Programming Systems and Environments – Lab 7

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241530 % 6 = 0, so I'm assuming I should do tasks from group number 1.

Task 1 – Directories, files, random numbers

Simple task to learn how to create directories, manage parameters and generate random numbers in Bash, as well as to deal with permissions in Linux. I've used mkdir command to create directories with -p argument, which doesn't return error if directory already exists (also it can create multiple directories in path in one go, but I'm not using that feature in my script). I'm referring to first argument ($1) without checking if it's provided (instructions didn't ask for any error detection/management) and to generate random numbers, I'm using $RANDOM which returns a pseudorandom integer in the range 0 – 32767. Saving to file in Bash is actually very easy: by using > and >> operators I'm redirecting output of command "echo $RANDOM" into pipeline (file).

To change permissions of created files, I'm using "chmod" command with arguments -w (remove write access) and 777 (which adds all access flags)

Task 2 – List files with execute access in given directory

Script for that is taken from first google search result I've attached in bibliography, only slightly modified. What we're doing here is: we check every file (for loop over filenames) in given directory ($1/*) to check whether they've executable (-x) access. If so, then I print the name by using ls -l (which, alongside filename, prints access flags and more). One may change printing to simply use echo $file, so this script would be easier to incorporate into other applications.

Bibliography:

Shell Script to List Files that have Read, Write and Execute Permissions [access 25.05.2022] https://www.geeksforgeeks.org/shell-script-to-list-files-that-have-read-write-and-execute-permissions/

Random numbers in Bash [access 25.05.2022] https://tldp.org/LDP/abs/html/randomvar.html

Code for task 1:

```
#/!bin/bash
mkdir -p $1
dir1=$1"/dir1"
dir2=$1"/dir2"
mkdir -p $dir1
mkdir -p $dir2

dir1file1=$dir1"/file1"
dir1file2=$dir1"/file2"
dir1file3=$dir1"/file3"
echo $RANDOM >> $dir1file1
echo $RANDOM >> $dir1file2
echo $RANDOM >> $dir1file3
chmod -w $dir1file1
chmod -w $dir1file2
chmod 777 $dir1file3

dir2file1=$dir2"/file1"
dir2file2=$dir2"/file2"
dir2file3=$dir2"/file3"
echo $RANDOM >> $dir2file1
echo $RANDOM >> $dir2file2
echo $RANDOM >> $dir2file3
chmod -w $dir2file1
chmod -w $dir2file2
chmod 777 $dir2file3
```

Code for task 2:

```
#/!bin/bash

# loop through all files in current directory
for file in $1/*
do
        # check if it is a file
        if [ -f $file ]
        then
                # check if it has execute permission
                if [ -x $file ]
                then
                        # print the complete file name with -l option
                        ls -l $file
                fi
        fi
done
```