

Mid-semester Assignment (20 points)

Advanced Linux Administration - Winter Semester 2021/2022

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_1v1 and FIT_1v2
5. Create EXT4 filesystems on FIT_1v1 logical volume.
6. Create XFS filesystems on FIT_1v2 logical volume.
7. Mount FIT_1v1 to /mnt/test1 and FIT_1v2 to /mnt/test2 directories.
8. Resize filesystem on FIT_1v1 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 Fedora32 Server. 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 like?

