SY204 – Sys Prgm & OS Fund Name(s): _____

Alpha(s): _____

Assignment Type:	In-Class/Homework	Collaboration Policy:	CP-0x05$_i$
Assignment Title:	Access Control Lists and Permissions		

Collaboration Policy:

- You may work in a small group (3-4 members) to work on this assignment.
- You shall write your own answers to questions, and shall enter commands in your own shell session.
- List your self-assigned group members after your name on this assignment sheet.
- Each group member shall turn in a copy of this assignment (individual submission).

Preparation:

- `ssh` to the department MIDN file server `midn.cyber.usna.edu`
  - You cannot complete this activity from the file system in your VM or from a file system on a lab machine.
- Start this activity in your home directory (~).
- Enter the following command in your home directory:

```
[100]$ chmod g+x .
```

1. [4 / __ / 0] Enter the following command in a terminal, and complete the following:

```
[101]$ umask
```

My `umask` in octal ugo format is: _____

The maximum user/permissions *allowed* by my `umask` are:

User	Permissions

2. (6) Enter the following commands in a terminal, and complete the following:

```
[102]$ mkdir own-perm
[103]$ ls -la own-perm/
```

[3 / __ / 0] The permissions for `own-perm/` in user/permission format are:

User	Permissions

```
[104]$ getfacl –e own-perm/
```

[3 / __ / 0] The File Access Control List (FACL) entries for own-perm/ are:

User	Permissions

3. [6 / __ / 0] Enter the following commands in a terminal, and complete the following:

```
[105]$ chmod g=rwx own-perm/
[106]$ ls -la own-perm/
[107]$ getfacl –e own-perm/
```

The chmod command is affected by the umask. True / False

At this point a FACL has not been set on own-perm/. If a FACL has not been set, describe what the getfacl displays when a FACL does not exist (compare output of ls -la and getfacl).

4. [4 / __ / 0] Enter the following commands in a terminal, and complete the following:

```
[108]$ setfacl -m u:1stOtherGroupMemberUsername:rwx own-perm/
```

Note: Complete Line 108 in a round-robin fashion (A allows B, B allows C, C allows A)

```
[109]$ ls -la own-perm/
[110]$ getfacl –e own-perm/
```

What symbol does ls use to indicate that a FACL exists for a file? _____

What does ls list as the group permissions for own-perm/? _____

List the FACL entries for own-perm/:

FACL Entry (type:qualifier:permissions)	FACL Entry (type:qualifier:permissions)

5. [5 / __ / 0] Enter the following commands in a terminal, and complete the following:

```
[111]$ chmod g=x own-perm/
[112]$ ls -la own-perm/
[113]$ getfacl -e own-perm/
```

Once a FACL is set `chmod` directly affects which FACL entry? _____

Describe how the *effective* permissions for a FACL entry are calculated.

6. [5 / __ / 0] Enter the following commands in a terminal, and complete the following:

```
[114]$ setfacl -m u:2ndOtherGroupMemberUsername:rx own-perm/
[115]$ ls -la own-perm/
[116]$ getfacl -e own-perm/
```

The `ls` command displays what FACL entry permissions for group permissions? _____

When a specific user or group FACL entry is changed what is the result of the FACL Mask entry? Hint: Review actions and results from Questions 4–6.

7. [4 / __ / 0] Enter the following commands in a terminal, and complete the following:

```
[117]$ echo hello > /home/mids/m20####/own-perm/hello.txt
```
Note: Complete Line 117 using the username of the group member who gave you rwx
```
[118]$ ls -la own-perm/
```

Who is the owner of `hello.txt` : username, (real name)? _____ (_____)

There is a FACL for `hello.txt`. True / False

8. [6 / __ / 0] Which users can read the contents of `hello.txt` (`cat hello.txt`)?

File Owner	Directory Owner	Group Member	Other User
Yes/ No	Yes/ No	Yes/ No	Yes/ No
Under what permission set (*not* rwx) is the Directory Owner accessing `hello.txt` ; i.e. user, group, other?			

9. [8 / __ / 0] Enter the following commands in a terminal, and complete the following:

```
[119]$ setfacl –m d:u:1stOtherGroupMemberUsername:rwx own-perm/
[120]$ echo hello > /home/mids/m20####/own-perm/hello2.txt
```
Note: Complete Line 120 using the username of the group member who gave you *rwx*
```
[121]$ ls -la own-perm/
```

There is a FACL for `hello2.txt`. True / False

In the `setfacl` format, *d* stands for: Default / Directory / Delete

10. [8 / __ / 0] Enter the following commands in a terminal, and complete the following:

```
[122]$ echo hello > own-perm/hello3.txt
[123]$ cp own-perm/hello3.txt own-perm/hello4.txt
[124]$ mv own-perm/hello3.txt own-perm/hello5.txt
[125]$ ls -la own-perm/
```

The `cp` command preserves FACLs. True / False

The `mv` command preserves FACLs. True / False

11. [8 / __ / 0] Enter the following commands in a terminal, and complete the following:

```
[126]$ setfacl -x u:1stOtherGroupUsername own-perm/hello4.txt
[127]$ setfacl -x u:1stOtherGroupUsername own-perm/hello2.txt
[128]$ setfacl -x u:1stOthrGrpUsr {1stOthGrpUsrHomeDir}/own-perm/hello3.txt
```

In general which user can modify a FACL? _____

12. [8 / __ / 0] Enter the following commands in a terminal, and complete the following:

```
[129]$ setfacl –m d:u:2ndOtherGroupUsername:rx own-perm/hello4.txt
```

Files can have default FACLs. True / False

Explain why your answer above makes sense.

13. [8 / __ / 0] When setting a default FACL on a directory which user should also have a FACL entry to ensure access to newly created files within the directory?

For Questions 14–15. Pillar of Cyber Security Context: Regarding access to the data in the file (file system object) the File Access Control List is associated with.

14. [10 / __ / 0] What two Pillars of Cyber Security is a File Access Control List designed to provide? Explain using complete sentences; spelling and grammar count.

Pillars:		Explanation:	

15. [10 / __ / 0] Regarding user ids and group ids, what Pillar of Cyber Security is expected to be provided by another portion of the operating system in order for a File Access Control List to be effective? Explain using complete sentences; spelling and grammar count.

Pillar:		Explanation:	