Mid-semester Assignment (20 points)
Advanced Linux Administration - Winter Semester 2019/2020

Prepare an executable Bash script performing the following 10 requirements (2 points each):

1. Create 4 loop devices which supplement real storage devices.
   a. Create files of 200MB size each.
2. Create software RAID1 on the first 2 loop devices and RAID0 on the other 2 loop devices.
3. Create volume group on top of 2 RAID devices.
   a. Name the volume group `FIT_vg`
4. In the volume group create 2 logical volumes of size 100MB each
   a. Name the logical volumes `FIT_lv1` and `FIT_lv2`
5. Create EXT4 filesystems on `FIT_lv1` logical volume.
6. Create XFS filesystems on `FIT_lv2` logical volume.
7. Mount `FIT_lv1` to `/mnt/test1` and `FIT_lv2` to `/mnt/test2` directories.
8. Resize filesystem on `FIT_lv1` to claim all available space in the volume group
   a. Verify using `df -h' command
9. Create 300MB file `/mnt/test1/big_file` using command `dd' command feeding it with data from `/dev/urandom` device:
   a. Create a checksum of the file `/mnt/test1/big_file` using tool `sha512sum'.
10. Emulate faulty disk replacement:
    a. Create 5th loop device representing new disk (200MB)
    b. Replace one of the RAID1 loop devices with the new loop device
    c. Verify the successful recovery of RAID using `mdadm` tool or file `/proc/mdstat.`

Instructions for submission
- Your final solution has to be uploaded to the WIS-FIT in a file named `xloginXX-fit-ili.sh`
- Script must run on a clean, default installation of Fedora30 Workstation. Install any required RPMs not present after default installation at the beginning of your script so it can run properly.
- Script must be written in a Bash.
- During evaluation of your solution script will be executed under `root` user without any additional command line options. (You can implement your own command line options, but they won't be used during evaluation of the 10 requirements.)
- Script must log (e.g. using command echo) a simple description of actions for the 10 requirements to a standard output, for example:
  - `1) Creating 4 loop devices`
    `.. creating file number 3"'`
- Script does not have to clean-up after itself, but it is recommended to use a snapshotting in your virtual machine to have a clean environment for consecutive executions of your script.

How it should look a like?