

DBF File format

A **DBF file** consists of a header record and data records. The header record defines the structure of dbf file and contains any other information related to the table. The header record starts at file position zero. Data records follow the header, in consecutive bytes, and contain the actual text of the fields.

Note: The data in dbf file starts at the position indicated in bytes 8 to 9 of the header record. **Data records begin with a delete flag byte.** If this byte is an ASCII space (0x20), the record is not deleted. If the first byte is an asterisk (0x2A), the record is deleted. The data from the fields named in the field subrecords follows the delete flag. (dbf 文件中的数据从头记录的第 8 到 9 字节指示的位置开始。数据记录以删除标志字节开始。如果这个字节是一个 ASCII 空格 (0x20)，则记录不会被删除。如果第一个字节是星号 (0x2A)，则记录被删除。来自字段的子记录中命名的字段的数据遵循删除标志。)

The length of a record, in bytes, is determined by summing the defined lengths of all fields. **Integers in dbf files are stored with the least significant byte first** (little-endian). (记录的长度 (以字节为单位) 是通过将所有字段的定义长度相加来确定的。dbf 文件中的整数首先存储最低有效字节。)

DBF File Header

Byte offset	Description
0	DBF File type:
	0x02 FoxBASE
	0x03 FoxBASE+/Dbase III plus, no memo
	0x30 Visual FoxPro
	0x31 Visual FoxPro, autoincrement enabled
	0x32 Visual FoxPro with field type Varchar or Varbinary
	0x43 dBASE IV SQL table files, no memo
	0x63 dBASE IV SQL system files, no memo
	0x83 FoxBASE+/dBASE III PLUS, with memo
	0x8B dBASE IV with memo
	0xCB dBASE IV SQL table files, with memo
	0xF5 FoxPro 2.x (or earlier) with memo
	0xE5 HiPer-Six format with SMT memo file
	0xFB FoxBASE

1 - 3	Last update (YYMMDD)
4 - 7	Number of records in file
8 - 9	Position of first data record
10 - 11	Length of one data record, including delete flag
12 - 27	Reserved
	Table flags:
	0x01 file has a structural .cdx
	0x02 file has a Memo field
28	0x04 file is a database (.dbc)
	This byte can contain the sum of any of the above values. For example, the value 0x03 indicates the table has a structural .cdx and a Memo field.
29	Code page mark
30 - 31	Reserved, contains 0x00
	Field subrecords
32 - n	The number of fields determines the number of field subrecords. One field subrecord exists for each field in the table.
n+1	Header record terminator (0x0D)
n+2 to n+264	Visual Foxpro only: A 263-byte range that contains the backlink, which is the relative path of an associated database (.dbc) file, information. If the first byte is 0x00, the file is not associated with a database. Therefore, database files always contain 0x00.

Field Subrecords Structure

Byte offset	Description
0 - 10	Field name with a maximum of 10 characters. If less than 10, it is padded with null characters (0x00).
	Field type:
	C - Character
	Y - Currency (Visual Foxpro)
	N - Numeric
	F - Float
11	D - Date
	T - DateTime (Visual Foxpro)
	B - Double (Visual Foxpro)
	I - Integer (Visual Foxpro)
	L - Logical
	M - Memo
	G - General

	C	- Character (binary)
	M	- Memo (binary)
	P	- Picture
	+	- Autoincrement (dBase Level 7)
	O	- Double (dBase Level 7)
	@	- Timestamp (dBase Level 7)
	V	- Varchar type (Visual Foxpro, character field with variable size, real size in the last byte of field)
12 - 15	Displacement of field in record	
16	Length of field (in bytes)	
17	Number of decimal places	
	Field flags:	
	0x01	System Column (not visible to user)
	0x02	Column can store null values
18	0x04	Binary column (for CHAR and MEMO only)
	0x06	(0x02+0x04) When a field is NULL and binary (Integer, Currency, and Character/Memo fields)
	0x0C	Column is autoincrementing
19 - 22	Value of autoincrement Next value	
23	Value of autoincrement Step value	
24 - 31	Reserved	

Limitations for dBase III format

Maximum number of fields: 128

Maximum length of Character field: 254