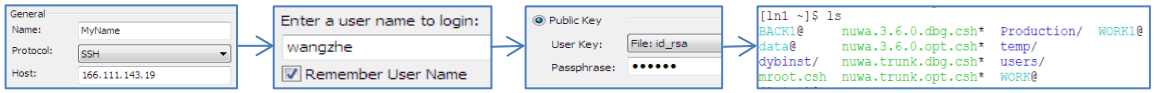
A Brief Introduction to the Exploration-100 Farm of Tsinghua

1. Composition & Disk sharing
   The Exploration-100 Farm is composed by Login nodes, Compute nodes, I/O Storage nodes and others. All nodes use Red Hat Enterprise Linux 5.5 x86_64. The disk sharing is divided into three parts: (a) the Software Shared Directory: /app, (b) the User Directory: ${HOME}, and (c) the Work Directory: ${HOME}/WORK.
2. User login
   It is recommended to use *SSH Secure Shell* which is a software to login the Farm.
   1) Create a *login-MyName* for the first time to login using *SSH Secure Shell*.
      Host IP (for Tsinghua local network): 166.111.143.18, and for external network: 166.111.143.19.



   2) Data transmission: Click the "File Transfer" in the *SSH Secure Shell* toolbar.
3. Job submission
   1) Users simply use commands, and the jobs will be submitted and automatically executed by the Farm.
      a) Queue classification. There are four kinds of queue in the system of the Farm: normal (the most commonly used), hpc_linux, priority and short.
      b) Submit jobs. Command: *bsub.*
      E.g. there a source-file named "example.cc". Compile the file and generate an executive-file named "example". You submit a job to run the executive-file

example.cc
```
#include<iostream>
#include<fstream>
using namespace std;

int main()
{
  ofstream WriteIntoFile("./file_sub.dat",ios::out|ios::app);
  if(!WriteIntoFile)
    {cerr<<"Open file_sub.dat error!!!"<<endl; exit(1);}

  WriteIntoFile<<"Hello world!"<<endl;

  WriteIntoFile.close();

  return 0;
}
```

```
[ln1 ~/WORK/jixp/work_exercise]$ bsub example
move job to normal
Job <27398> is submitted to queue <normal>.
```

      After you have successfully submitted a job, it will return a Job-ID corresponding to the job you have submitted. *E.g.* the number "27398" is the Job-ID.
      c) View jobs state. Command: *bjobs.*

```
[ln1 ~/WORK/jixp/work_exercise]$ bjobs 27398
JOBID   USER    STAT  QUEUE      FROM_HOST   EXEC_HOST   JOB_NAME   SUBMIT_TIME
27398   wangzhe DONE  normal     ln1         c03b09      example    Oct 28 10:29
```

      When the Job-STAT is "DONE", it means your job is done. *E.g.* you can get the result

file_sub.dat
```
Hello world!
```

      d) Control jobs operating
      Delete jobs. Command: *bkill.*
      Suspend jobs. Command: *bstop.*
      Resume jobs. Command: *bresume.*

[Note——Instruction to Sharing System of the Farm]

【A】= ${HOME}　【B】= ${HOME}/BACK1 (Not Used)　【C】= ${HOME}/WORK

1) There are quota restrictions for storage space of【A】. While there are no quota restrictions for【B】's.
2) 【A】can be read and written in Login notes, but cannot be written in Compute notes.
3) 【C】can be read and written in all notes.【C】is not supported for the long term data storage.
4) The Farm will automatically clean up【C】, that is the **Farm will delete files which have not been accessed more than 40 days in【C】. The operation of clean-up may not notice the user.**

[Note——Store Files and Run jobs in the Farm]

1) The important files should be stored in the【A】, be not stored in【C】.
2) Write and run your source codes in【A】, and output the program results in【C】.
3) It is recommended to make backups in your local computer for extremely important files, such as compute results, output data and source codes.

External link for "Users Guide of the Exploration-100 Farm of Tsinghua" (in Chinese):

- http://wenku.baidu.com/view/9b154f1f227916888486d7d6.html