Git Hub Via SSH :

Here we are going to learn how to communicate github with ssh protocol.

SSH means secure shell also known as secure socket shell and it is unix based command interface and protocol for securely access to a remote computer.

Ssh keys :

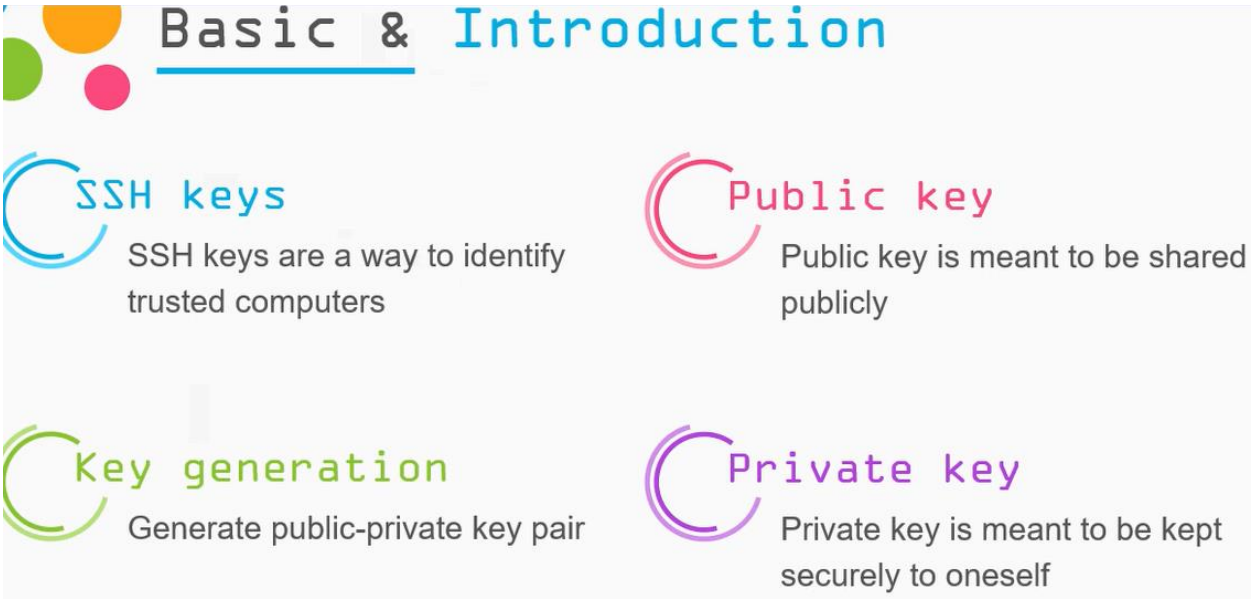
ssh keys are a way to identify trusted computers

Now this identification process does not involve passwords and is more secure than a password based authentication.

To achieve this ssh authentication we need to generate public and private key pair.

Key Generation :

Generate Public and private key pair



This is a public key looks like

This is a private key looks like

Do you have already Keys in your system :

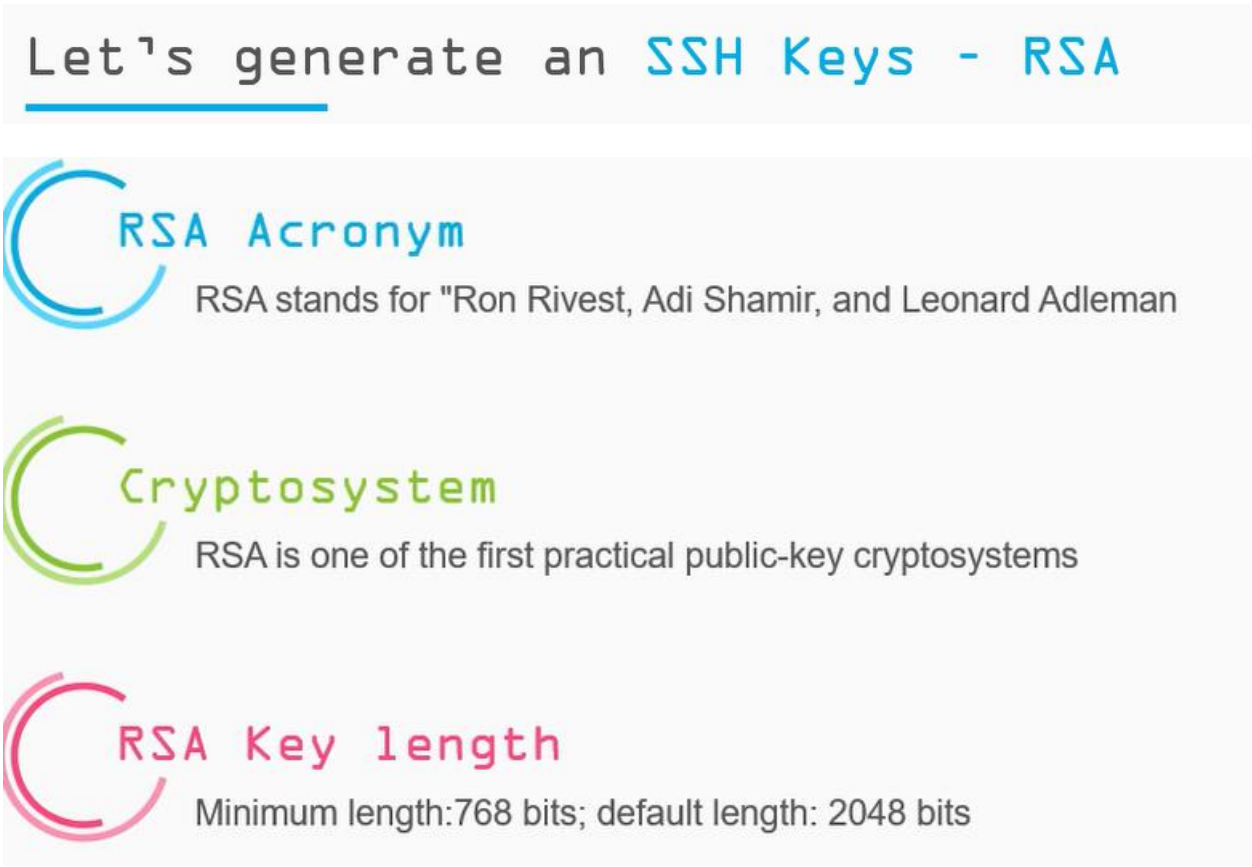
```
Home@Welcome MINGW64 /c/gitbranches/new/firstrepo (master)
$ ls -l ~/.ssh
total 13
-rw-r--r-- 1 Home 197121 1766 Apr 13 16:37 id_rsa
-rw-r--r-- 1 Home 197121  397 Apr 13 16:08 id_rsa.pub
-rw-r--r-- 1 Home 197121 6415 Apr 13 16:38 known_hosts
```

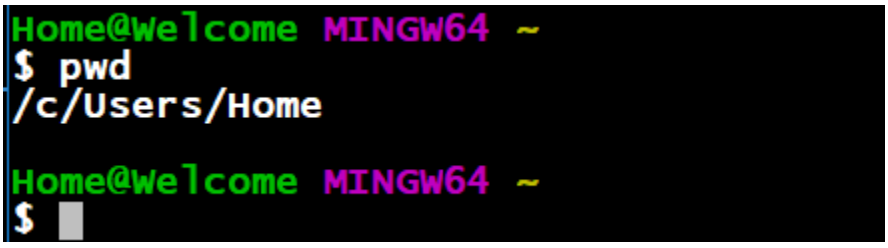
To remove your old keys execute below commands

```
Home@Welcome MINGW64 /c/gitbranches/new/firstrepo (master)
$ rm -rf ~/.ssh

Home@Welcome MINGW64 /c/gitbranches/new/firstrepo (master)
$ ls -l ~/.ssh
ls: cannot access '/c/Users/Home/.ssh': No such file or directory

Home@Welcome MINGW64 /c/gitbranches/new/firstrepo (master)
$
```





Iam going to generate keys with no default values adding my own parameters

With out parameters ---- ssh-keygen

With parameters

```
Home@Welcome MINGW64 ~
$ ssh-keygen -t rsa -b 2048 -C "myfirstkey pair"
Generating public/private rsa key pair.
Enter file in which to save the key (/c/Users/Home/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /c/Users/Home/.ssh/id_rsa.
Your public key has been saved in /c/Users/Home/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:XLlWDB2PgQnBOCT7yvCAPpNazkVwLxyGZOI5SokQDRA myfirstkey pair
The key's randomart image is:
+---[RSA 2048]----+
|E=o   o=+o.+o.   |
|+++.   oo o+.+   |
|.*o + .   o + .  |
|o .* o o . o     |
|. . * . S o      |
| . o * . .       |
|  * . +          |
| = +             |
|. o              |
+----[SHA256]-----+

Home@Welcome MINGW64 ~
$ ls -l ~/.ssh
total 13
-rw-r--r-- 1 Home 197121 1679 Apr 13 16:08 id_rsa
-rw-r--r-- 1 Home 197121  397 Apr 13 16:08 id_rsa.pub
-rw-r--r-- 1 Home 197121 4778 Apr 12 08:46 known_hosts
```

Enable ssh agent :

Here we are going to enable the ssh agent and adding the key to ssh agent

```
Home@Welcome MINGW64 ~
$ eval "$(ssh-agent -s)"
Agent pid 2744

Home@Welcome MINGW64 ~
$
```

This command will start the ssh agent and displayed process id above. Now we are adding key to running ssh agent

```
Home@Welcome MINGW64 ~
$ ssh-add ~/.ssh/id_rsa.pub
Enter passphrase for /c/Users/Home/.ssh/id_rsa.pub:

Home@Welcome MINGW64 ~
$
```

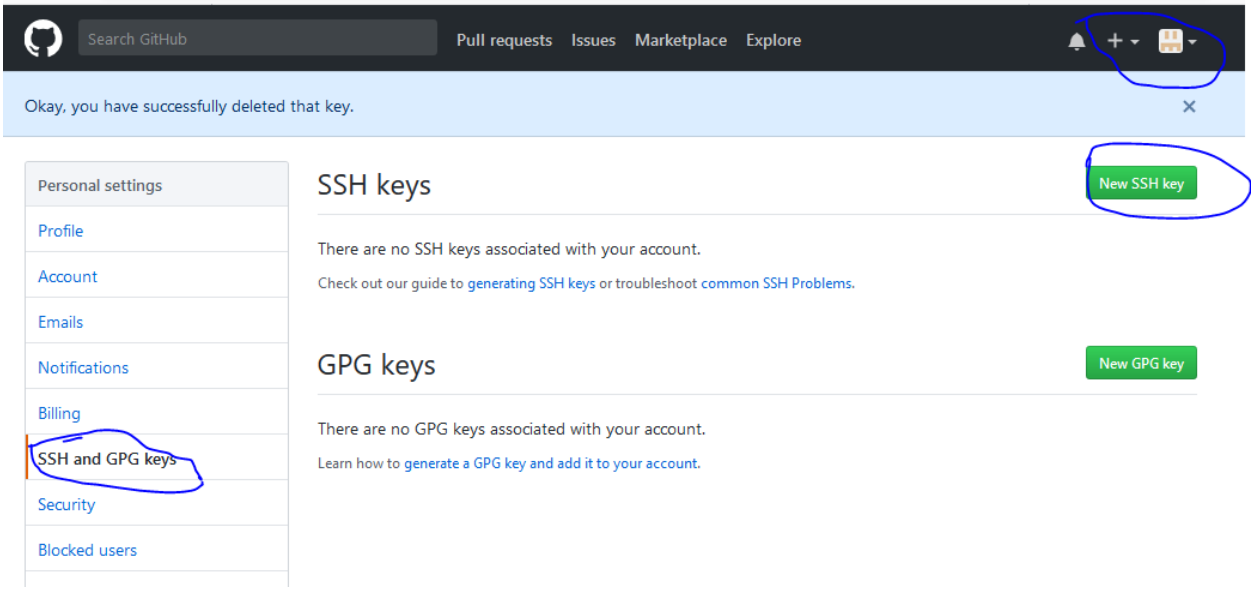
Key has been added into ssh key

Next step is we have to add the public to github, here we are going to copy the public key using below command

Just copied our public key now need to paste into git hub account. So please login into your account of github

Goto setting tab under your user id profile

Then select ssh keys like below



SSH keys / Add new

Title

My Keys

Key

```
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABAQDOf0GNL52iOtK9duVEF+UH3QiUefsuwFzt+40jJ+zA8HG4/4zVkhqeQnxM
vumfc7AFBvbluQeMY7MMc4+EtaTYVH1knQI8nktrlTTUxYoYVjaxEDgFfMFFVqgeZRZYvbkQ3NRNuGLnbHBa6CGTAPp
lMChT3DMnZWR9LoGJrNa5fAdTgD9FxzKPW8ZVJP/f5sfDzohnVNP7eE0TLhBXbO1KvzioeqSwr+BqfiMYq6hvN2nTi
/D8mCJ4jqxCnRK4Lw1OSijANr4XjV7uAGehGIIYBuAtCp1Aj7pt6aA6DaJoSDf9sMIkRLE5K1t2UijkymeSnacnNK8IBJkOS
QbcO8fJ myfirstkey pair
```

Add SSH key

Personal settings

- Profile
- Account
- Emails
- Notifications
- Billing
- SSH and GPG keys

SSH keys

New SSH key

This is a list of SSH keys associated with your account. Remove any keys that you do not recognize.

My Keys
Fingerprint: `43:4c:47:d6:2b:31:58:3f:73:4f:77:7f:2d:b1:a0:a7`
SSH
Added on Apr 13, 2018
Never used — Read/write

Delete

Check out our guide to generating SSH keys or troubleshoot common SSH Problems.

Checking SSH connection

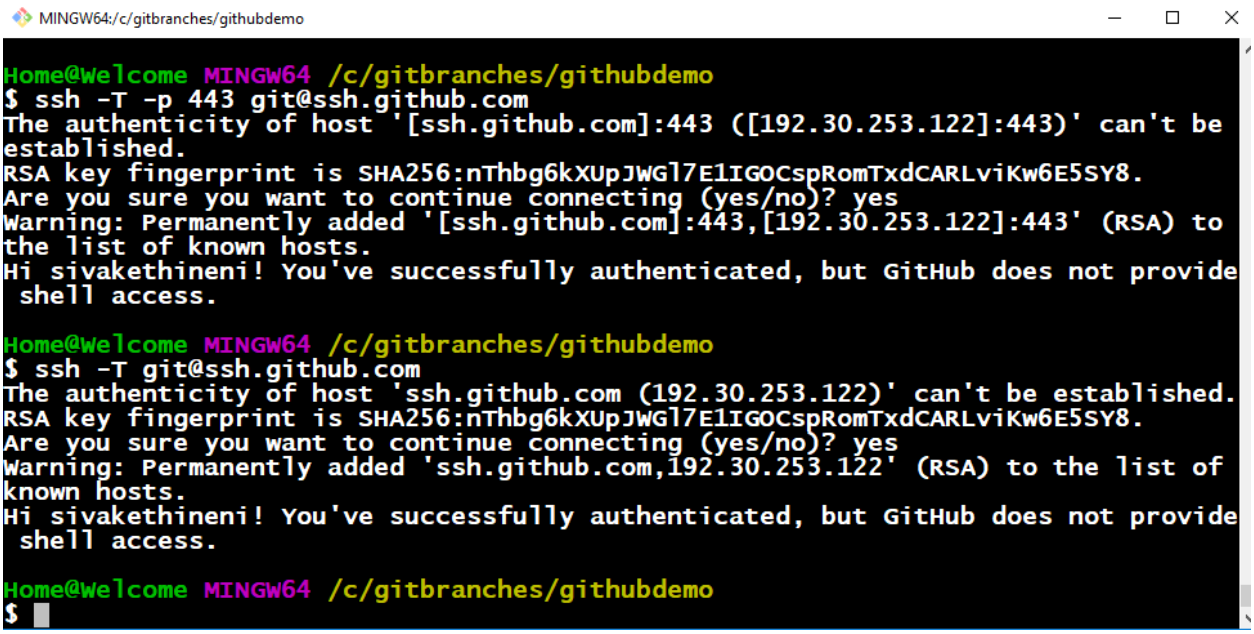
```
Home@Welcome MINGW64 ~
$ cd /c/gitbranches/

Home@Welcome MINGW64 /c/gitbranches
$ mkdir githubdemo

Home@Welcome MINGW64 /c/gitbranches
$ cd githubdemo/

Home@Welcome MINGW64 /c/gitbranches/githubdemo
$ pwd
/c/gitbranches/githubdemo

Home@Welcome MINGW64 /c/gitbranches/githubdemo
$
```



successfully authenticated

If you have any firewall issues don’t use any port numbers then we have to use pure ssh command like second one above screen shot

Switching remote URL and SSH Push

```
Home@Welcome MINGW64 /c/gitbranches/githubdemo
$ git remote -v
fatal: Not a git repository (or any of the parent directories): .git

Home@Welcome MINGW64 /c/gitbranches/githubdemo
$ git clone https://github.com/sivakethineni/firstrepo.git
Cloning into 'firstrepo'...
remote: Counting objects: 11, done.
remote: Compressing objects: 100% (6/6), done.
remote: Total 11 (delta 1), reused 8 (delta 1), pack-reused 0
Unpacking objects: 100% (11/11), done.

Home@Welcome MINGW64 /c/gitbranches/githubdemo
$ cd firstrepo/

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git remote -v
origin  https://github.com/sivakethineni/firstrepo.git (fetch)
origin  https://github.com/sivakethineni/firstrepo.git (push)

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$
```

```
Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git remote set-url origin git@github.com:sivakethineni/firstrepo.git

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git remote -v
origin  git@github.com:sivakethineni/firstrepo.git (fetch)
origin  git@github.com:sivakethineni/firstrepo.git (push)

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
```

```
Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git remote -v
origin  git@github.com:sivakethineni/firstrepo.git (fetch)
origin  git@github.com:sivakethineni/firstrepo.git (push)

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git pull origin master
The authenticity of host 'github.com (192.30.253.112)' can't be established.
RSA key fingerprint is SHA256:nThbg6kXUpJWGl7E1IGOCspRomTxdCARLviKw6E5SY8.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'github.com,192.30.253.112' (RSA) to the list of know
n hosts.
From github.com:sivakethineni/firstrepo
 * branch            master     -> FETCH_HEAD
Already up-to-date.
```

```
Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ vi file6

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git add .
warning: LF will be replaced by CRLF in file6.
The file will have its original line endings in your working directory.

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git commit -m "message"
[master 1d105c7] message
 1 file changed, 1 insertion(+)
 create mode 100644 file6

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git push origin master
Warning: Permanently added the RSA host key for IP address '192.30.253.113' to t
he list of known hosts.
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 275 bytes | 0 bytes/s, done.
Total 3 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To github.com:sivakethineni/firstrepo.git
   db7c41e..1d105c7  master -> master

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$
```

Now you go and check in github account for changes.

```
Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git remote set-url origin https://github.com/sivakethineni/firstrepo.git

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git remote -v
origin  https://github.com/sivakethineni/firstrepo.git (fetch)
origin  https://github.com/sivakethineni/firstrepo.git (push)

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$
```

We can set back to https again like above.

```
Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ ssh-keygen -p
Enter file in which the key is (/c/Users/Home/.ssh/id_rsa):
Enter new passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved with the new passphrase.

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git remote -v
origin  https://github.com/sivakethineni/firstrepo.git (fetch)
origin  https://github.com/sivakethineni/firstrepo.git (push)

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git remote set-url origin git@github.com:sivakethineni/firstrepo.git

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git remote -v
origin  git@github.com:sivakethineni/firstrepo.git (fetch)
origin  git@github.com:sivakethineni/firstrepo.git (push)

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
```

```
Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ ls
fil4  file3  file4  file6  README.md

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ vi file6

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git add .
warning: LF will be replaced by CRLF in file6.
The file will have its original line endings in your working directory.

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git commit -m "commited"
[master caf350c] commited
 1 file changed, 1 insertion(+), 1 deletion(-)

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
$ git push origin master
Enter passphrase for key '/c/Users/Home/.ssh/id_rsa':
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 264 bytes | 0 bytes/s, done.
Total 3 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To github.com:sivakethineni/firstrepo.git
   1d105c7..caf350c  master -> master

Home@Welcome MINGW64 /c/gitbranches/githubdemo/firstrepo (master)
```

We have set up our ssh keys with password authentication.

Thank you.

Siva