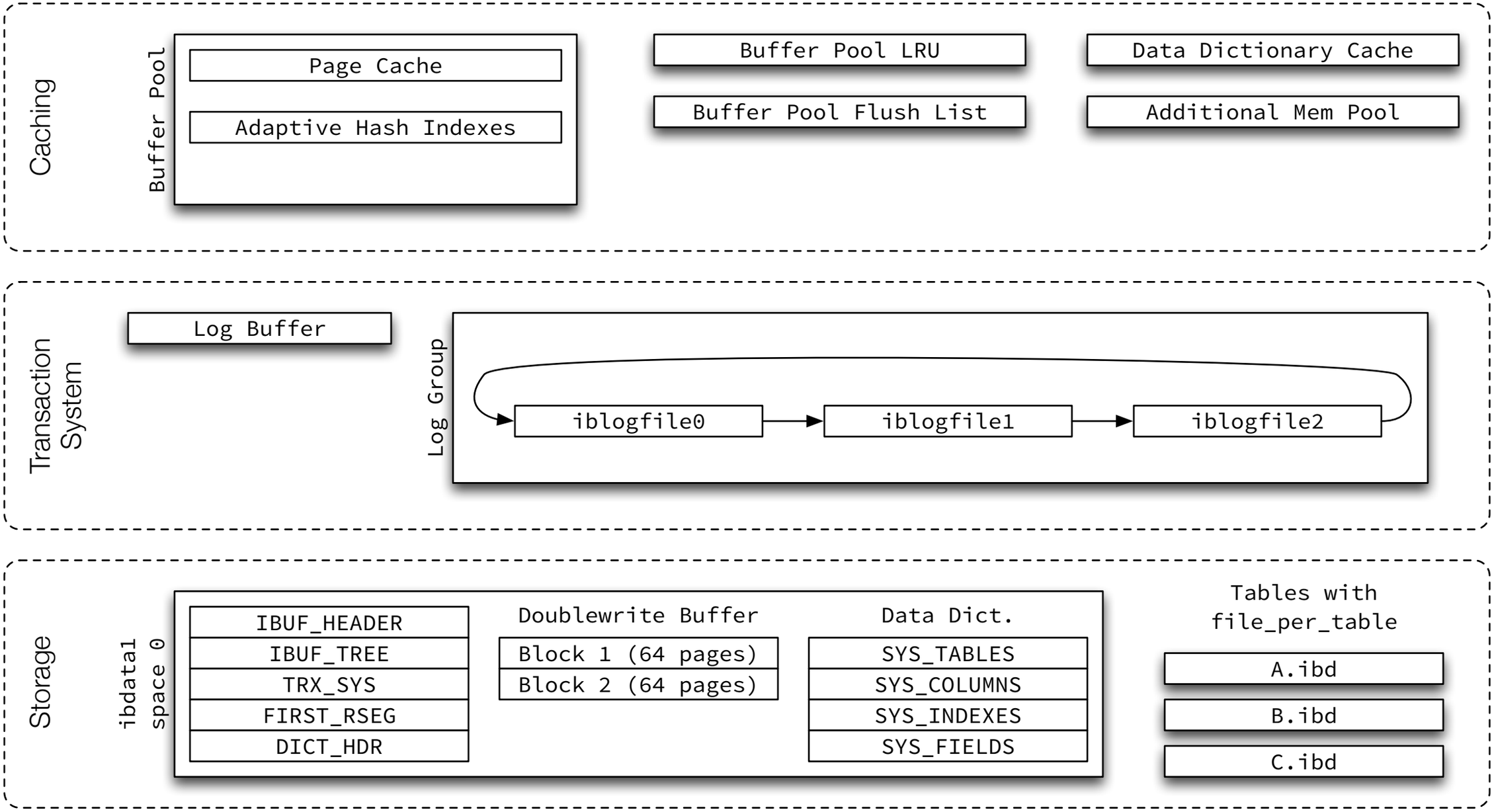
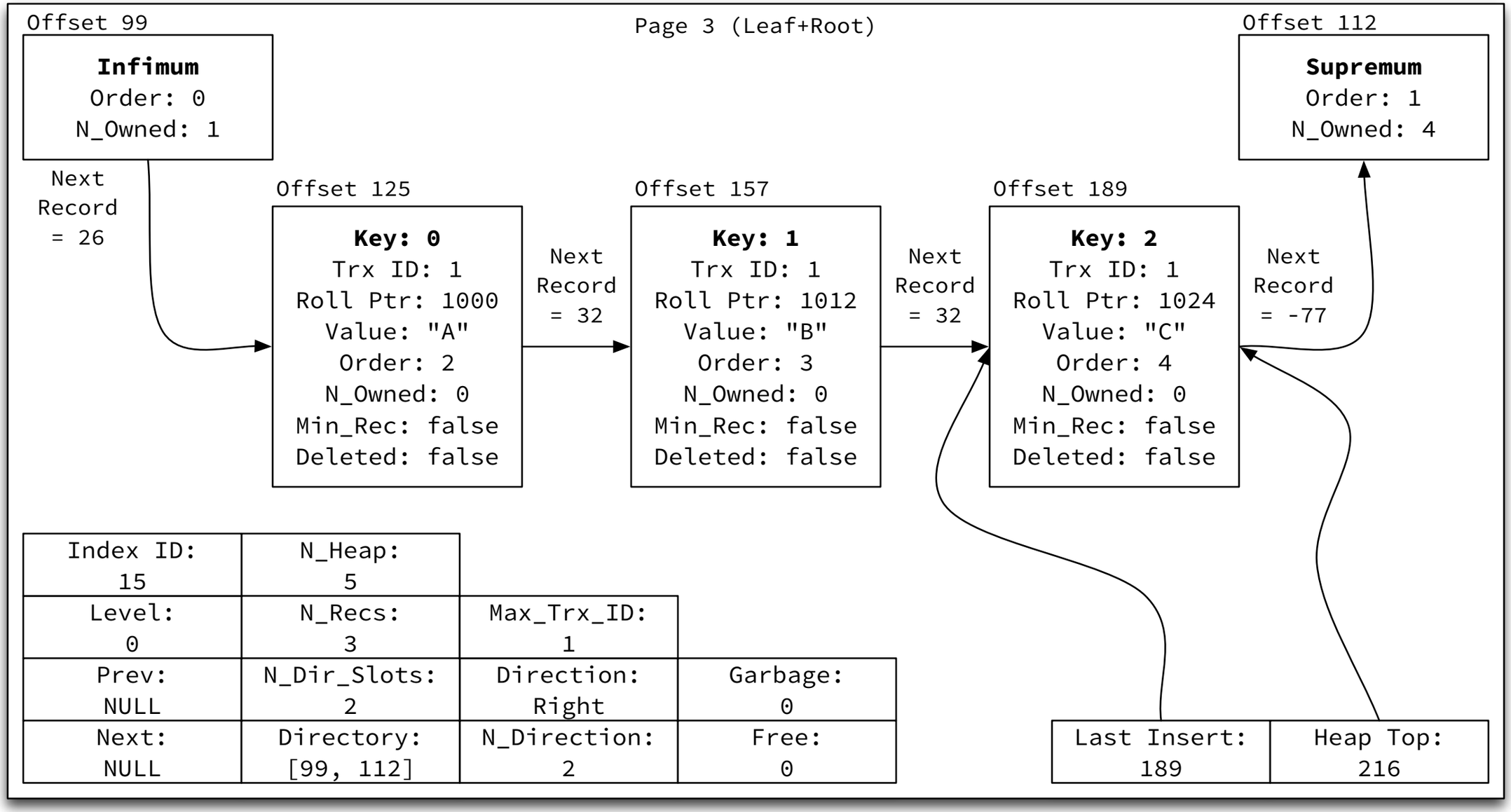
# High-level Overview

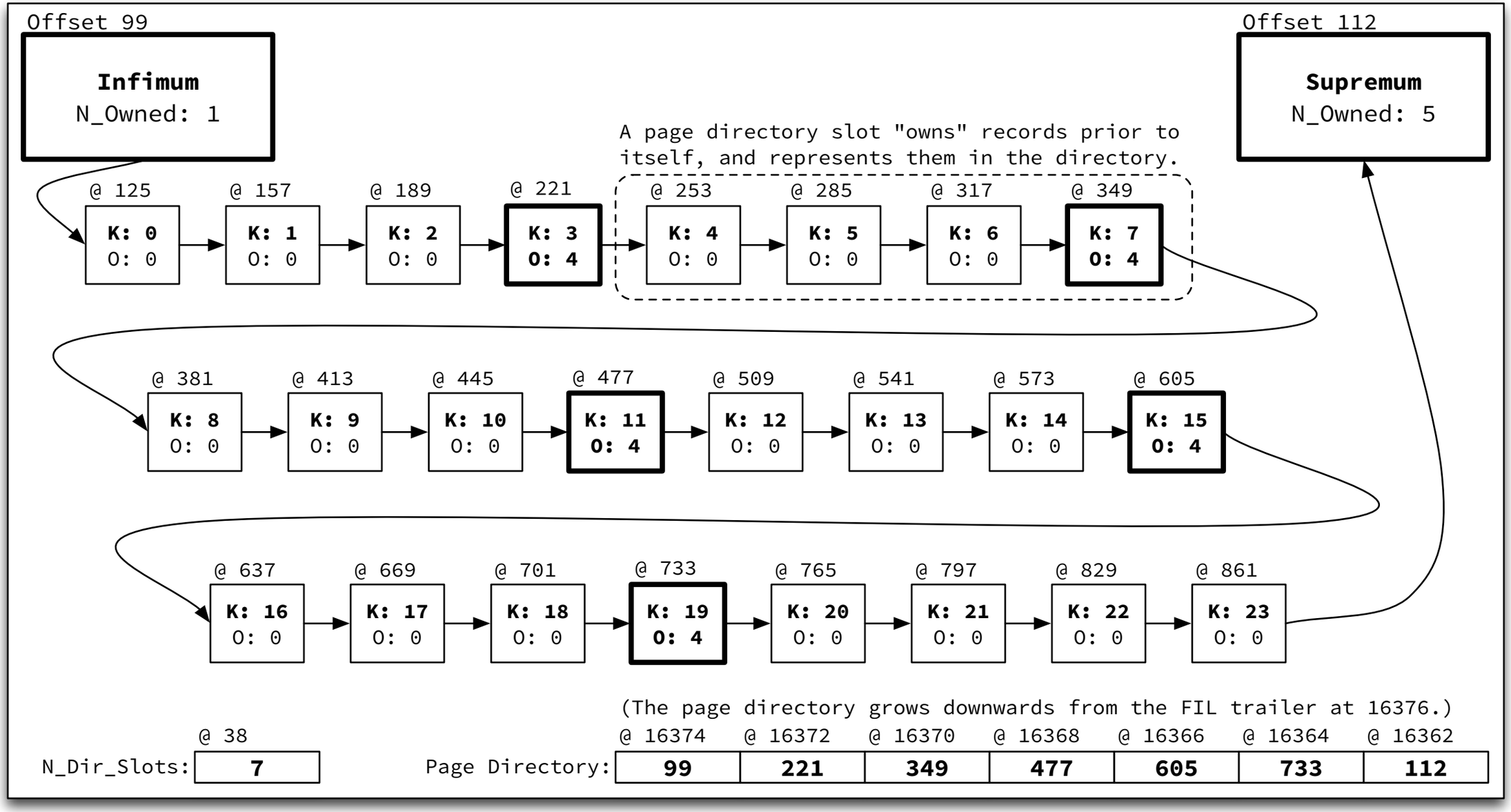


# B+Tree Page Structure



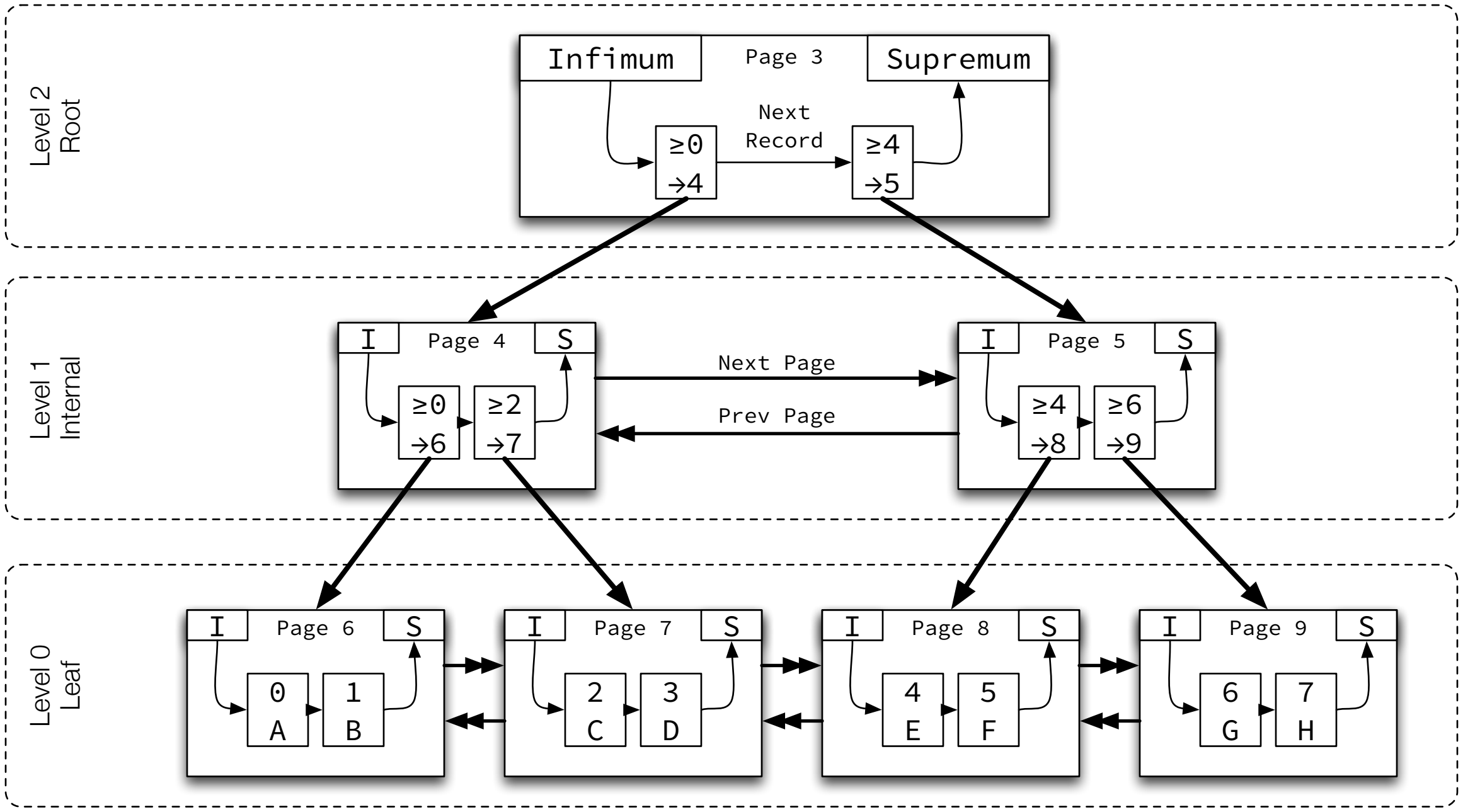

InnoDB table format is Barracuda with "compact" record structure, non-compressed.
Table created with: `CREATE TABLE t (i INT NOT NULL, s CHAR(10) NOT NULL, PRIMARY KEY(i)) ENGINE=InnoDB;`
Table populated with: `INSERT INTO t (i, s) VALUES (0, "A"), (1, "B"), (2, "C");`
Record size: 5 (header) + 4 (PK) + 6 (TRX_ID) + 7 (ROLL_PTR) + 10 (non-key fields) = 32 bytes

# B+Tree Page Directory Structure



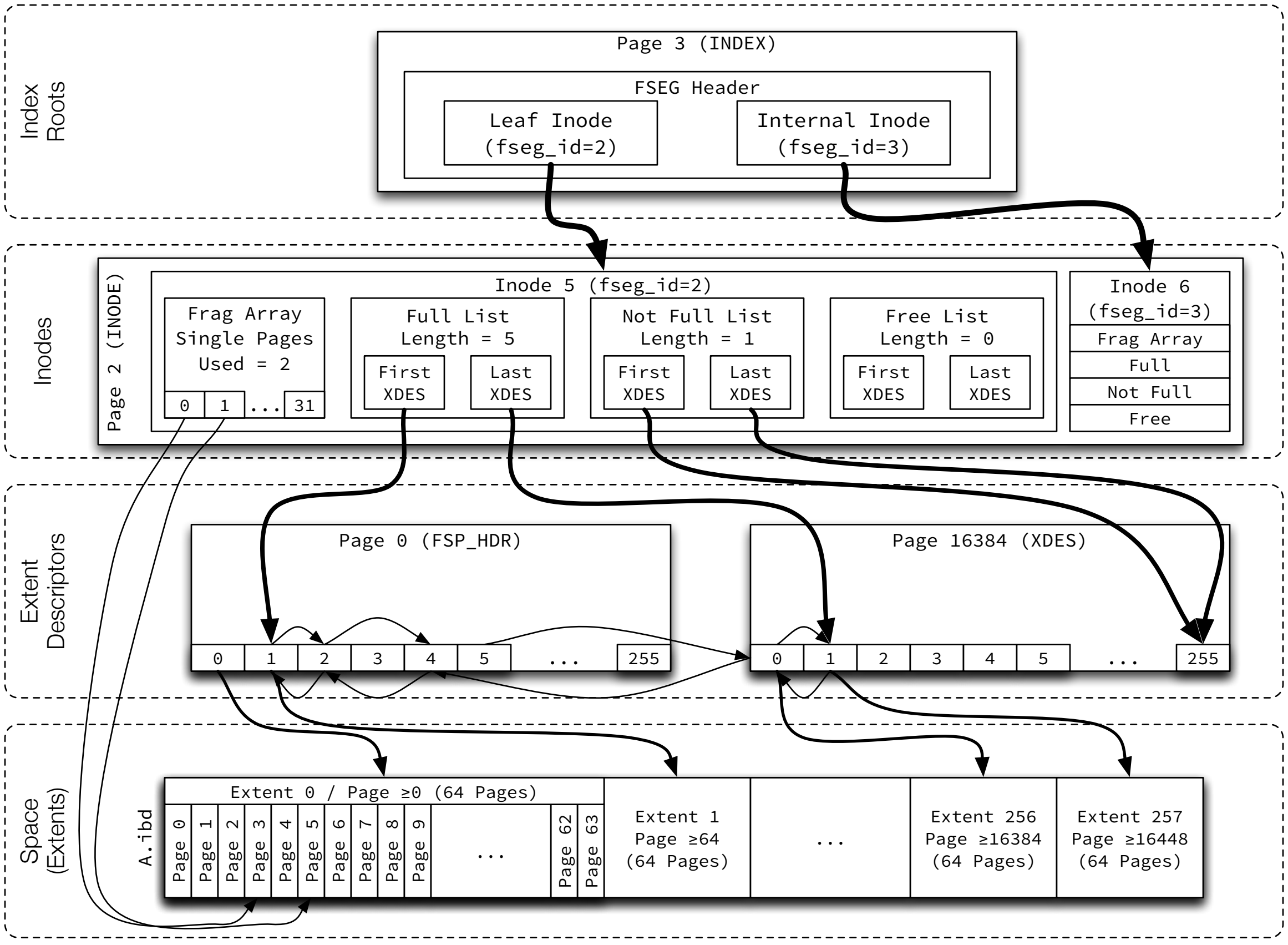

Infimum always owns only itself, so will always have a slot in the page directory with N_Owned = 1.
Supremum always owns the last few records in the page, and is allowed to own less than 4 records (if the page has fewer).
All directory slots will own a minimum of 4 and maximum of 8 records, except supremum, which may own fewer.

# B+Tree Structure

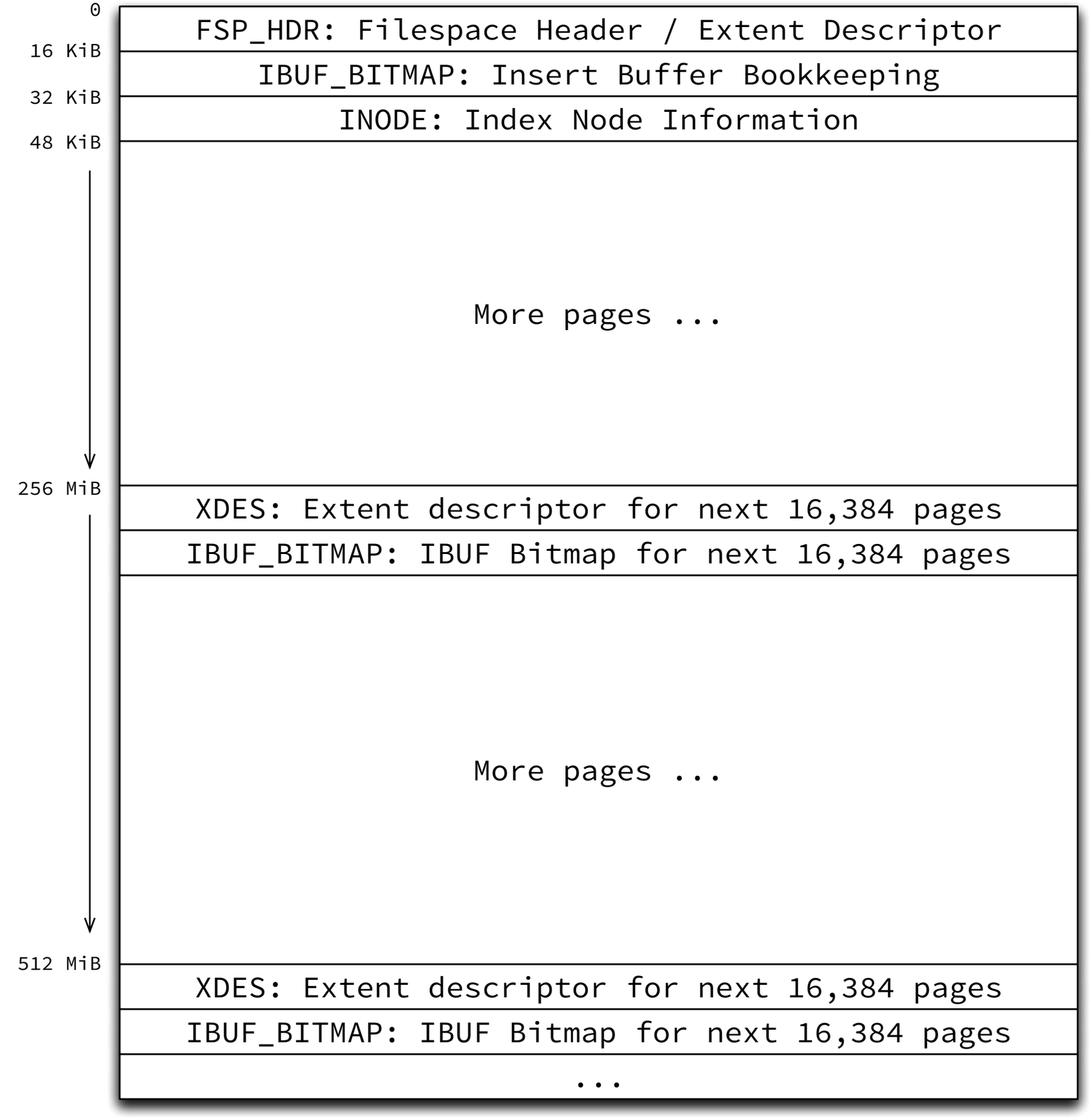



Levels are numbered starting from 0 at the leaf pages, incrementing up the tree.
Pages on each level are doubly-linked with previous and next pointers in ascending order by key.
Records within a page are singly-linked with a next pointer in ascending order by key.
Infimum represents a value lower than any key on the page, and is always the first record in the singly-linked list of records.
Supremum represents a value higher than any key on the page, and is always the last record in the singly-linked list of records.
Non-leaf pages contain the minimum key of the child page and the child page number, called a "node pointer".

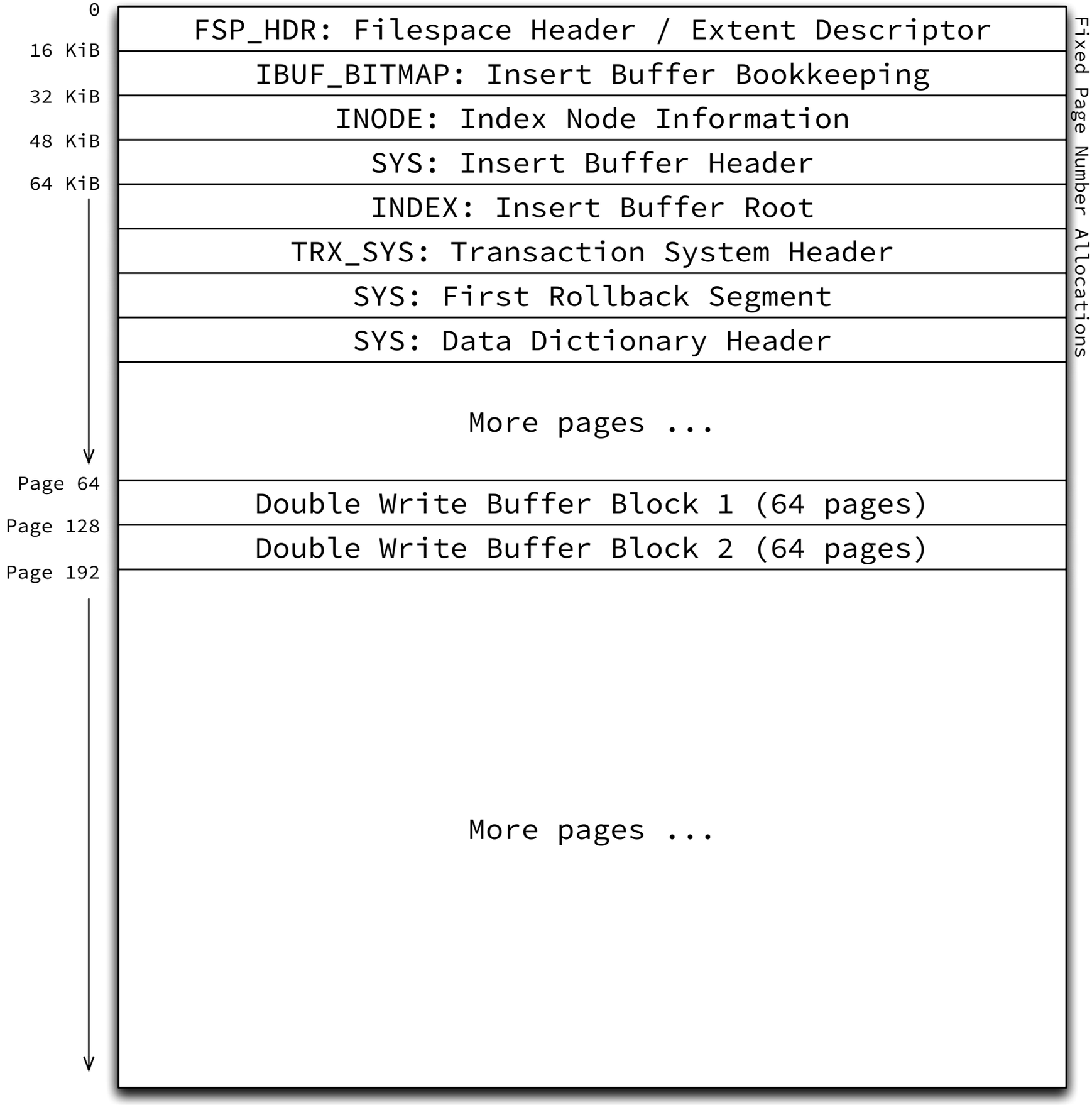
# Index File Segment Structure



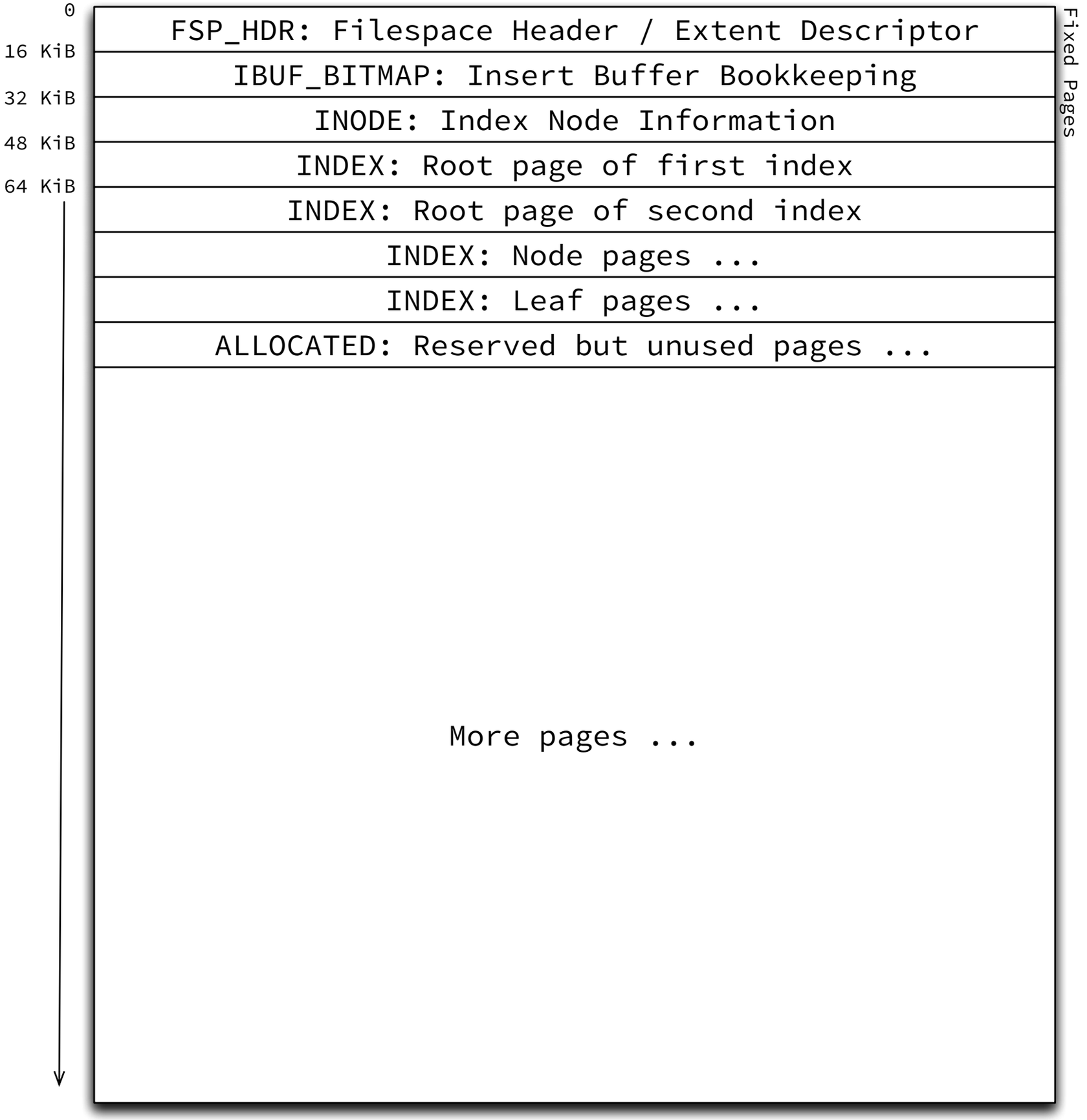
# Space File Overview



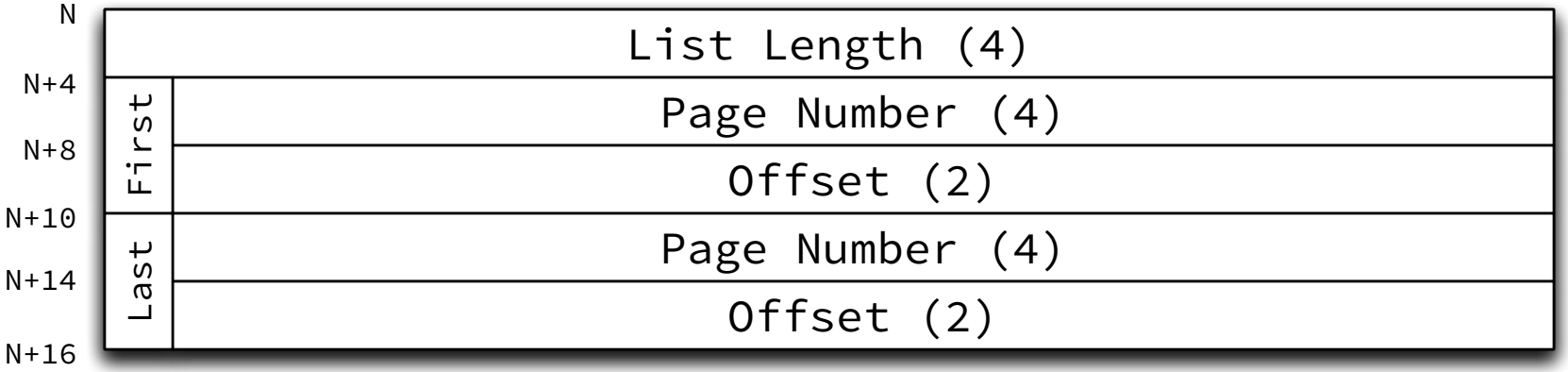
# ibdata1 File Overview



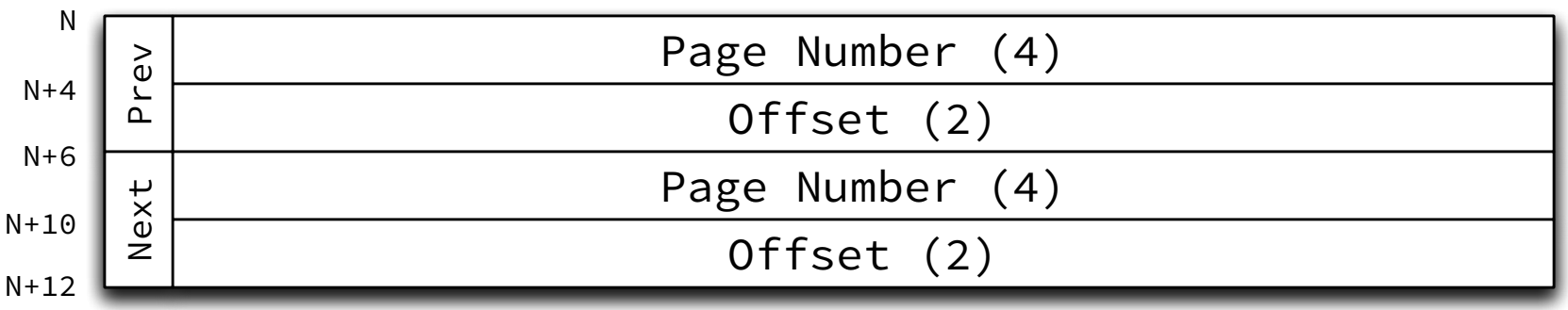
# IBD File Overview



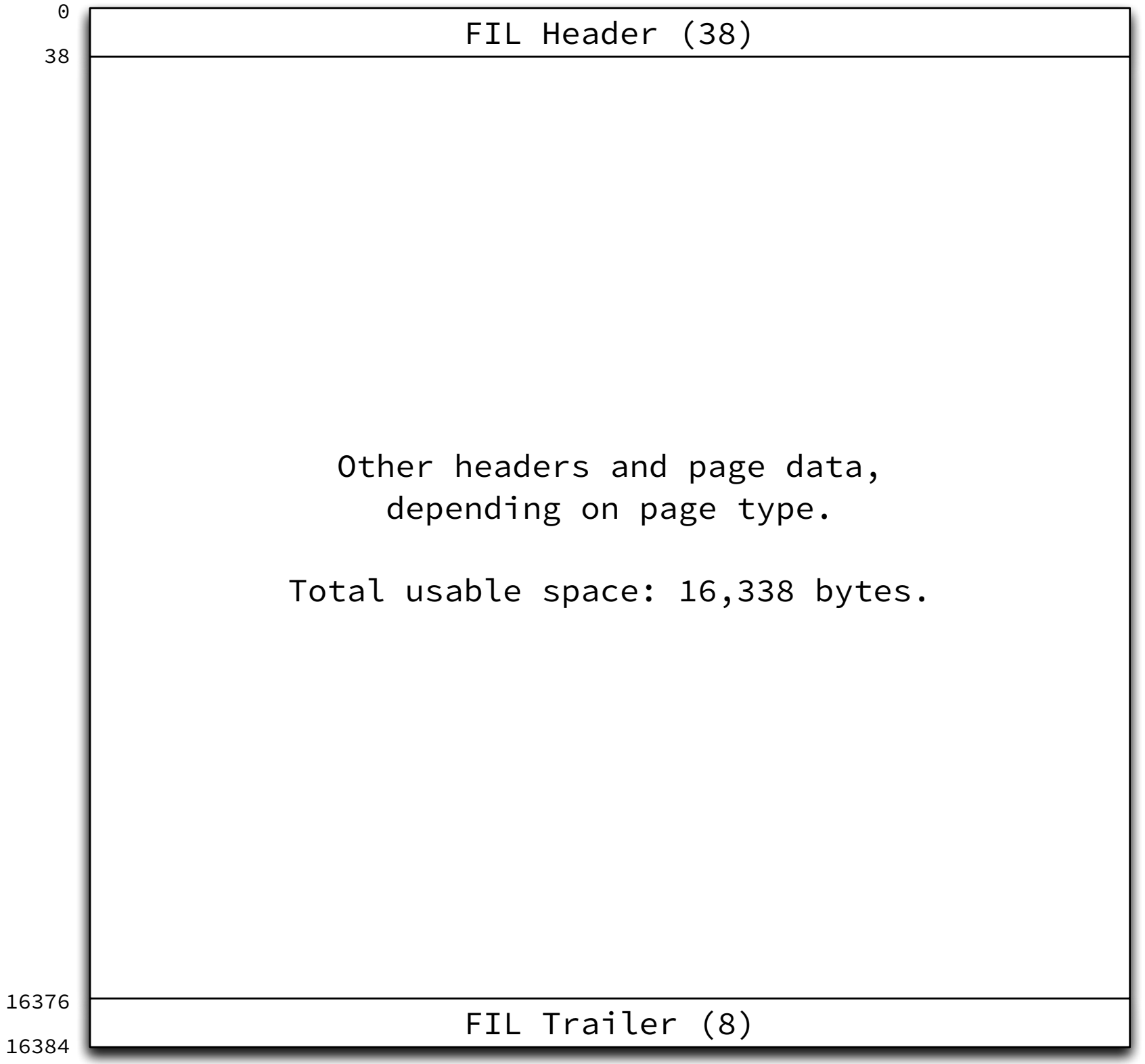
# List Base Node



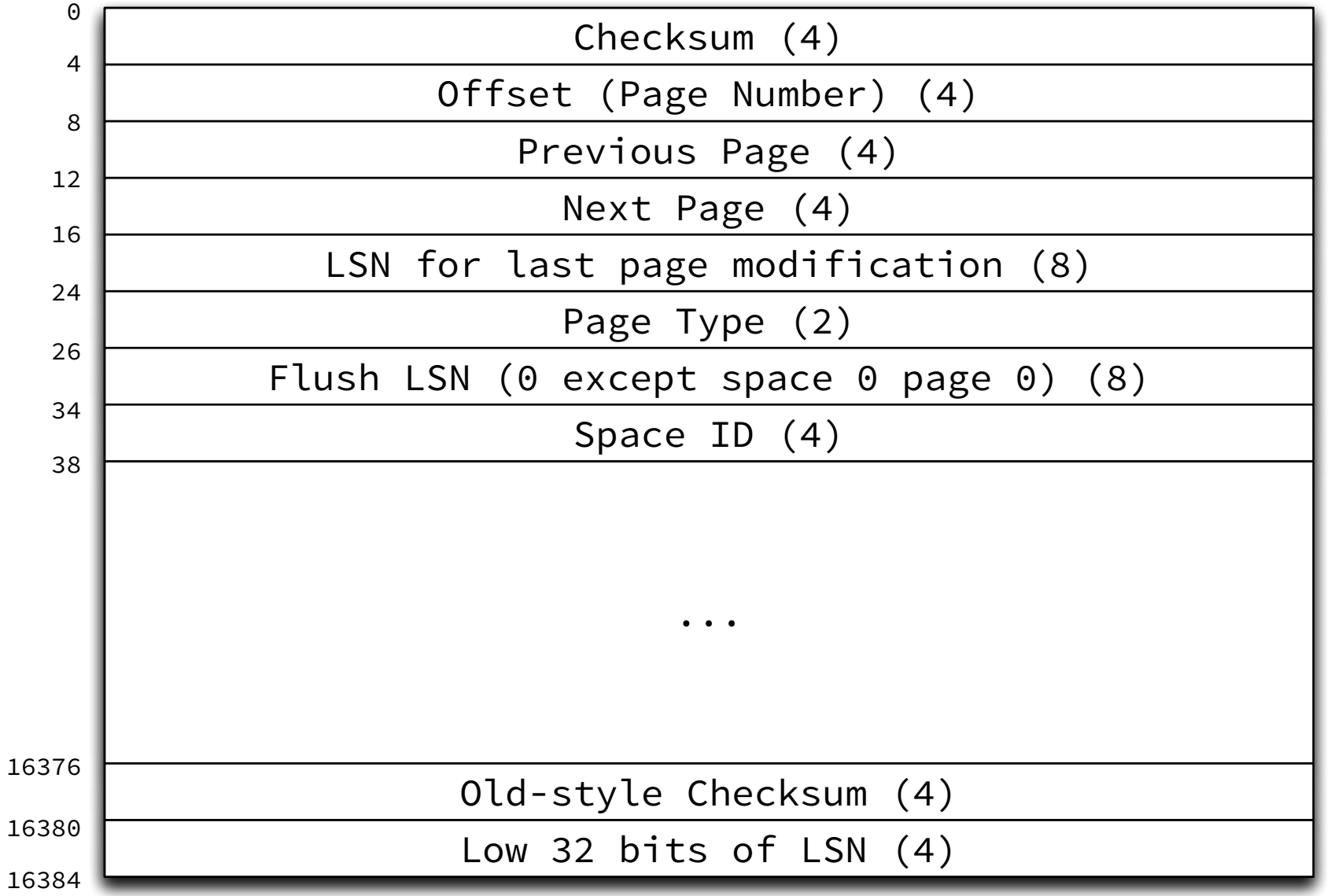

# List Node



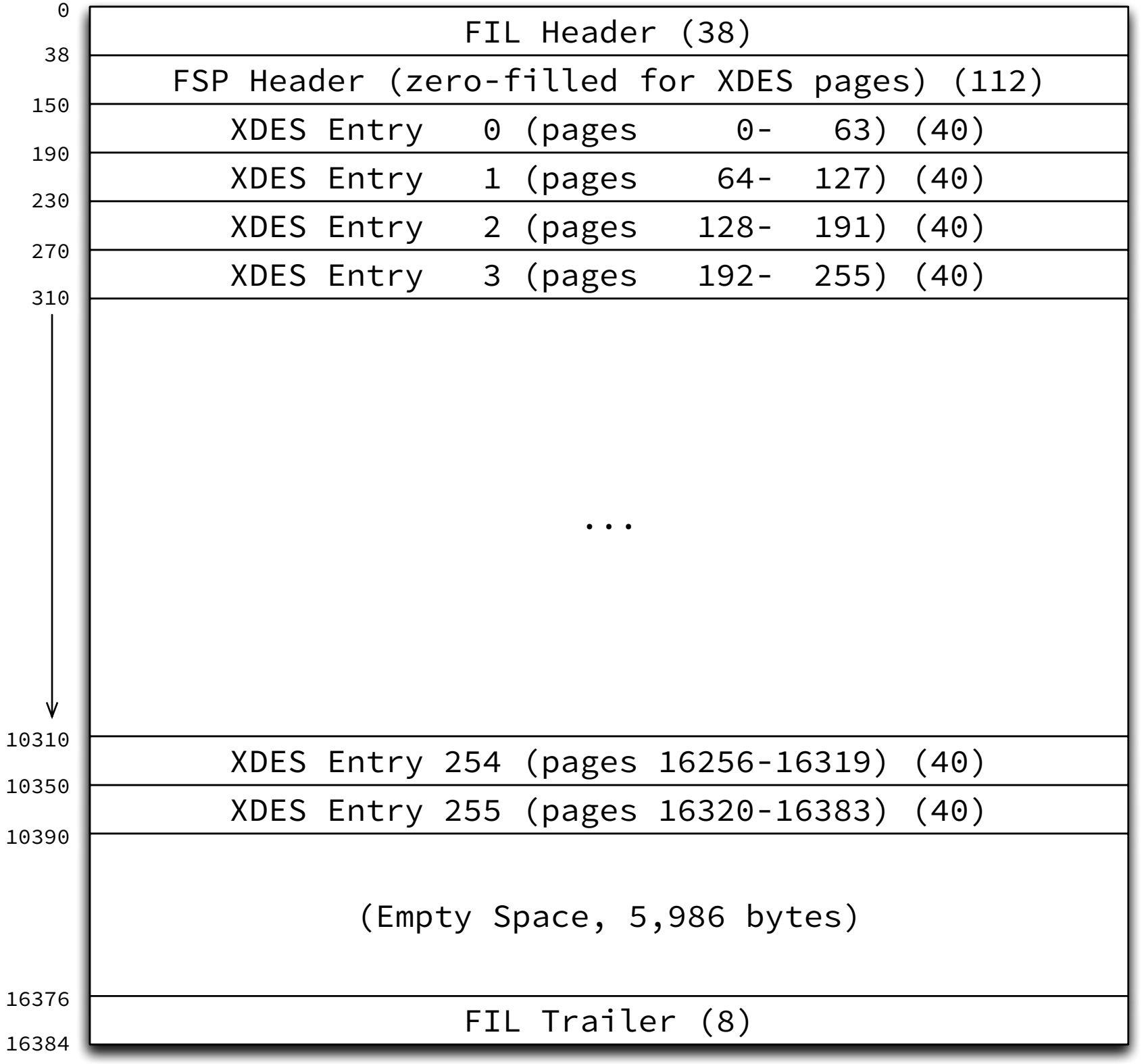
# Basic Page Overview



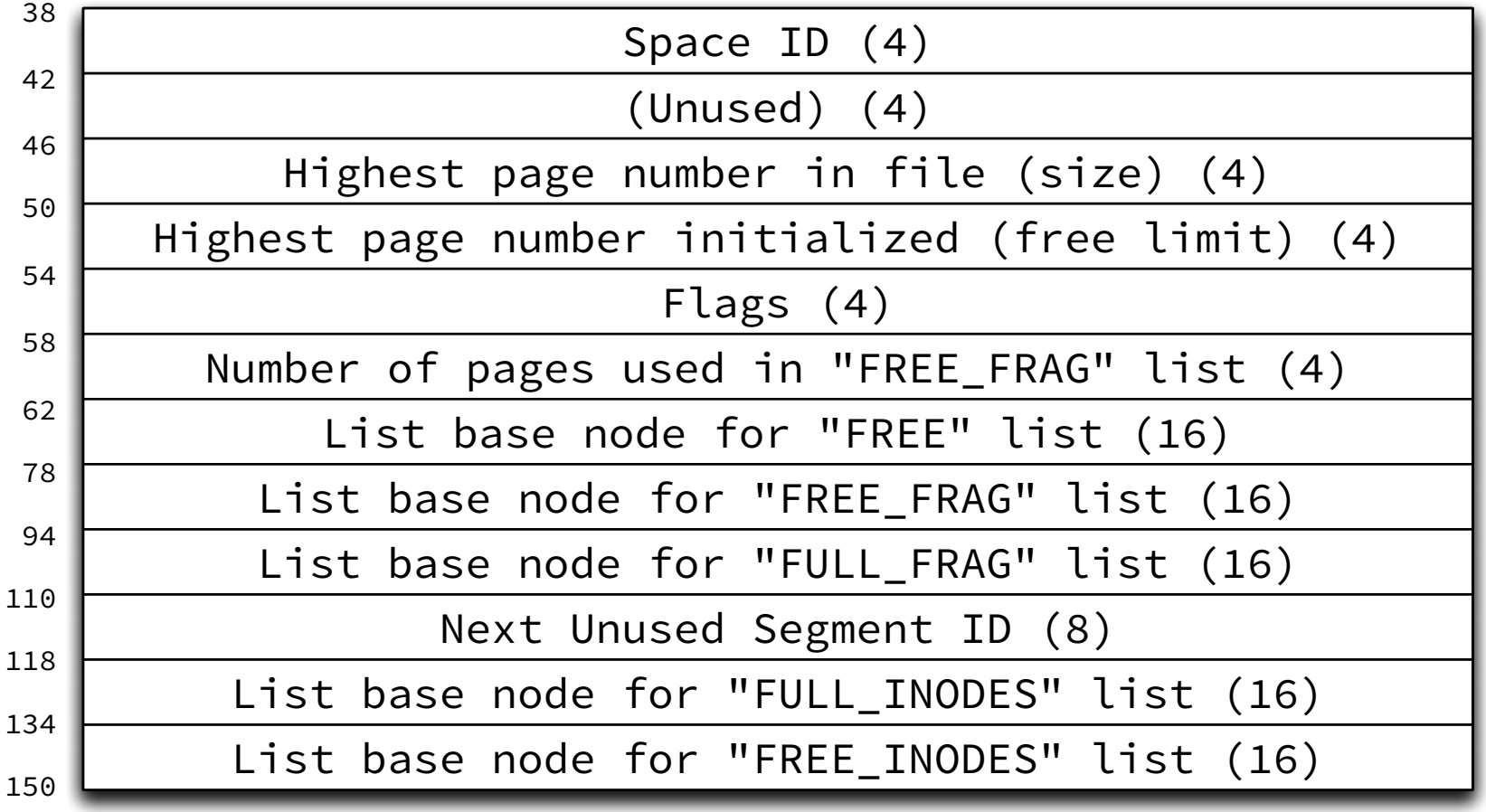
# FIL Header/Trailer



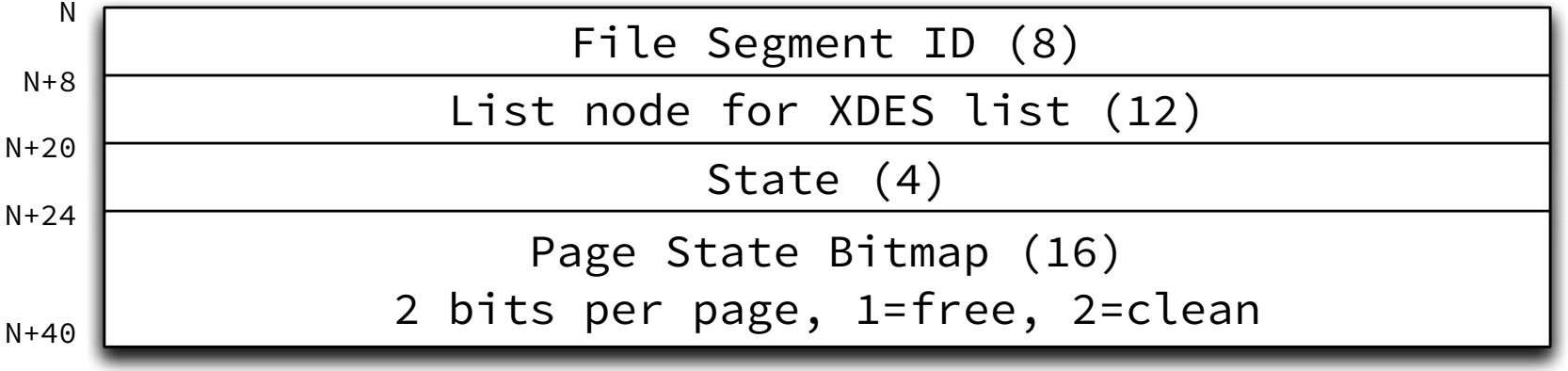
# FSP_HDR/XDES Overview



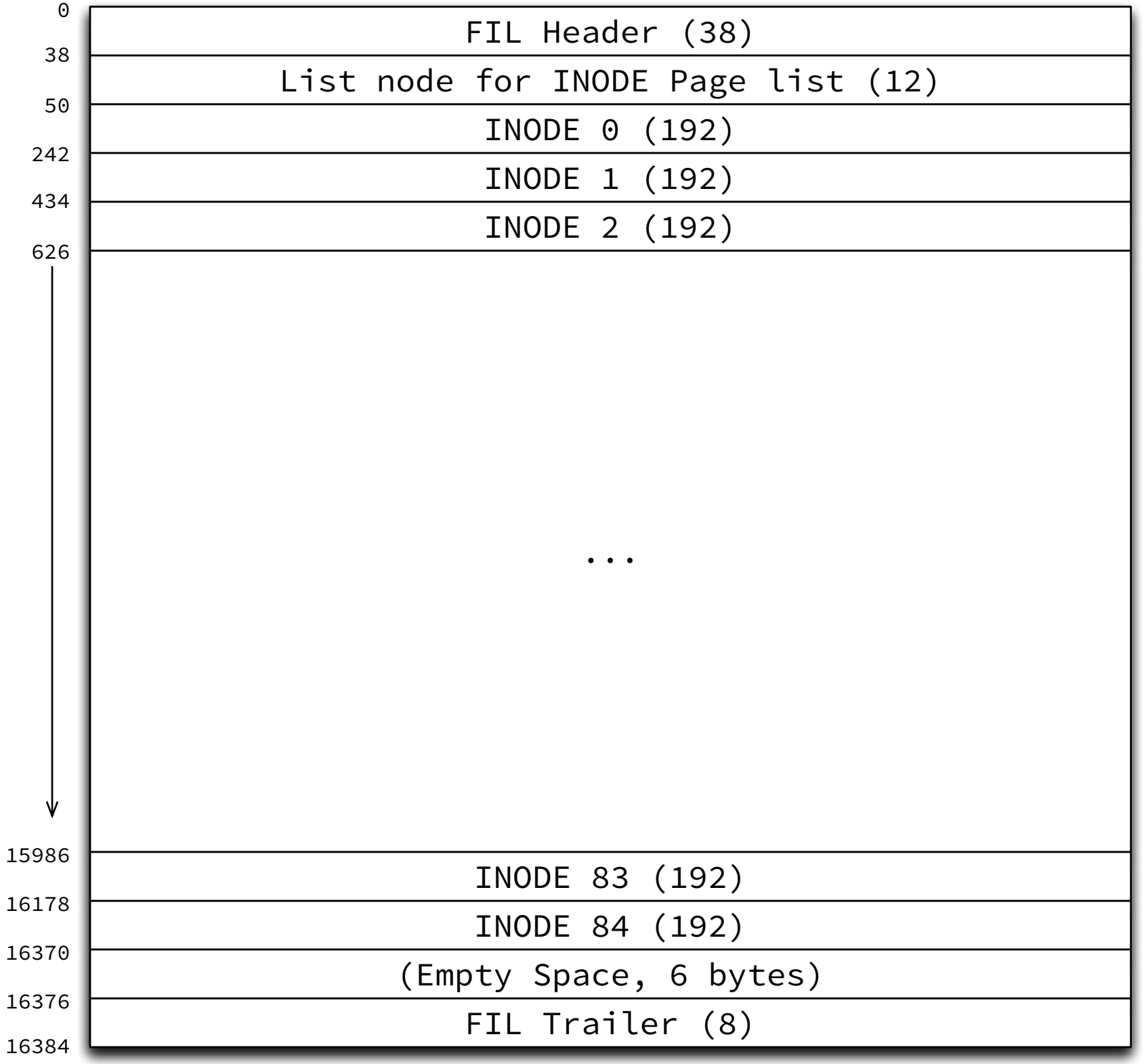
# FSP Header


38
Space ID (4)
42
(Unused) (4)
46
Highest page number in file (size) (4)
50
Highest page number initialized (free limit) (4)
54
Flags (4)
58
Number of pages used in "FREE_FRAG" list (4)
62
List base node for "FREE" list (16)
78
List base node for "FREE_FRAG" list (16)
94
List base node for "FULL_FRAG" list (16)
110
Next Unused Segment ID (8)
118
List base node for "FULL_INODES" list (16)
134
List base node for "FREE_INODES" list (16)
150

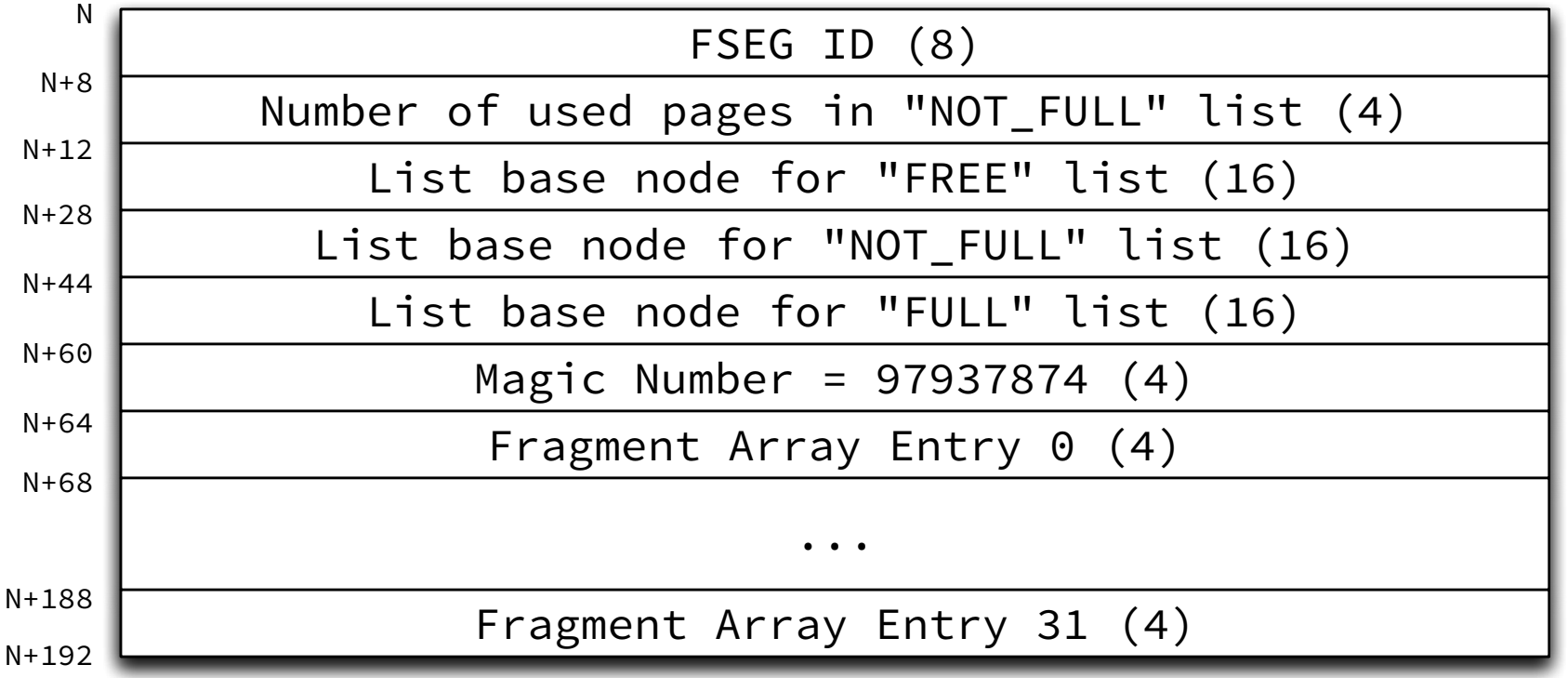
# XDES Entry


N
File Segment ID (8)
N+8
List node for XDES list (12)
N+20
State (4)
N+24
Page State Bitmap (16)
2 bits per page, 1=free, 2=clean
N+40

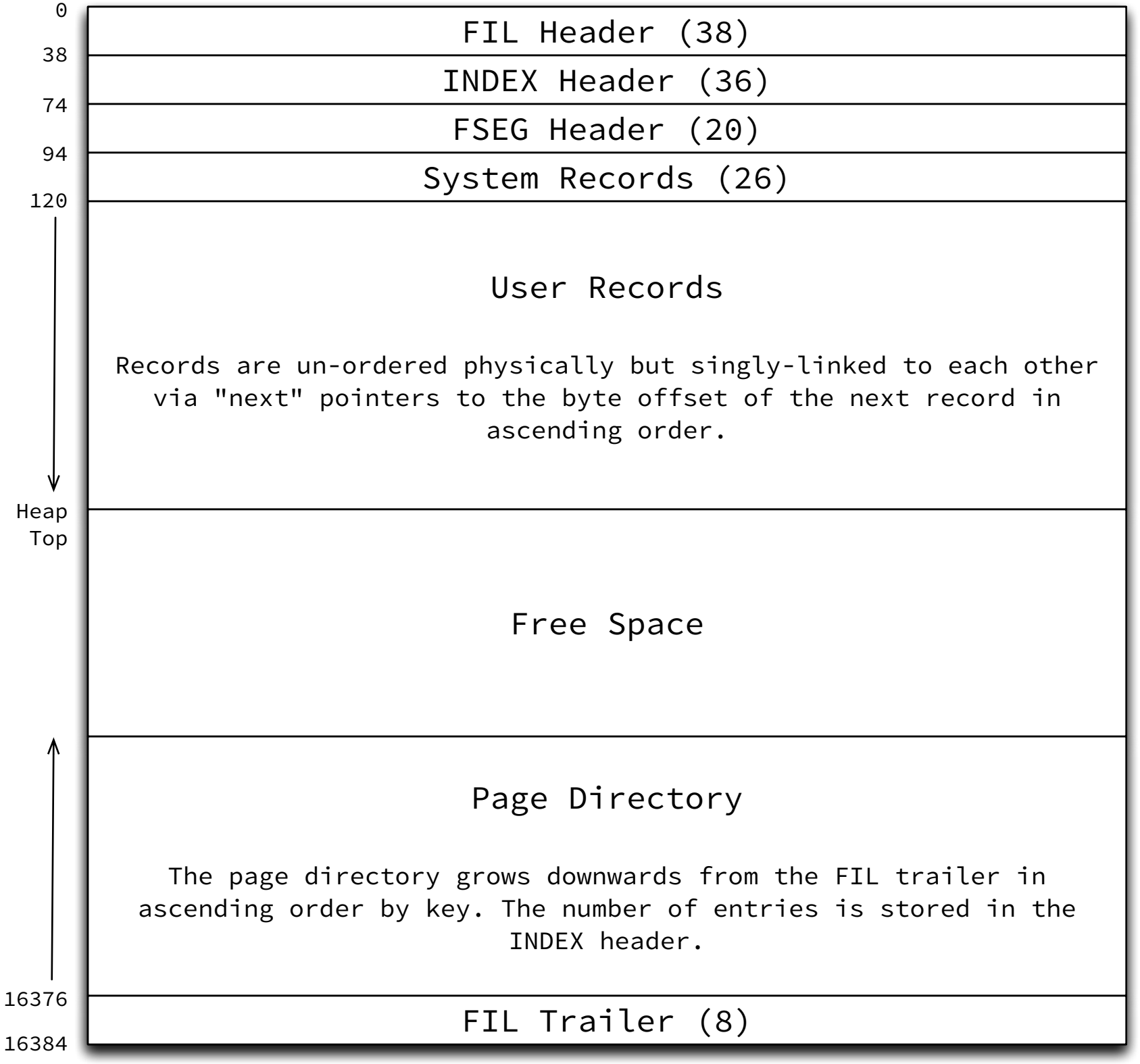
# INODE Overview



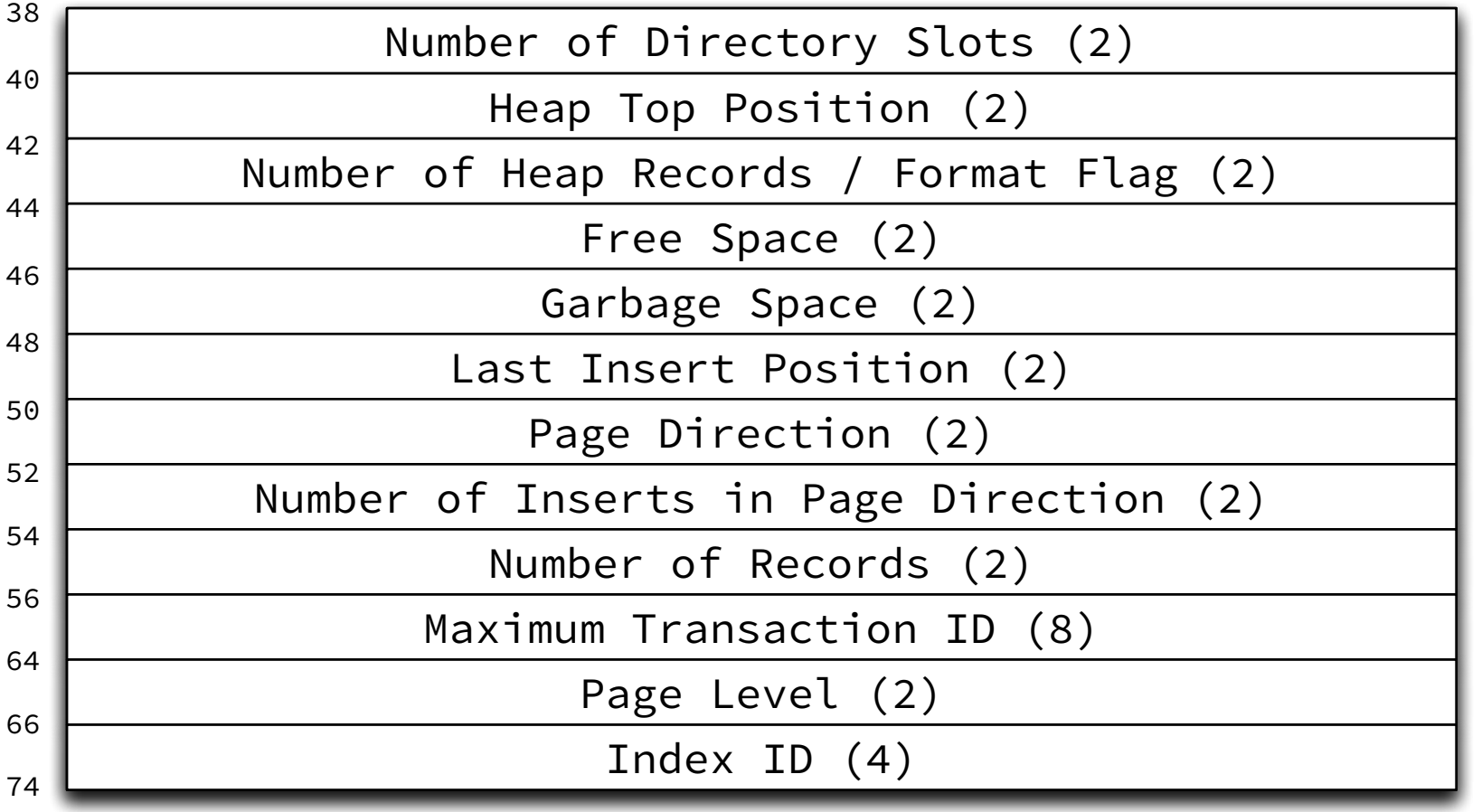
# INODE Entry


N
FSEG ID (8)
N+8
Number of used pages in "NOT_FULL" list (4)
N+12
List base node for "FREE" list (16)
N+28
List base node for "NOT_FULL" list (16)
N+44
List base node for "FULL" list (16)
N+60
Magic Number = 97937874 (4)
N+64
Fragment Array Entry 0 (4)
N+68
...
N+188
Fragment Array Entry 31 (4)
N+192

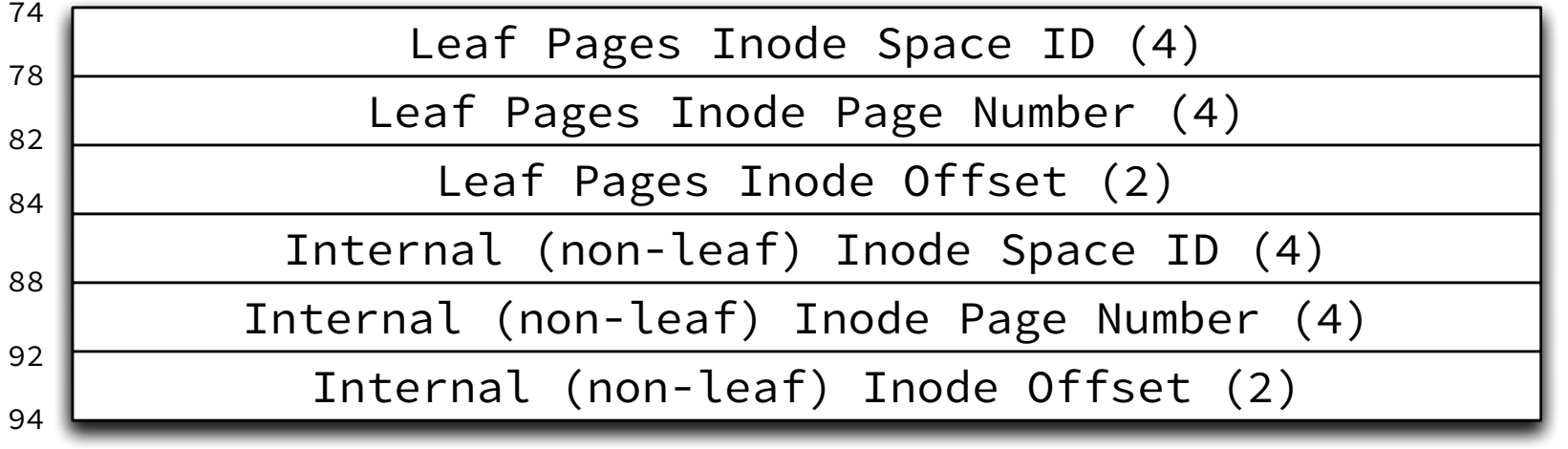
# INDEX Overview



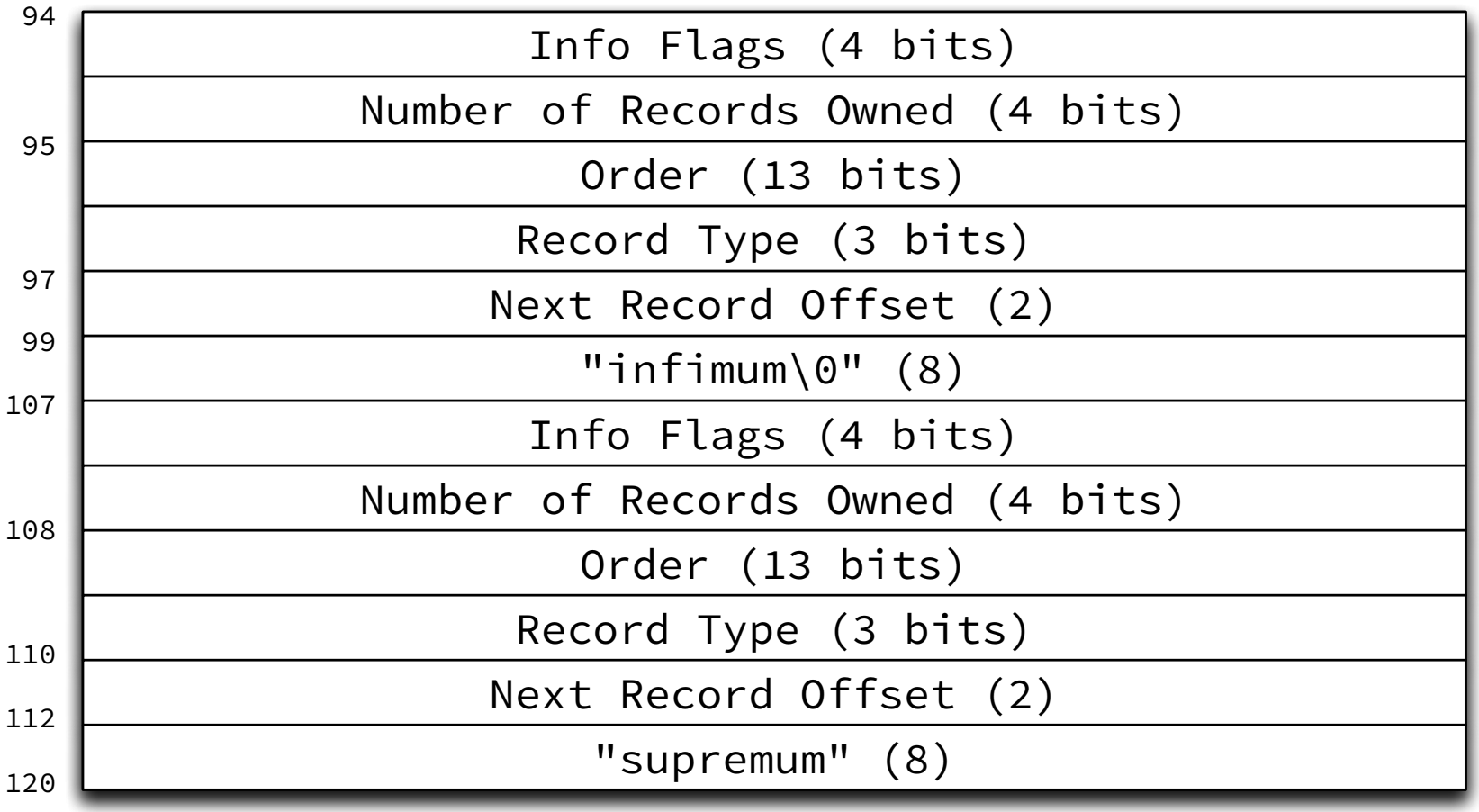
# INDEX Header



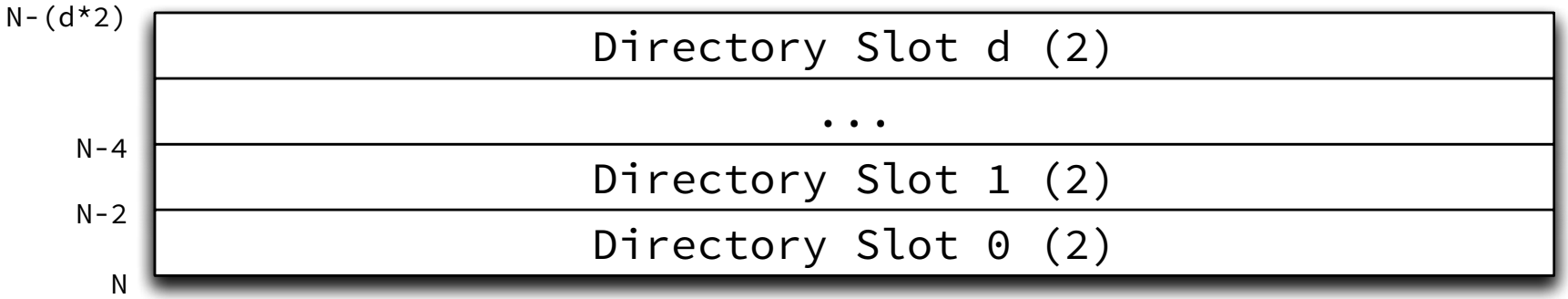
# FSEG Header


74
78
82
84
88
92
94
Leaf Pages Inode Space ID (4)
Leaf Pages Inode Page Number (4)
Leaf Pages Inode Offset (2)
Internal (non-leaf) Inode Space ID (4)
Internal (non-leaf) Inode Page Number (4)
Internal (non-leaf) Inode Offset (2)

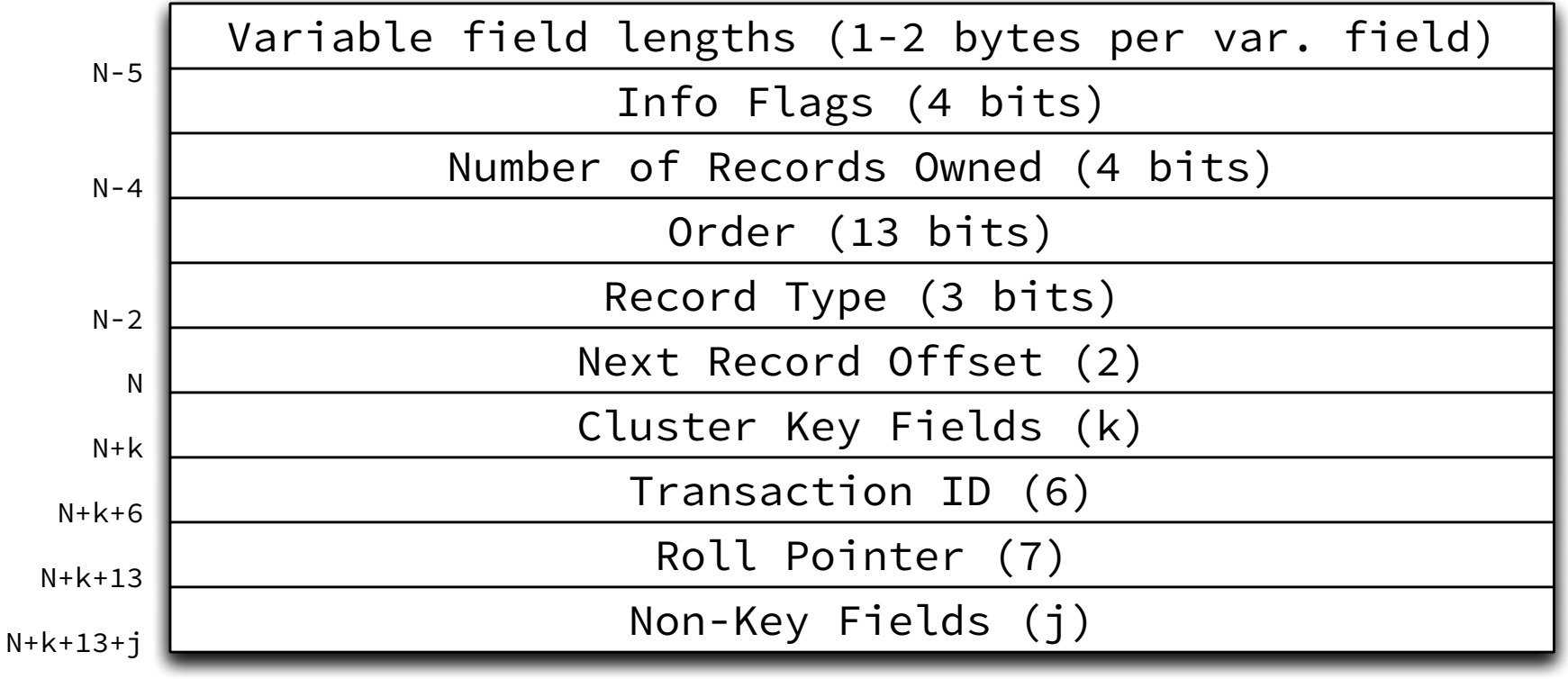
# INDEX System Records



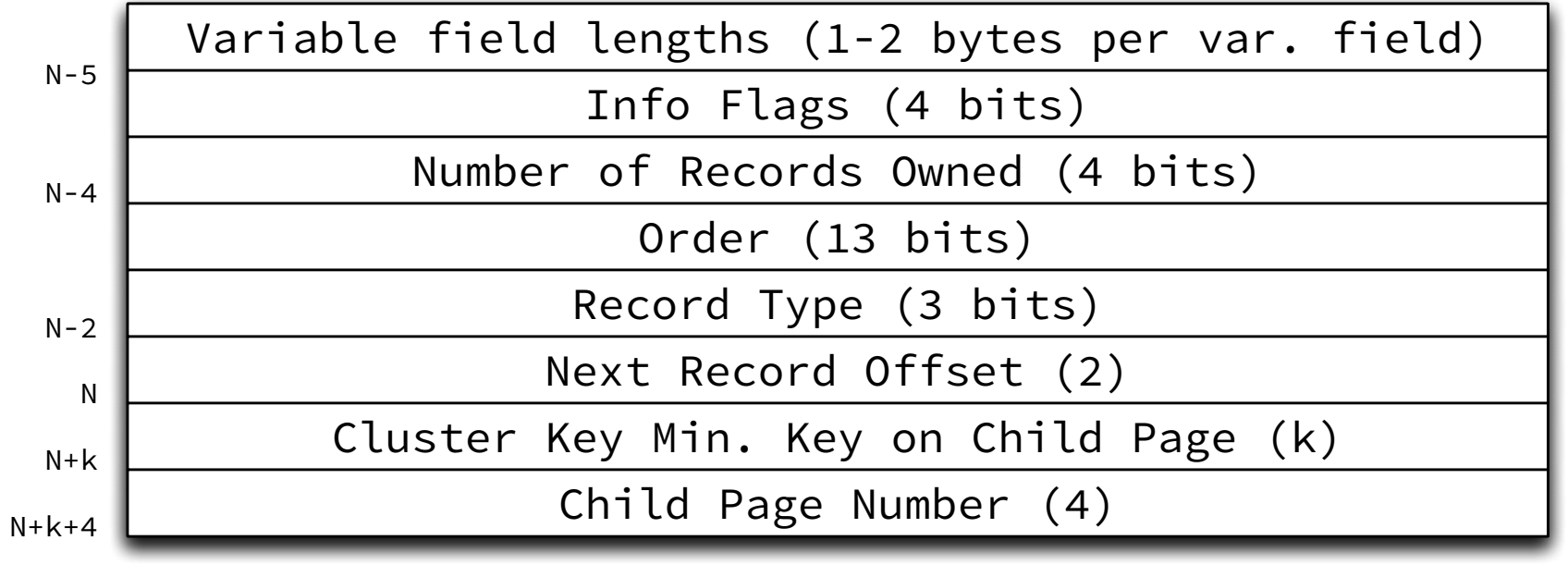
# INDEX Page Directory



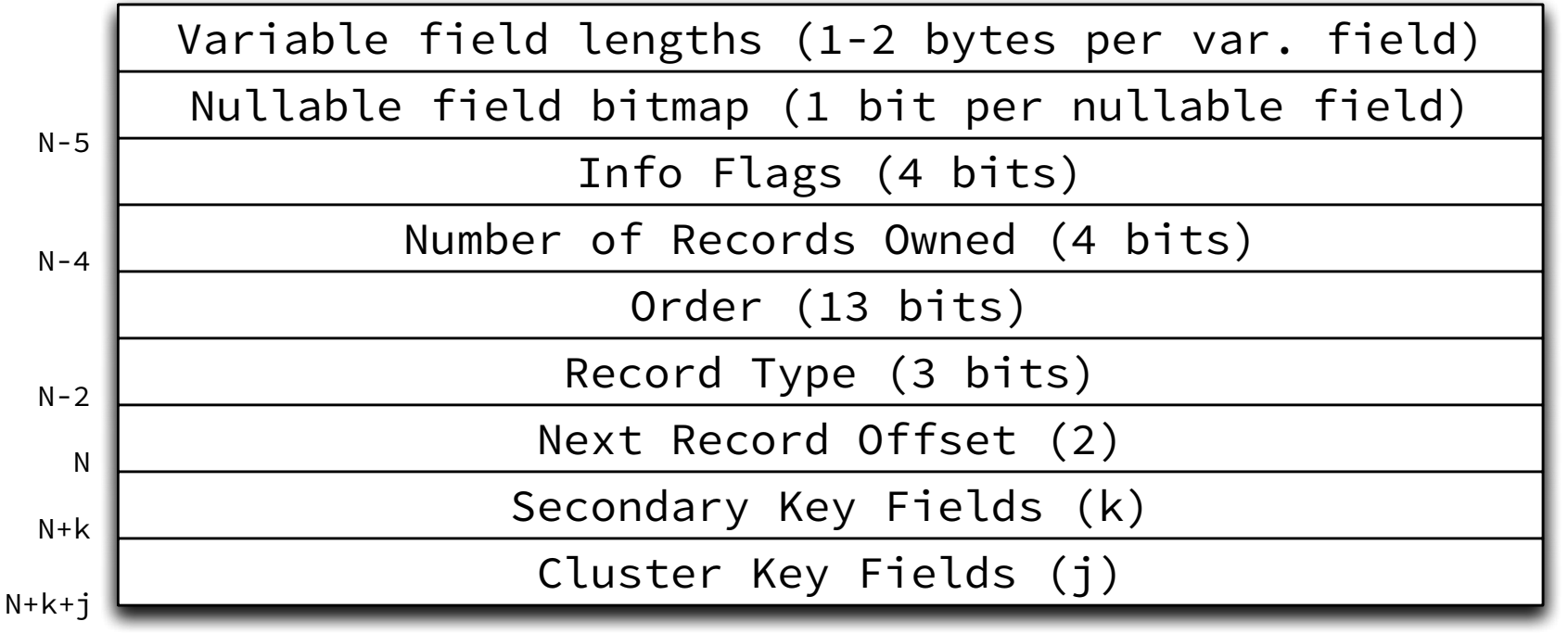
# Clustered Key Record Format
# Leaf Pages



# Clustered Key Record Format
# Node Pages



# Secondary Key Record Format
# Leaf Pages



# Secondary Key Record Format
# Node Pages