**Design:**

In the fs.h of xv6, we can find there are 12 NDIRECT and 1 NINDIRECT pointers to the file, and this space can be used to store the small data directly in small files. The files smaller than 13 \* 4 = 52 bytes can be stored directly in the inode itself. We add O\_SMALL and T\_SMALLFILE in fnctl.h and stat.h for the small file. In the sysfile.h modify the create() and sys\_open() function to create a small file when the open mode is O\_SMALL. In the fs.c of xv6, we modify the readi() and writei() function to implement the write and read of small file. When writing data into the small file, check data size if it can fit into the inode, otherwise throw an error. When reading data from the small file, read from the inode.

**The files modified**:

fcntl.h: Add O\_SMALL flag for small file.

stat.h: Define T\_SMALLFILE for small file type.

sysfile.c: Modify the create () function to create inode for small file, modify the open () funtion to create a small file.

Fs.c: Modify the readi () function when the file type we read is small file, we read the data directly from the inode.

Modify the writei () function when the file type we write to is small file, we write the data to inode addr space which previously point to the data block.