# Week 1 in-class exercises. Shell

## Exercise 1. Numeric sets with shell commands

You are given two files *A* and *B*, where each line contains exactly one integer. Write a single-line chain of commands to complete each task listed below. Do not forget that you are sorting numbers, rather than strings.

1.1. Find out how many times the number 1 occurs in file A. Do the same for file B.
1.2. Find the minimum and the maximum number in file A. Do the same for file B.
1.3. Combine numbers in files A and B into a single file AB which contains all the numbers both from A and B but without duplicates (UNION).
1.4. Find out what set of numbers is common to both A and B (INTERSECTION).

## Explore 1. File permissions

- For each three-digit octal permission in the following table, give the equivalent nine-character symbolic permission and the three symbolic permissions that apply to each of User/Owner, Group, and Other

| Row | Octal mode | Symbolic mode | User/Owner | Group | Others |
|-----|-----------|---------------|------------|-------|--------|
| 0 | 000 | | | | |
| 1 | 001 | | | | |
| 2 | 010 | | | | |
| 3 | 011 | | | | |
| 4 | 100 | | | | |
| 5 | 101 | | | | |
| 6 | 110 | | | | |
| 7 | 111 | | | | |

## Explore 2. Directory permissions

- In your w1 directory, create directory *top*. Change the user permission of the *top* sub-directory using the chmod command given in the second column (Command line) of the table. Execute this chmod command in the w1 directory to set the permissions on the *top* subdirectory.

- Next, for the row and permission value you just set in Step A, try to execute the four commands listed across the top of the table. For each of the four commands, record in the table whether or not the command line executes successfully. Enter in the table PD for Permission Denied OK for success. Does it meet your expectations for the directory permissions?

| Row | Command line | | cd top | touch top/file | mkdir top/dir | ls –l top |
|-----|--------------|--|--------|----------------|---------------|-----------|
| 0 | chmod 000 top | | | | | |
| 1 | chmod 100 top | | | | | |
| 2 | chmod 200 top | | | | | |
| 3 | chmod 300 top | | | | | |
| 4 | chmod 400 top | | | | | |
| 5 | chmod 500 top | | | | | |
| 6 | chmod 600 top | | | | | |
| 7 | chmod 700 top | | | | | |