**Project 1: Report**

1. Command-Line Arguments: It takes two command-line arguments, the source file that will be copied, and the destination file where the content of the source file will be written to.
2. Source File Check: Before going to the file operations, we check to see if the source file exists using access(). If the file does not exist, the program exits and prints an error message.
3. Pipe Creation: This parent process will write the content of the source file to the pipe and the child process will read from the pipe and then write the content into the destination file.

* It creates two file descriptors, read end and write end
* If this process fails then an error message is outputted

1. Fork: We use a fork() to create a child process. This makes two processes execute at the same time.

* If the process fails then an error message is outputted

1. Parent Process:

* The parent process opens the source file in read-only mode (O\_RDONLY)
* It reads the file in one byte at a time until the end of the file.
* The parent closes the write end of the pipe after finishing the file copy operation and waits for the child process to finish

1. Child Process:

* The child process opens the destination file in write-only mode (O\_WRONLY) and creates it if it does not exist (O\_CREAT)
* It reads data from the pipe one byte at a time until the end of the pipe.
* When this is done, the child process closes the destination file and the read end of the pipe

1. Error Handling:

* Invalid number of command-line arguments
* Source file does not exist
* Pipe creation failure
* Fork failure
* Input/Output errors when reading or writing to files

1. Closing File Descriptors: After the file operations are complete, all file descriptors are closed
2. Success: If the file copy program is successful, we print a success message indicating that the file was copied from the source to the destination

**Video:**

<https://youtu.be/artXpE2Bj-Q>