**Assignment 1 COMP-3300 Operating System Fundamentals**

*“I confirm that I will keep the content of this assignment confidential. I confirm that I have not received any unauthorized assistance in preparing for or writing this assignment. I acknowledge that a mark of 0 may be assigned for copied work.”* + Keerthana Madhavan 104995097

I implemented this assignment using a POSIX API on a Mactintosh Laptop written in C programming language.

To begin the program, I included all the necessary header files for low-level IO and the standard io library into my .c file. I used header files such as

#<stdio.h> - To use the Input and Output.

#<stdlib.h> - Heaader files for macros

#<unistd.h> - to use the system calls

#<fcntl.h> - Used this for file descriptors

# <errno.h> - To send out errors: if a file does not exist, or already exists, or can’t be opened

#<string.h> - To use type ‘char’ to store files names and buffers

#<sys/types.h> - to use data types such as ssize\_t

Then I set up the variables for file descriptors, and input and output variables to store the information entered by the user.

Then I acquire the input and output files names from the user and store it in their respective variables. After each input I set the file descriptor to store the information of the files using:

\*\*\*\* NOTE: The input and output files are stored in a array, since it is the is read in using the system read calls.

fd = open(&inputFile, O\_RDONLY);

fd1 = open(&outputFile, O\_CREAT | O\_EXCL | O\_CREAT | 0777);

After all the input processing and the set-up of file descriptors. I check whether the input file exists or not, if it does not the program is terminated. Also, check if the output file exists, if it does then the program is terminated.

If the file descriptors values are greater than 0, then I use a while loop to copy the contents of the input file to the output file. I terminate the while loop when the file\_size of the input file is less than 0.

Finally, I ended off with a “all contents copied” message and closed the file descriptors and ended the program.

\*\*\* All Script File highlights the process and implementation of the program.

* I have highlighted the parts where
  + The files contents gets copied
  + The input file does not exist
  + The output file exists already

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//COMP\_3300 Operating Systems Assignment 1

// Keerthana Madhavan

// Student No: 104995097

#include <stdio.h>

#include <stdlib.h>

#include <unistd.h>

#include <fcntl.h> //for file descriptor

#include <errno.h>

#include <string.h>

#include <sys/types.h>

#include <sys/stat.h>

extern int errno;

int main(int argc, char \*argv[])

{

int fd, fd1; // file descriptors for

char inputFile, outputFile;

// char buf[BUFFER\_SIZE];

char c[1];

int file\_size;

int errnum;

char inError[] = "Error: Input file doesn't exist";

char outError[] = "Error: Output file already exists";

char endNormally[] = "Process Copy Complete: Terminating Normally\n";

char inputPrompt[] = "Input File: ";

write(STDOUT\_FILENO, inputPrompt, sizeof(inputPrompt)/sizeof(char));

char buf1[128];

int inputCharacters = read(0, buf1, sizeof(buf1)/sizeof(char)-1); // you read from stdin

buf1[inputCharacters-1] = '\0'; // null terminate the input file

char outputPrompt[] = "Output File: ";

write(STDOUT\_FILENO, outputPrompt, sizeof(outputPrompt)/sizeof(char));

char buf2[128];

int outputCharacters = read(0, buf2, sizeof(buf2)/sizeof(char)-1); // read the output file from the stdin

buf2[outputCharacters - 1] = '\0';

//get the input file name

// printf("Enter the input file name: ");

// scanf("%s", &inputFile);

//set up file descriptors for input file

if( ( fd = open(buf1, O\_RDONLY)) < 0)

{

write(STDOUT\_FILENO, inError, sizeof(inError)/sizeof(char));

return -1;

}

//get the output file name, through the terminal

if((fd1 = open(buf2, O\_CREAT | O\_EXCL | O\_WRONLY , 0777)) < 0)

{

write(STDOUT\_FILENO, outError, sizeof(outError)/sizeof(char));

return -1;

}

while( read(fd, c, 1)>0)

{

// write(1, &buf, file\_size);

write(fd1, c, 1);

// printError(strerror(errno));

}

close(fd);

close(fd1);

printf("all the contents have been copied");

return 0;

}

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Input File: out.c

Output File: new.x c

all the contents have been copied[1m[7m%[27m[1m[0m

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Assign1\_ShortReport.pdf assn1.c new.c

a.out implementation.txt out.c

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Candidate Number: 002821-0025

amounts of data thefts and database shutdowns. Historically the data theft of President Obama‚Äôs Twitter account illegal access of confidential documents have presented serious concern over cloud networking credibility and for data failure it was the Amazon Cloud Loss in 2011, both of these issues will be later discussed in the essay.

My research question is important because it allows for exploring the future need for AI in data storage systems, on basis of current security threats and data thefts, and implications on current technology that require AI to maintain huge databases like Amazon, Microsoft, Twitter, Instagram, Snapchat and etc. This essay would, further discuss on possible problems of cloud storage, solutions for security, real life situation on data theft, and views on future development. This essay also focuses on factors contributing towards the implementation of AI in Data Storage Systems: Data Theft and Data Failures.

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Input File: goo

Output File: same.c

Error: Input file doesn't exist[1m[7m%[27m[1m[0m

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Input File: o n out.c

Output File: new.c

Error: Output file already exists[1m[7m%[27m[1m[0m

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