Scientific and Technical Computing
Git Basics Due 9/6/13 23:59

Version 2013-2 as of 1 September 2013

Homework 1

Part A, Local Git work: Make a local git directory, create a branch with changes, and merge it into the master branch.

1.) Create an STC directory. (mkdir STC; cd STC)

2.) Initialize a git repository in it. (git init)

3.) Create README, prog.c and routines.c files (or prog.f90 and routines.f90).
Use the README prog and routine files below.

4.) Stage them, and then commit them (git add README prog.c routines.c) or use ".f90"
(git commit –m "New Inverse square package.")

5.) Look at what you have done. (git log)

6.) Create a new branch called b1. (git branch b1)

7.) Change to the b1 branch. (git checkout b1)

8.) Change N to 1000000 in prog.c/f90.

9.) Commit the change. (git commit -am "Changed N." or add and then commit)

10.) Change back to master branch. (git checkout master)

11.) Combine the loops in routine.c/f90.

12.) Commit the change. (git commit -am "Combined loops in master branch")

13.) Merge b1 into master. (git merge b1)

14.) Remove the b1 branch pointer. (git branch –d b1)

15.) Check log; note merge entry. (git log)

Part B, Server setup and initial push: Setup your bitbucket account to accept ssh connections and push your local repository into this (remote) server.

1.) Create an ssh keypair for bitbucket (ssh-keygen -b 1024 -f $HOME/.ssh/rsa_id_bb)

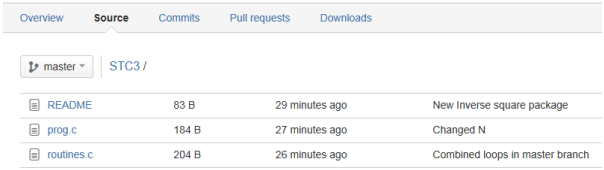
2.) Insert the public key in bitbucket (cat $HOME/.ssh/rsa_id_bb.pub and paste into URL→window: bitbucket.org →"avatar"→Manage Account→SSH Keys →Keys* window.) Avatar is the person silhouette: .

3.) Try an ssh connection (ssh -T git@bitbucket.org)
You should get "You can use git or hg to connect to Bitbucket."; if not, something is wrong with your keypair, or a network firewall is restricting access.

4.) Create a reference to the remote server (bitbucket) (git remote add origin ssh://git@bitbucket.org/<bb_username>/STC.git)
bb_username is your original bitbucket password.

5.) Push your repository to bitbucket (git push -u origin --all)

6.) Go to bitbucket and look at your repository through their GUI—(Click on Source in the middle menu):



Also, look at their documentation on pushing and pulling to the repository.

7.) Go to your home directory, create a scratch directory and clone your remote repository into this local directory. Check it out and then remove it.
(cd $HOME
mkdir scratch
cd scratch
git clone git@bitbucket.org:<bb_username>/STC.git STC_scratch
<LOOK AROUND IN directory STC_scratch>
cd STC_scratch
git log
cd $HOME
rm –rf scratch)

Fortran files:

login2$ cat README

```
Initial code create on 9/3/2013.
name:
email:
```

login2$ cat prog.f90

```
program invsqrt
integer, parameter :: N=100
real a(N);
   do i=1,N; a(i)=i; end do
   call isqrt(a,N);
   print*,"N a(1) a(N): ", N,a(1),a(N)
end program
```

login2$ cat routines.f90

```
subroutine isqrt(a, n)
  integer :: n,i
  real    :: a(n)
!               Vector inverse square
!               Someone advised to
!               making two separate loops.
  do i=1,n; a(i) = sqrt(a(i)); end do
  do i=1,n; a(i) = 1.0e0/a(i); end do
end subroutine
```

C/C++ files:

login2$ cat README

```
Initial code create on 9/3/2013.
name:
email:
```

login2$ cat prog.c

```
#define N 100
void isqrt(float *a,int n);

main(){
float a[N];
int i;
   for(i=0; i<N; i++) a[i]=1.0e0 + i;
   isqrt(a,N);
   printf("N a(0) a(N-1): %d %f %f\n", N,a[0],a[N-1]);
}
```

login2$ cat routines.c

```
void isqrt(float *a,int n){
  int i;
//              Vector inverse square
//              Someone advised to
//              making two separate loops.

  for(i=0;i<n;i++) a[i] = sqrt(a[i]);
  for(i=0;i<n;i++) a[i] = 1.0e0/a[i];
}
```

We welcome feedback; please address questions, suggestions, and requests for more information to **info@tacc.utexas.edu**.