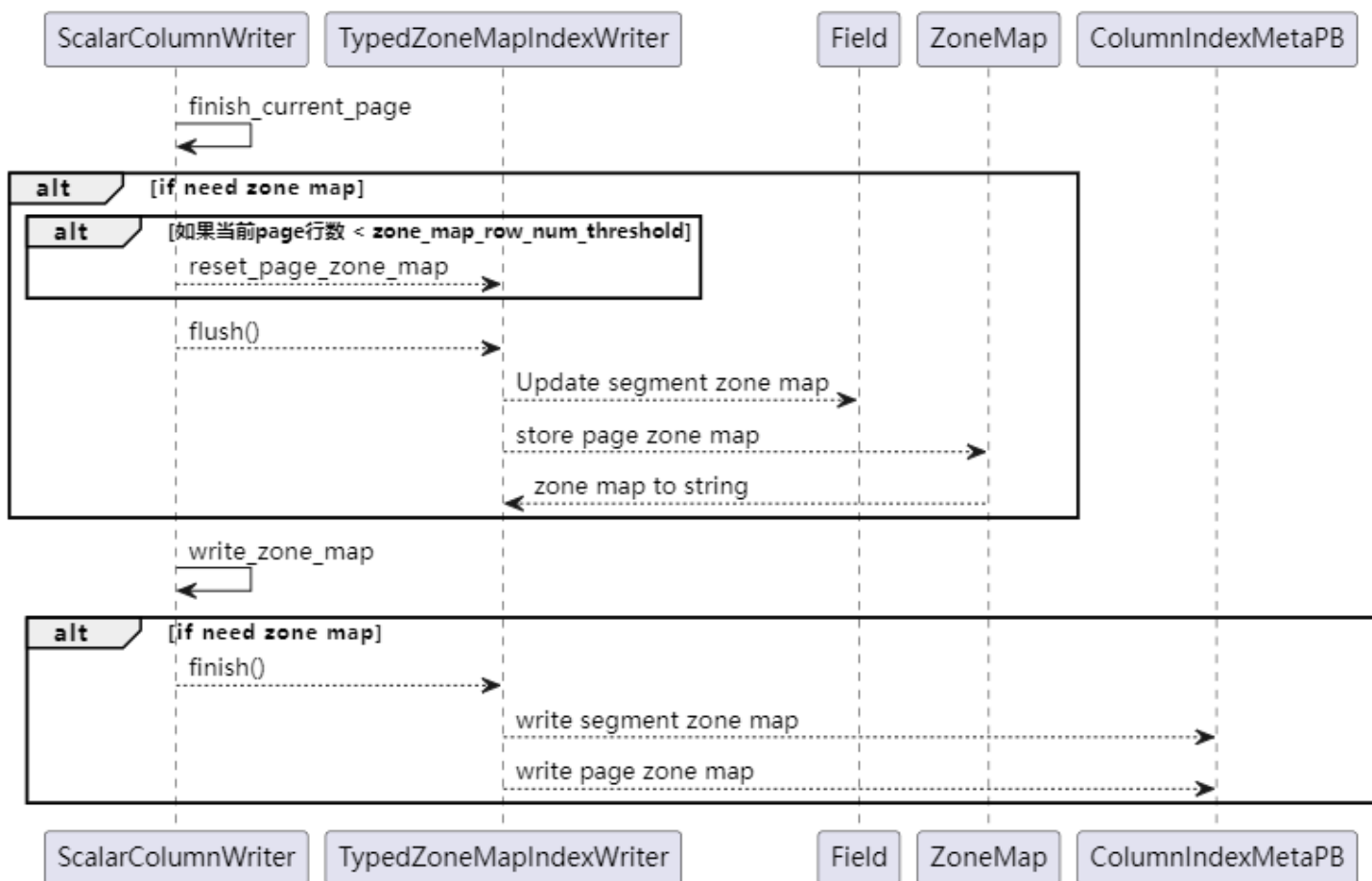


□□□□

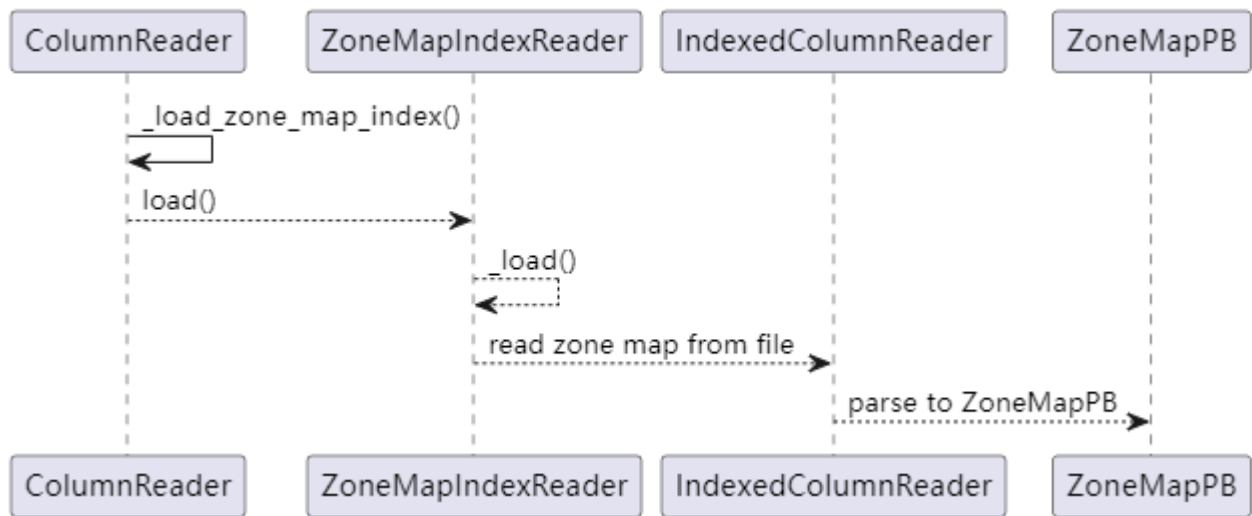
□□□□□□



flush finish flush page finish



过程



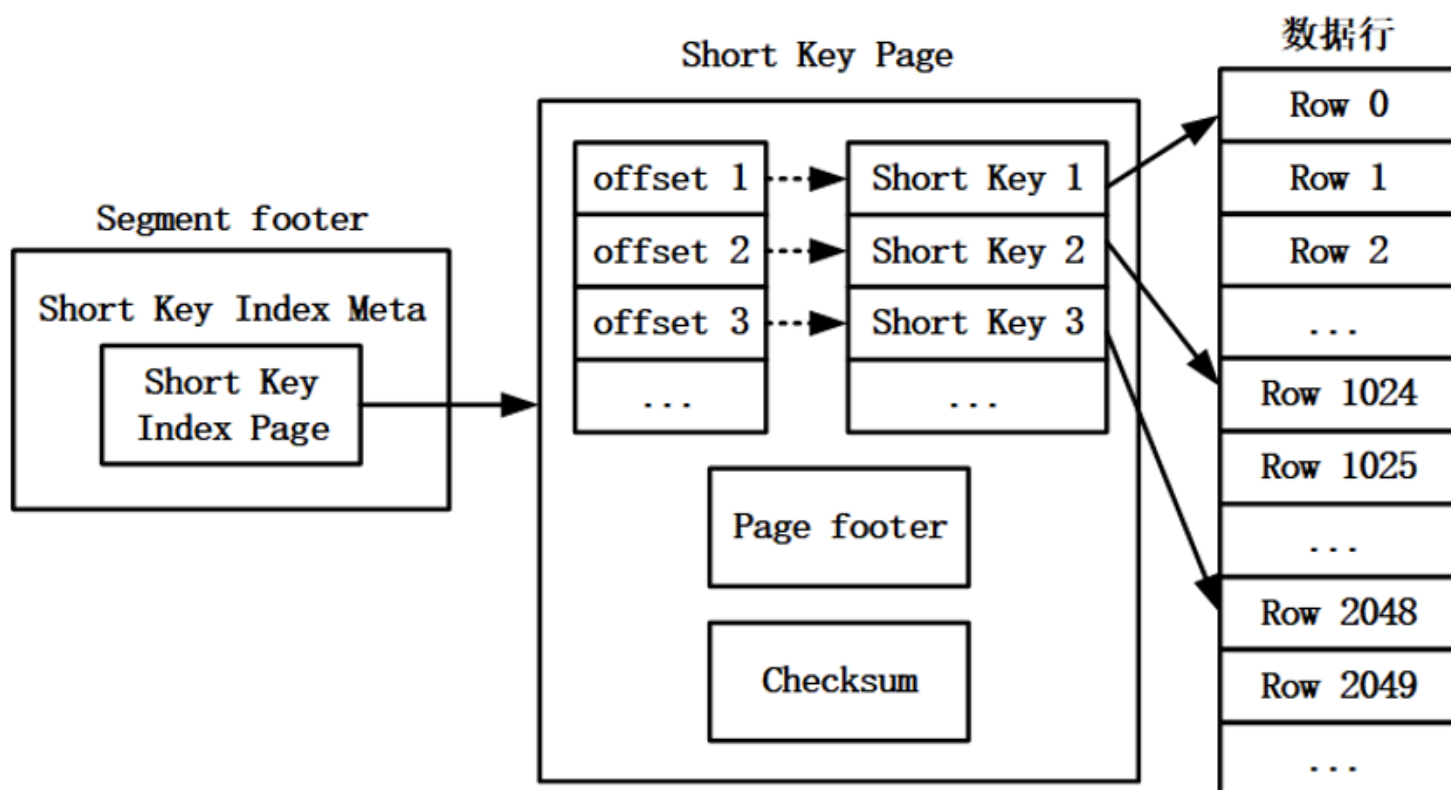
过程

zone map 是存储在sql中的zone map  
field = value value Zone Map Data Page  
= < > <= >= is null is not null in

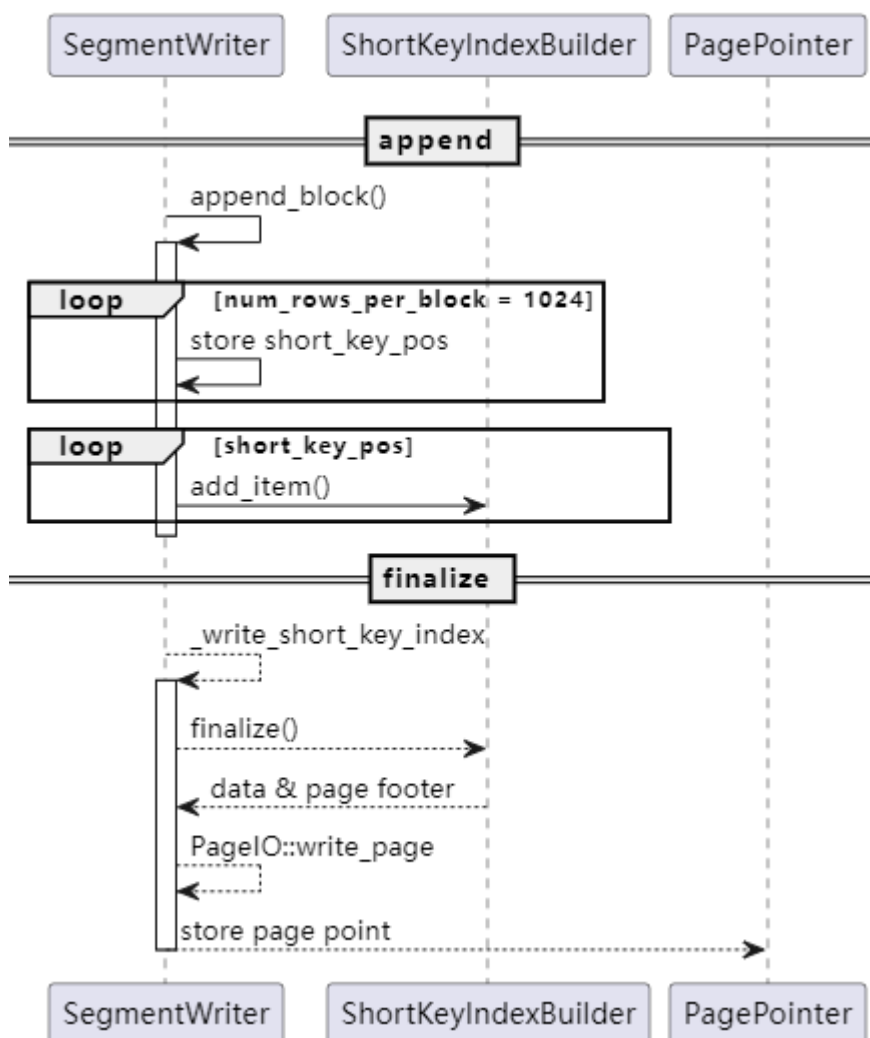
## Short Key Index

过程

每个Segment包含1024个Short Key  
Segment Key Key



□□□□





`varchar(36)`

```

    "unique_id": 0,
    "name": "id",
    "type": "BIGINT",
    "is_key": true,
    "aggregation": "NONE",
    "is_nullable": true,
    "precision": 0,
    "frac": 0,
    "length": 8,
    "index_length": 8,
    "visible": true,
    "result_is_nullable": false
  },
  {
    "unique_id": 1,
    "name": "deleted",
    "type": "TINYINT",
    "is_key": false,
    "aggregation": "NONE",
    "is_nullable": true,
    "precision": 0,
    "frac": 0,
    "length": 1,
    "index_length": 1,
    "visible": true,
    "result_is_nullable": false
  },
  {
    "unique_id": 2,
    "name": "type",
    "type": "STRING",
    "is_key": false,
    "aggregation": "NONE",
    "is_nullable": true,
    "precision": 0,
    "frac": 0,
    "length": 2147483647,
    "index_length": 20,
    "visible": true,
    "result_is_nullable": false
  },
  {
    "unique_id": 3,
    "name": "author",
    "type": "STRING",
    "is_key": false,
    "aggregation": "NONE",
    "is_nullable": true,
    "precision": 0,
    "frac": 0,
    "length": 2147483647,
    "index_length": 20,
    "visible": true,
    "result_is_nullable": false
  }
]

```

[illegible]

```

KeyRange
user_id

```

```
keyrange(10000,10002)keyrange
```

10/10/2019

- `keyrange` `upper_row_id`
  - `Key Range` `key`
  - `key` `start` `key` `key` `key` `start` `Key Range` `key` `start` `key` `start` `key`
  - `key` `end` `key` `end` `key` `Segment` `end`
  - `start` `end` `key` `upper_row_id`
- `mid=(start+end)/2;` `mid` `mid` `page` `mid` `upper_row_id`;
- `lower_row_id` `lower_row_id~upper_row_id` `_row_bitmap`