

מעבדה 3 – מערכות הפעלה

מגישים:

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תרגיל 1:

קוד:

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <fcntl.h>

int main(int argc, char* argv[]){
    int firstFile, secondFile, newTextFile, charCounterFirstFile, charCountSecondFile;
    int i = 0, j = 0;
    char bufferFirstFile[256], bufferSecondFile[256];

    if (argc != 3){
        printf("The function must get 3 arguments.\n");
        exit(1);
    }

    // Open both of the files.
    firstFile = open(argv[1], O_RDONLY, 0);
    if (firstFile < 0){
        printf("First file has failed to open.\n");
        exit(1);
    }
    secondFile = open(argv[2], O_RDONLY, 0);
    if (secondFile < 0){
        printf("Second file has failed to open.\n");
        exit(1);
    }

    // Looks for a difference
    while ((charCounterFirstFile = read(firstFile, bufferFirstFile, 256)) > 0 &&
(charCountSecondFile = read(secondFile, bufferSecondFile, 256)) > 0){
        while (i < charCounterFirstFile && j < charCountSecondFile){
            if (bufferFirstFile[i] != bufferSecondFile[j]){
                printf("Different files\n");
                newTextFile = open("compare.txt", O_WRONLY | O_CREAT, 0644);
                if (newTextFile < 0){
                    printf("The new Text file has failed to open.\n");
                    exit(1);
                }
            }
        }

        // Move the file pointers backwards
```

```

        lseek(firstFile, 0, SEEK_SET);
        lseek(secondFile, 0, SEEK_SET);

        // Read each file until the end and write it in the new text file.
        while ((charCounterFirstFile = read(firstFile, bufferFirstFile,
256)) > 0){
            write(newTextFile, bufferFirstFile, charCounterFirstFile);
        }
        while ((charCountSecondFile = read(secondFile, bufferSecondFile,
256)) > 0){
            write(newTextFile, bufferSecondFile, charCountSecondFile);
        }

        close(newTextFile);
        return 0;
    }
    i++;
    j++;
}
i = 0;
j = 0;
}

// Close all of the file handlers.
close(firstFile);
close(secondFile);
printf("Identical files\n");

return 0;
}

```

קובץ :sh

```

cd ~/operatingSystems/lab3/targil1
cc compare.c -o compare
./compare a.txt b.txt

```

פלט - דומה:

```

yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil1$ cat a.txt
I am a student
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil1$ cat b.txt
I am a student
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil1$ ./compare.s
h
Identical files

```

```
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil1$ cat a.txt
I a student
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil1$ cat b.txt
I am a student
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil1$ ./compare.s
h
Different files
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil1$ cat compare
.txt
I a student
I am a student
```

תרגיל 2:

קוד:

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <fcntl.h>
#include <sys/stat.h>

int main(int argc, char* argv[]){
    int mainFile, encryptedFile, bytesRead;
    int bufferSize = atoi(argv[2]);
    char* buffer[bufferSize];

    if (argc != 4){
        printf("The function must get 4 arguments.\n");
        exit(1);
    }

    if ((mainFile = open(argv[1], O_RDONLY, 0)) < 0){
        printf("Opening the main file for reading has failed.\n");
        exit(1);
    }

    if (mkdir("./encrypted", 0700) == -1){
        printf("Making the new directory has failed\n");
        exit(1);
    }

    if ((encryptedFile = open("./encrypted/a.txt", O_RDWR | O_CREAT, 0644)) < 0){
        printf("Opening the new a.txt file in the directory \"encrypted\" has
failed.\n");
        exit(1);
    }

    while ((bytesRead = read(mainFile, buffer, bufferSize)) > 0){
        write(encryptedFile, buffer, bytesRead);
        if (bytesRead == bufferSize){
            write(encryptedFile, argv[3], strlen(argv[3]));
        }
    }
}
```

```
close(mainFile);  
close(encryptedFile);  
  
return 0;  
}
```

קובץ :sh

```
cd ~/operatingSystems/lab3/targil2  
cc createEncryptedCopy.c -o createEncryptedCopy  
./createEncryptedCopy a.txt 2 xx
```

פלט:

```
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil2$ ls  
a.txt  createEncryptedCopy  createEncryptedCopy.c  createEncryptedCopy.sh  
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil2$ ./createEncryptedCopy.sh  
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil2$ ls  
a.txt  createEncryptedCopy  createEncryptedCopy.c  createEncryptedCopy.sh  encrypted  
yuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil2$ cat encrypted/a.txt  
abxxcdxxefxxg  xxyyxxzyuval-kogan@yuval-kogan-VMware-Virtual-Platform:~/operatingSystems/lab3/targil2$
```