File 1:

Modified Filename: syscall.h

Original Filename: originalsyscall.h

Command: diff -uw syscall.h originalsyscall.h

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw syscall.h originalsyscall.h
--- syscall.h    2017-11-28 11:35:10.000000000 -0500
+++ originalsyscall.h    2017-11-28 21:03:08.681094000 -0500
@@ -20,4 +20,3 @@
 #define SYS_link    19
 #define SYS_mkdir   20
 #define SYS_close   21
-#define SYS_lseek   22
user@cs3224:~/6.828/changes$
```

File 2:

Modified Filename: defs.h

Original Filename: originaldefs.h

Command: diff -uw defs.h originaldefs.h

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw defs.h originaldefs.h
--- defs.h       2017-11-28 11:24:36.000000000 -0500
+++ originaldefs.h       2017-11-28 21:03:08.677094000 -0500
@@ -186,8 +186,5 @@
 int            copyout(pde_t*, uint, void*, uint);
 void           clearpteu(pde_t *pgdir, char *uva);

-//sysfile.c
-int lseek(int, int); // added for pa4
-
 // number of elements in fixed-size array
 #define NELEM(x) (sizeof(x)/sizeof((x)[0]))
user@cs3224:~/6.828/changes$
```
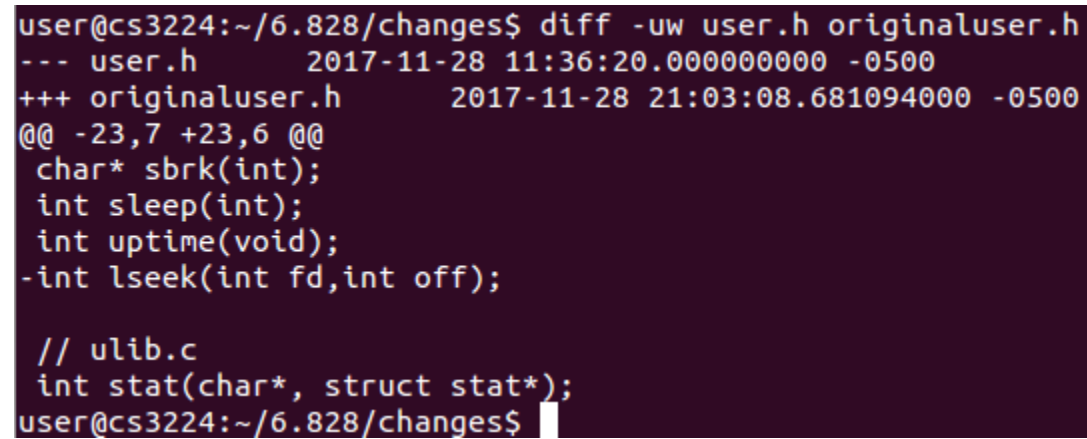
File 3:

Modified Filename: user.h

Original Filename: originaluser.h

Command: diff -uw user.h originaluser.h

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw user.h originaluser.h
--- user.h       2017-11-28 11:36:20.000000000 -0500
+++ originaluser.h        2017-11-28 21:03:08.681094000 -0500
@@ -23,7 +23,6 @@
 char* sbrk(int);
 int sleep(int);
 int uptime(void);
-int lseek(int fd,int off);

 // ulib.c
 int stat(char*, struct stat*);
user@cs3224:~/6.828/changes$
```

File 4:

Modified Filename: fs.c

Original Filename: originalfs.c

Command: diff -uw fs.c **originalfs.c**

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw fs.c originalfs.c
--- fs.c          2017-11-28 20:24:24.181021145 -0500
+++ originalfs.c          2017-11-28 21:03:08.681094000 -0500
@@ -22,9 +22,6 @@
 #include "file.h"

 #define min(a, b) ((a) < (b) ? (a) : (b))
-#define FIRST_THREE_BYTES(p)  (p>>8)

-#define LAST_EIGHT_BITS(p) (p & 0xFF)
-#define COMBINE_ADD_TO_LEN(p,k)   ((p<<8)+(0xFF & k))
 static void itrunc(struct inode*);
 // there should be one superblock per disk device, but we run with
 // only one device
@@ -378,32 +375,7 @@
 {
   uint addr, *a;
   struct buf *bp;
-  if(ip->type==T_EXTENT){  // checking type of the file
-    int k=0; // initializing variable k
-    //if it already exist, e.g. for read operations
-    for(k=0;k<(NDIRECT/2);k++){ // run through the length of the pointers here
ndirect represent 12
-      if(ip->addrs[k]==0) // if the address is zero
-          break;
-      if((ip->addrs[k+NDIRECT/2]+LAST_EIGHT_BITS(ip->addrs[k]))>bn && ip->addrs
[k+NDIRECT/2]<=bn ) // this condition corresponds to the neighbouring block chec
k.
-          return FIRST_THREE_BYTES(ip->addrs[k])+(bn- ip->addrs[k+NDIRECT/2]);
-      }
-    if(k==(NDIRECT/2)) // check for not allowing to allocate more extents for t
he file
-      panic("bmap: You can't create more extents for the given file");
```

```
-    uint blkadd= balloc(ip->dev); // allocate block using the device number as p
arameter.
-    //the below condition is to increment the extents of the file.
-    if(LAST_EIGHT_BITS(ip->addrs[k])<255 && (FIRST_THREE_BYTES(ip->addrs[k])+LAS
T_EIGHT_BITS(ip->addrs[k]))==blkadd)
-       ip->addrs[k]+=1;
-    // the below condition is useful to add new extents to the given file.
-    else{

-     ip->addrs[k]=COMBINE_ADD_TO_LEN(blkadd, 1); //address of 32bit combining fi
rst three bytes of block address and 1 byte of length as address.
-     ip->addrs[k+NDIRECT/2]=bn;
-    }
-    return blkadd; // return the address corresponding to the block.

-  }// end of the extent type file conditions.
-  else{
   if(bn < NDIRECT){
     if((addr = ip->addrs[bn]) == 0)
       ip->addrs[bn] = addr = balloc(ip->dev);
@@ -424,7 +396,7 @@
     brelse(bp);
     return addr;
   }
-}
+
   panic("bmap: out of range");
 }

@@ -439,22 +411,14 @@
   int i, j;
```

```diff
@@ -439,22 +411,14 @@
   int i, j;
   struct buf *bp;
   uint *a;
- if(ip->type==T_EXTENT){ //file check for extent type.
-    for(i=0;i<NDIRECT/2;i++){ // run through the address pointers of the inode.
-       for(j=0;j<LAST_EIGHT_BITS(ip->addrs[i]);j++){ //run through the last eigh
t bits of the inode address.
-          bfree(ip->dev,FIRST_THREE_BYTES(ip->addrs[i])+j*BSIZE); //freeing the
 memory.
-       }
-    ip->addrs[i]=0; // setting address of the inode to zero.
-    ip->addrs[i+NDIRECT/2]=0;
-    }
- }else{
+
   for(i = 0; i < NDIRECT; i++){
     if(ip->addrs[i]){
        bfree(ip->dev, ip->addrs[i]);
        ip->addrs[i] = 0;
     }
   }
-}
+
   if(ip->addrs[NDIRECT]){
     bp = bread(ip->dev, ip->addrs[NDIRECT]);
     a = (uint*)bp->data;
@@ -481,26 +445,8 @@
   st->type = ip->type;
   st->nlink = ip->nlink;
   st->size = ip->size;
- if(ip->type==T_EXTENT){
-   int i;
-   cprintf("Details of extent based file:");
```

```
-      cprintf("Details of extent based file:");
-      for(i=0;i<NDIRECT/2;i++){
-        if(ip->addrs[i]!=0)
-          {
-            uint addr = ip->addrs[i] >> 8;
-            uint offset = ip->addrs[i+1];
-            uint length = ip->addrs[i] & 0xFF;
-            cprintf("\nbase addr: %x\toffset: %d\tlength: %d\t",
-             addr,
-             offset,
-             length);
-          }
-        }
-
-}
}

-
 //PAGEBREAK!
 // Read data from inode.
 // Caller must hold ip->lock.
@@ -510,8 +456,6 @@
   uint tot, m;
   struct buf *bp;

-
-
   if(ip->type == T_DEV){
     if(ip->major < 0 || ip->major >= NDEV || !devsw[ip->major].read)
       return -1;
@@ -541,7 +485,6 @@
   uint tot, m;
   struct buf *bp;
```

```
-
 //PAGEBREAK!
 // Read data from inode.
 // Caller must hold ip->lock.
@@ -510,8 +456,6 @@
   uint tot, m;
   struct buf *bp;


-
-
   if(ip->type == T_DEV){
     if(ip->major < 0 || ip->major >= NDEV || !devsw[ip->major].read)
       return -1;
@@ -541,7 +485,6 @@
   uint tot, m;
   struct buf *bp;


-
   if(ip->type == T_DEV){
     if(ip->major < 0 || ip->major >= NDEV || !devsw[ip->major].write)
       return -1;
user@cs3224:~/6.828/changes$
```

File 5:

Modified Filename: usys.S

Original Filename: originalusys.S

Command: diff -uw usys.S originalusys.S

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw usys.S originalusys.S
--- usys.S          2017-11-28 11:36:32.000000000 -0500
+++ originalusys.S        2017-11-28 21:03:08.681094000 -0500
@@ -29,5 +29,3 @@
 SYSCALL(sbrk)
 SYSCALL(sleep)
 SYSCALL(uptime)
-SYSCALL(lseek)
-
user@cs3224:~/6.828/changes$
```

File 6:

Modified Filename: syscall.c

Original Filename: originalsyscall.c

Command: diff -uw syscall.c originalsyscall.c

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw syscall.c originalsyscall.c
--- syscall.c    2017-11-28 11:35:02.000000000 -0500
+++ originalsyscall.c    2017-11-28 21:03:08.681094000 -0500
@@ -103,7 +103,6 @@
 extern int sys_wait(void);
 extern int sys_write(void);
 extern int sys_uptime(void);
-extern int sys_lseek(void);

 static int (*syscalls[])(void) = {
 [SYS_fork]    sys_fork,
@@ -127,7 +126,6 @@
 [SYS_link]    sys_link,
 [SYS_mkdir]   sys_mkdir,
 [SYS_close]   sys_close,
-[SYS_lseek]   sys_lseek,
 };

 void
user@cs3224:~/6.828/changes$
```

File 7:

Modified Filename: fs.h

Original Filename: originalfs.h

Command: diff -uw fs.h originalfs.h

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw fs.h originalfs.h
--- fs.h        2017-11-28 16:22:41.207094102 -0500
+++ originalfs.h        2017-11-28 21:03:08.681094000 -0500
@@ -33,7 +33,6 @@
   short nlink;              // Number of links to inode in file system
   uint size;                // Size of file (bytes)
   uint addrs[NDIRECT+1];    // Data block addresses
-
 };

 // Inodes per block.
user@cs3224:~/6.828/changes$
```

File 8:

Modified Filename: Makefile

Original Filename: originalMakefile

Command: diff -uw Makefile originalMakefile

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw Makefile originalMakefile
--- Makefile    2017-11-28 18:59:40.844482193 -0500
+++ originalMakefile    2017-11-28 21:03:08.677094000 -0500
@@ -28,7 +28,6 @@
        vectors.o\
        vm.o\

-
 # Cross-compiling (e.g., on Mac OS X)
 # TOOLPREFIX = i386-jos-elf

@@ -175,9 +174,6 @@
        _usertests\
        _wc\
        _zombie\
-       _extent\
-       _lseek\
-       _stat\

 fs.img: mkfs README $(UPROGS)
        ./mkfs fs.img README $(UPROGS)
@@ -246,7 +242,7 @@

 EXTRA=\
        mkfs.c ulib.c user.h cat.c echo.c forktest.c grep.c kill.c\
-       ln.c ls.c mkdir.c rm.c stressfs.c usertests.c wc.c  extent.c lseek.c stat.c zombie.c\
+       ln.c ls.c mkdir.c rm.c stressfs.c usertests.c wc.c zombie.c\
        printf.c umalloc.c\
        README dot-bochsrc *.pl toc.* runoff runoff1 runoff.list\
        .gdbinit.tmpl gdbutil\
user@cs3224:~/6.828/changes$
```

File 9:

Modified Filename: ls.c

Original Filename: originalls.c

Command: diff -uw ls.c originalls.c

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw ls.c originalls.c
--- ls.c        2017-11-28 11:32:12.000000000 -0500
+++ originalls.c        2017-11-28 21:03:08.681094000 -0500
@@ -45,9 +45,6 @@
   case T_FILE:
     printf(1, "%s %d %d %d\n", fmtname(path), st.type, st.ino, st.size);
     break;
-   case T_EXTENT:
-     printf(1, "%s %d %d %d\n", fmtname(path), st.type, st.ino, st.size);
-     break;

   case T_DIR:
     if(strlen(path) + 1 + DIRSIZ + 1 > sizeof buf){
user@cs3224:~/6.828/changes$
```

File 10:

Modified Filename: file.h

Original Filename: originalfile.h

Command: diff -uw file.h originalfile.h

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw file.h originalfile.h
--- file.h        2017-11-28 11:29:54.000000000 -0500
+++ originalfile.h        2017-11-28 21:03:08.677094000 -0500
@@ -23,7 +23,6 @@
   short nlink;
   uint size;
   uint addrs[NDIRECT+1];
-
 };

 // table mapping major device number to
user@cs3224:~/6.828/changes$
```

File 11:

Modified Filename: fcntl.h

Original Filename: originalfcntl.h

Command: diff -uw fcntl.h originalfcntl.h

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw fcntl.h originalfcntl.h
--- fcntl.h     2017-11-28 11:25:20.000000000 -0500
+++ originalfcntl.h      2017-11-28 21:03:08.677094000 -0500
@@ -2,4 +2,3 @@
 #define O_WRONLY  0x001
 #define O_RDWR    0x002
 #define O_CREATE  0x200
-#define O_EXTENT  0x004                        // added for pa4
user@cs3224:~/6.828/changes$
```

File 12:

Modified Filename: sysfile.c

Original Filename: originalsysfile.c

Command: diff -uw sysfile.c originalsysfile.c

Screenshot:

```
user@cs3224:~/6.828/changes$ diff -uw sysfile.c originalsysfile.c
--- sysfile.c    2017-11-28 21:39:55.729163489 -0500
+++ originalsysfile.c    2017-11-28 21:03:08.681094000 -0500
@@ -85,13 +85,9 @@
   int n;
   char *p;

-
   if(argfd(0, 0, &f) < 0 || argint(2, &n) < 0 || argptr(1, &p, n) < 0)
     return -1;
-
   return filewrite(f, p, n);
-
-
 }

 int
@@ -110,17 +106,12 @@
 int
 sys_fstat(void)
 {
-
   struct file *f;
   struct stat *st;

   if(argfd(0, 0, &f) < 0 || argptr(1, (void*)&st, sizeof(*st)) < 0)
     return -1;
-
 return filestat(f, st);
```

```
-
-
-
-
 }

 // Create the path new as a link to the same inode as old.
@@ -261,7 +252,7 @@
   if((ip = dirlookup(dp, name, &off)) != 0){
     iunlockput(dp);
     ilock(ip);
-    if((type == T_FILE && ip->type == T_FILE) || (type == T_EXTENT && ip->type == T_EXTENT) )
+    if(type == T_FILE && ip->type == T_FILE)
       return ip;
     iunlockput(ip);
     return 0;
@@ -304,23 +295,14 @@
     return -1;

   begin_op();
+
   if(omode & O_CREATE){
-    if(omode & O_EXTENT){
-      ip = create(path, T_EXTENT, 0, 0);
-      if(ip == 0){
-        end_op();
-        return -1;
-      }
-    }
-    else{
      ip = create(path, T_FILE, 0, 0);
      if(ip == 0){
        end_op();
```

```
          ip = create(path, T_FILE, 0, 0);
          if(ip == 0){
            end_op();
            return -1;
          }
-     }
-   }
-   else {
+   } else {
        if((ip = namei(path)) == 0){
          end_op();
          return -1;
@@ -333,7 +315,6 @@
        }
    }


-
    if((f = filealloc()) == 0 || (fd = fdalloc(f)) < 0){
      if(f)
        fileclose(f);
@@ -462,17 +443,3 @@
    fd[1] = fd1;
    return 0;
  }
-int sys_lseek(void){
-   struct file *f;
-   int n;
-   if(argfd(0, 0, &f) < 0 || argint(1, &n) < 0 )
-     return -1;
-   if(f->type==FD_INODE){ // check fie type as fd inode.
-     ilock(f->ip);// lock to perform operation automically.
-   f->off=n; // setting the offset.
-   f->ip->size=n;// setting the size.
-   iunlock(f->ip);//unlocking.so other process can use the lock.
-   return n;
```

```
-int sys_lseek(void){
-   struct file *f;
-   int n;
-   if(argfd(0, 0, &f) < 0 || argint(1, &n) < 0 )
-     return -1;
-   if(f->type==FD_INODE){ // check fie type as fd inode.
-     ilock(f->ip);// lock to perform operation automically.
-   f->off=n; // setting the offset.
-   f->ip->size=n;// setting the size.
-   iunlock(f->ip);//unlocking.so other process can use the lock.
-   return n;
-}
-   return -1;
-}
user@cs3224:~/6.828/changes$
```

Extra Files added for Implementation of lseek() systemcall and Testing:

- Extent.c
- Stat.c
- Lseek.c