**Modifications to the Original Shell**

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This document describes the changes made to each file of the original shell (https://github. com/mit-pdos/xv6-public) in order to add extent-based files and the lseek() syscall to xv6. Note: This document only presents required details & explanations where needed. For full descriptions on specific entries, refer to appropriate locations in the shell files (line numbers in red).

***fcntl.h***

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| --- |
| Add definition for O\_EXTENT flag (5) |

***stat.h***

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| --- |
| Add definition for Extent type file (4)  Add definition for max number of Extents (equal to NDIRECT) (6)  Add variables for Extent addresses & lengths in stat struct (14-15) |

***sysfile.c***

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| --- |
| Add check for Extent file type in if statement (in create() function) (254)  Check omode for O\_EXTENT file type & ∴ set type of inode (in sys\_open() function) (299)  Add implementation of lseek with description and comments (446-467) |

***syscall.h***

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| --- |
| Add syscall #22→ SYS\_lseek (23) |

***syscall.c***

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| --- |
| Extern function prototypes for sys\_lseek (106)  Map syscall number to function (130) |

***usys.S***

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| --- |
| Add entries for lseek (32) |

***user.h***

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| --- |
| Add user definition for lseek (26) |

***fs.h***

|  |
| --- |
| Add definition max length for an Extent (58) |

***fs.c***

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| --- |
| *bmap()* → Check if the file is extent-based, and if it is, find the nth block by counting the number of blocks in each extent, and return the appropriate address. If nth block doesn't exist, create a new block & return its address. (377-404)  *itrunc()* → Check if the file is extent-based, and if it is, deallocate all allocated blocks in every extent. (442-450)  *stati()* → Dump information about extents in extent address & length variables. (478-483) |

***test.c***

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| Add a test driver to verify the functionality of all parts of this assignment. |

***Makefile***

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| Include test.c in the make process. (184,254) |