# Summary

| **SI** | **Topic** | **Short Explanation** | **Note** |
| --- | --- | --- | --- |
| 1 | SUID | Any user will get owner’s permission for the files or folders | chmod 4700 file1 |
| 2 | SGID | Any user will get owner group’s permission for the files or folders | chmod 2700 file1 |
| 3 | Sticky bit | Only root/owner can delete the files/folders | chmod 1777 folder1 |

There are two special permissions that can be set on executable files:

1. Set User ID (setuid) and
2. Set Group ID (sgid).

# Set User ID (setuid)

SUID is a special permission assigned to a file. These permissions allow the file being executed to be executed with the privileges of the owner. For example, if a file was owned by the root user and has the setuid bit set, no matter who executed the file it would always run with root user privileges.

~# chmod 4700 file1

~# ls -l file1

-rw**s**rw-r-- 1 user1 user1 0 2017-10-29 21:41 file1

**‘Or’**

~# chmod u+s file1

~# # ls -l file1

-rw**S**rw-r-- 1 user1 user1 0 2017-10-29 21:41 file1

Note the **capital S**. This means there are no execute permissions. Run the following command to add execute permissions to the file1 file, noting the **lower case s**.

~# chmod u+x file1

~# ls -l file1

-rwsrw-r-- 1 user1 user1 0 2017-10-29 21:41 file1

# Set Group ID (sgid)

When the Set Group ID bit is set, the executable is run with the authority of the group. For example, if a file was owned by the users’ group, no matter who executed that file it would always run with the authority of the user’s group.

~# chmod 2700 file1

~# ls -l file1

-rwx--**S**--- 1 user1 user1 0 2017-10-30 21:40 file1

**‘Or’**

~# chmod g+s

~# ls -l file1

-rwx--**S**--- 1 user1 user1 0 2017-10-30 21:40 file1

# sticky bit

When the sticky bit is set on a directory, only the root user, the owner of the directory, and the owner of a file can remove files within said directory.

~# ls -ld /tmp

drwxrwxrw**t**  24 root root 4096 2017-10-30 22:00 tmp

The **t** at the end symbolizes that the sticky bit is set. A file created in the /tmp directory can only be removed by its owner, or the root user.

~# chmod 1777 folder1

**‘Or’**

~# chmod a+t folder1

# how to find files with SUID/SGID

Find all the files with SUID but set, use the below command :

~# find / -perm +4000

Find all the files with SGID bit set, use the below command :

~# find / -perm +2000

You can also combine both the commands to find both SGID and SUID but set files.

~# find / -type f \\( -perm -4000 -o -perm -2000 \\) -exec ls -l {} \\;