

The memory space for a particular set of buffers is allocated when the pool is created; once a pool has been allocated, there is no way to increase the number of buffers in the pool or to change the buffer size.

Each buffer pool is identified by an integer, known as a *pool identifier* or *buffer pool ID*. Like other IDs in Xinu, a buffer pool ID is used as an index into the buffer pool table, *buftab*. Once a pool has been created, a process uses the pool ID whenever it requests a buffer from a pool or releases a previously allocated buffer back to a pool. Requests to allocate or release a buffer from a pool do not need to specify the length of a buffer because the size of buffers is fixed when the pool is created.

The data structure used to hold information about buffer pools consists of a single table. Each entry in the table holds a buffer size, a semaphore ID, and a pointer to a linked list of buffers for the pool. Pertinent declarations can be found in file *bufpool.h*:

```
/* bufpool.h */

#ifndef NBPOOLS
#define NBPOOLS 20           /* Maximum number of buffer pools */
#endif

#ifndef BP_MAXB
#define BP_MAXB 8192         /* Maximum buffer size in bytes */
#endif

#define BP_MINB 8            /* Minimum buffer size in bytes */
#ifndef BP_MAXN
#define BP_MAXN 2048         /* Maximum number of buffers in a pool */
#endif

struct bpentry {           /* Description of a single buffer pool */
    struct bpentry *bpnext; /* pointer to next free buffer */
    sid32 bpsem;          /* semaphore that counts buffers */
                           /* currently available in the pool */
    uint32 bpsize;         /* size of buffers in this pool */
};

extern struct bpentry buftab[]; /* Buffer pool table */
extern bpid32 nbpools;        /* current number of allocated pools */
```

Structure *bpentry* defines the contents of an entry in the buffer pool table, *buftab*. The buffers for a given pool are linked into a list, with field *bpnext* pointing to the first buffer on the list. Semaphore *bpsem* controls allocation from the pool, and integer *bpsize* gives the length of buffers in the pool.