Exercise 19.2: Filesystem Quotas

Please Note

The subsection describing this material was marked as optional, so you may not have covered the material necessary to do this exercise.

1. Change the entry in `/etc/fstab` for your new filesystem to use user quotas (change `noexec` to `usrquota` in the entry for `/mnt/tempdir`). Then remount the filesystem.
2. Initialize quotas on the new filesystem, and then turn the quota checking system on.
3. Now set some quota limits for the normal user account: a soft limit of 500 blocks and a hard limit of 1000 blocks.
4. As the normal user, attempt to use **dd** to create some files to exceed the quota limits. Create `bigfile1` (200 blocks) and `bigfile2` (400 blocks).

   You should get a warning. Why?
5. Create `bigfile3` (600 blocks).

   You should get an error message. Why? Look closely at the file sizes.
6. Eliminate the persistent mount line you inserted in `/etc/fstab`.

Solution 19.2

1. Change `/etc/fstab` to have one of the following two lines according to whether you are using a real partition or a loopback file:

   in /etc/fstab

   ```
   /dev/sda11     /mnt/tempdir ext4 usrquota      1 2
   /imagefile     /mnt/tempdir ext4 loop,usrquota 1 2
   ```

   Then remount:

   ```
   $ sudo mount -o remount /mnt/tempdir
   ```
2. ```
   $ sudo quotacheck -u /mnt/tempdir
   $ sudo quotaon -u /mnt/tempdir
   $ sudo chown student.student /mnt/tempdir
   ```

   (You won't normally do the line above, but we are doing it to make the next part easier).
3. Substitute your user name for the `student` user account.
4. ```
   $ sudo edquota -u student
   ```
5. ```
   $ cd /mnt/tempdir
   $ dd if=/dev/zero of=bigfile1 bs=1024 count=200
   200+0 records in
   200+0 records out
   204800 bytes (205 kB) copied, 0.000349604 s, 586 MB/s
   ```


   ```

```
$ quota

Disk quotas for user student (uid 500):
Filesystem blocks quota lim grace files qu lim gr
/dev/sda11   200   500 1000   1   0   0

$ dd if=/dev/zero of=bigfile2 bs=1024 count=400

sda11: warning, user block quota exceeded.
400+0 records in
400+0 records out
4096600 bytes (410 kB) copied, 0.000654847 s, 625 MB/s
```

Create `bigfile3` (600 blocks).

6.
```
$ quota

Disk quotas for user student (uid 500):
Filesystem blocks quota limit grace files qu lim gr
/dev/sda11    600*   500  1000 6days   2  0  0

$ dd if=/dev/zero of=bigfile3 bs=1024 count=600

sda11: write failed, user block limit reached.
dd: writing `bigfile3': Disk quota exceeded
401+0 records in
400+0 records out
409600 bytes (410 kB) copied, 0.00177744 s, 230 MB/s

$ quota

Disk quotas for user student (uid 500):
Filesystem blocks  quota limit grace files quota limit grace
/dev/sda11   1000*   500  1000 6days     3     0     0

$ ls -l

total 1068
-rw------- 1 root    root      7168 Dec 10 18:56 aquota.user
-rw-rw-r-- 1 student student 204800 Dec 10 18:58 bigfile1
-rw-rw-r-- 1 student student 409600 Dec 10 18:58 bigfile2
-rw-rw-r-- 1 student student 409600 Dec 10 19:01 bigfile3
drwx------ 2 root    root     16384 Dec 10 18:47 lost+found
-rwxr-xr-x 1 root    root     41216 Dec 10 18:52 more
```

Look closely at the file sizes.

7. Get rid of the line in `/etc/fstab`.

