REMOTE ACCESS TUTORIAL: SSH AND SFTP

Prologue

1. For this tutorial, you need a ssh and sftp client on your machine. If you are running Linux or Mac OS X, these clients should be installed by default. For Windows, we recommend you to install PuTTY:

    http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

You need also a DIUF Linux account (to access this https, you have to be on the unifr campus network, e.g. via a PC in a public room, via WIFI unifr_secure, or remotely via vpn):

    https://diuf-file.unifr.ch/intranet/?Your_Linux_Account

2. Before trying to access a remote machine, it is wise to find out if it is alive, e.g. by ping it:

```
% ping -c 3 <host_name>
```

where `<host_name>` is the DNS name or IP of the remote machine (e.g. `diuf-ssh.unifr.ch`).

a) ssh (Secure Shell)

ssh is a program for logging into a remote machine and for executing commands on a remote machine. It provides secure encrypted communication between two untrusted hosts over an insecure network. The user must prove his/her identity to the remote machine. The most commonly used login is:

```
% ssh <your_login_name>@<host_name>
```

To logout of the remote machine, type: `% exit`

Exercise 1. Connect to a remote machine and then execute the line command '`% date`', and answer the following questions : (1) How exactly does the prompt look like and explain the different items. (2) Where has the line command `% date` been executed: on your local machine or on the remote one ?

b) sftp (Secure File Transfer Program)

sftp is an interactive file transfer program which performs all operations over an encrypted ssh transport. It connects and logs into the specified host, then enters an interactive command mode. The most common usages are:

```
% sftp [[user@]host[:dir[/]]]       // Start in a remote directory
% sftp [[user@]host[:file [file]]]  // Retrieve files
% sftp -b batchfile [user@]host     // Read a series of commands from an
                                    // input batchfile

% sftp>ls [path]                    // Display remote directory listing
% sftp>cd dir[/[dir]]               // Change directory
% sftp>pwd                          // Display remote working directory
% sftp>get remote-path [local-path] // Download file
% sftp>put local-path [remote-path] // Upload file
% sftp>help                         // Display the help text
% sftp>exit                         // Quit sftp
```

Exercise 2. Connect to a remote machine and try out some of the above sftp commands. *Hand in: a couple of concrete commands you executed.*

c) Combination of sftp and ssh

In some cases, it is useful to combine sftp and ssh. For example, if you want to upload a file and then do some operations on it on the remote machine.

Exercise 3. 1) Download the file on Moodle -> Tutorials -> C01 -> /kr/kr1/kr006.c to your local machine. 2) Upload it to your home directory on `<host>` via **sftp** *(hint: use the command 'put').* 3) exit sftp and connect to `<host>` via **ssh**, 4) On the remote machine, rename the uploaded file to helloworld.c, compile and execute it. *Hand in: the list of command lines needed to solve this exercise.*

d) Miscellaneous

Exercise 4 (just for fun, and sometimes really useful). Do a ssh to your own machine (sic!) and explain what happens. *Hint: the host_name of your machine is available via the command* `hostname`.