

# Using Git to Manage CogX KTH Code

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## 1 Benefits of Using Git

- *Branches and tags are managed by Git.* Merging can be performed easily without the need to manually track the origins of the code and worry about the same code being merged multiple times.
- *Distributed repositories.* The work can be performed locally and off-line. Branching/merging/committing does not require connection to any central server.
- *Cheap (topic) branches.* Creating local branches e.g. for testing/implementing a feature, maintenance etc. is quick and easy. A workflow based on topic branches allows to create a higher quality code and maintain stability of the master branch.
- *Commits are uniquely identified by an SHA hash code.* The SHA code is calculated based on the contents of the commit and therefore is the same even for unrelated repositories.
- *Non-linear history.* Git tracks the history of all branches and merges.
- *Performance.* Git is fast.

## 2 Documentation

- Git Community Book  
<http://book.git-scm.com/>
- Git for the lazy  
[http://www.spheredev.org/wiki/Git\\_for\\_the\\_lazy](http://www.spheredev.org/wiki/Git_for_the_lazy)
- Git workflow for agile teams  
<http://reinh.com/blog/2009/03/02/a-git-workflow-for-agile-teams.html>
- Git for computer scientists  
<http://eagain.net/articles/git-for-computer-scientists/>

## 3 Installing Git

### 3.1 Ubuntu Linux

```
apt-get install git-core git-gui gitk
```

### 3.2 Windows

Full windows installer can be found at

<http://code.google.com/p/msysgit/downloads/list>

## 4 Setting Up the Local Repository

- Get access to the remote repository. Generate your public SSH key:

```
ssh-keygen -t rsa
```

and send the file `~/.ssh/id_rsa.pub` to the admin of the repository.

- Clone the remote repository into a local directory:

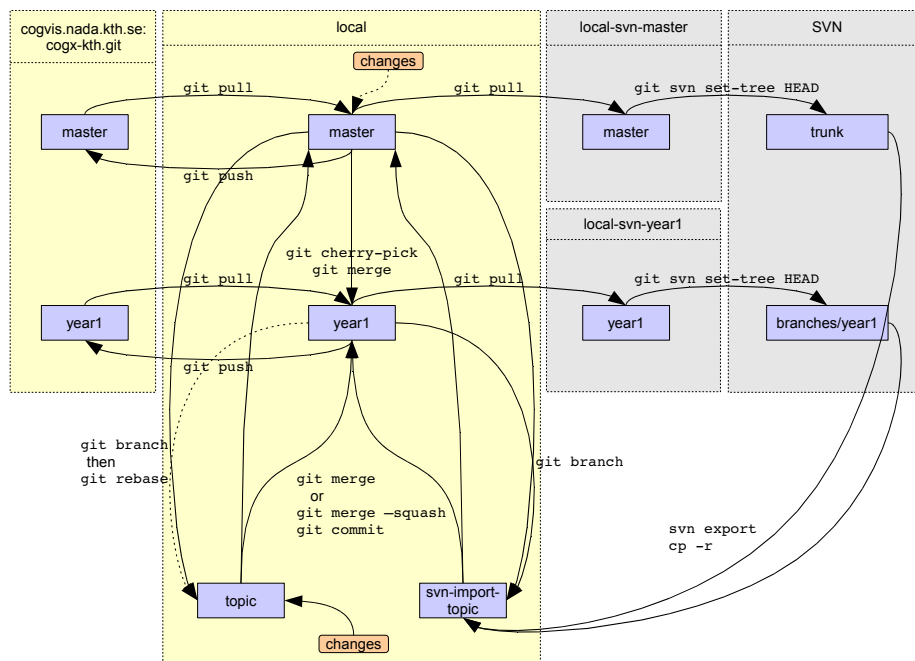
```
git clone git@cogvis.nada.kth.se:cogx-kth.git
```

- Create local branches tracking the remote branches e.g. `year1`:

```
git branch --track year1 origin/year1
```

## 5 Workflow for the CogX-KTH Code

### 5.1 Overview



## 5.2 Feature Development

- Checkout the master branch:

```
git checkout master
```

- Pull updates from the central server and merge them to master:

```
git pull
```

- Create and checkout a topic branch for the new feature:

```
git checkout -b topic
```

- Do some work in the topic branch:

```
echo "contents" > file
git add file
git commit -m "First_commit"
echo "contents2" > file2
git add file2
git commit -m "Second_commit"
```

- Merge with the master branch:

```
git checkout master
git merge --squash topic
git commit
```

- Push the changes upstream:

```
git push
```

- Do more work in the topic branch:

```
git checkout topic
echo "new_contents" > file
git add file
git commit -m "Third_commit"
```

- Pull some new updates from the central server and merge them to master:

```
git checkout master
git pull
```

- Rebasing the topic branch against the new changes:

```
git checkout topic
git rebase master
```

- Merge the changes with the master branch:

```
git checkout master
git merge --squash topic
git commit
```

- Push the changes upstream:

```
git push
```

### 5.3 Pushing Changes to SVN

Missing

### 5.4 Pulling Changes from SVN

Missing

## 6 FAQ

1. How to list branches and check which branch is checked out?

```
git branch
```

2. How to list all branches including remote branches?

```
git branch -a
```

3. How to view history of a branch or all branches?

```
gitk  
gitk --all
```