



PROGRAM: B.TECH (CSE-CC&VT)
SCHOOL OF COMPUTER SCIENCES

DevOps Assignment-1

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Batch - 2

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Subversion (SVN)

Apache Subversion (often referred to as SVN) is a version control system that allows you to manage and track changes to your files and directories over time.

Below is a step-by-step guide to install and use Subversion.

1. Install Apache Subversion On Windows

1. Download VisualSVN Server (recommended):

- Download from VisualSVN Server.
- Run the installer and follow the setup wizard to configure the server, repository location, and users.

2. Command-line SVN Client:

- Install TortoiseSVN from TortoiseSVN to get a graphical client and command-line tools.

On Linux

1. Update your package index:

```
sudo apt update # For Debian/Ubuntu
```

```
sudo yum update # For CentOS/RHEL
```

Linux

1. Setting Up SVN Server with svnserver

Step 1: Install Subversion

On a Linux system, install Subversion using your package manager:

```
sudo apt update
```

```
sudo apt install subversion
```

Step 2: Create a Repository

Create a directory for your repositories and initialize a new repository:

```
sudo mkdir -p /var/svn/repos
```

```
sudo svnadmin create /var/svn/repos/myrepo
```

Step 3: Configure svnserver

Edit the svnserve.conf file to configure access:

```
sudo nano /var/svn/repos/myrepo/conf/svnserve.conf
```

Make the following changes: [general]

```
anon-access = none # Disable anonymous access
```

```
auth-access = write # Allow authenticated users to write
```

```
password-db = passwd # Use the passwd file for authentication
```

Step 4: Set Up Users

Edit the passwd file to add users:

```
sudo nano /var/svn/repos/myrepo/conf/passwd
```

Add a user:

```
[users]
```

```
alice = alicepassword
```

bob = bobpassword

Step 5: Start svnserve

Start the svnserve daemon:

```
sudo svnserve -d -r /var/svn/repos
```

The -d flag runs it in daemon mode, and -r specifies the root directory for repositories.

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2. Common SVN Commands

Task 1: Check Out a Repository

To check out the repository to your local machine:

```
svn checkout svn://localhost/myrepo --username alice
```

You'll be prompted for the password.

Task 2: Add Files to the Repository

Create a new file and add it to the repository:

```
cd myrepo
```

```
echo "Hello, SVN!" > file.txt
```

```
svn add file.txt
```

```
svn commit -m "Added file.txt"
```

Task 3: Update Your Working Copy

To update your working copy with the latest changes:

```
svn update
```

Task 4: View Repository Status

Check the status of your working copy:

```
svn status
```

Task 5: View Change History

View the commit history of the repository:

```
svn log
```

Task 6: Create a Branch (before that create trunk as shown in next slide)

Create a branch for new development:

```
svn copy svn://localhost/myrepo/trunk  
svn://localhost/myrepo/branches/feature-branch -m "Creating  
feature branch"
```

Task 7: Switch to a Branch

Switch your working copy to the new branch:

```
svn switch svn://localhost/myrepo/branches/feature branch
```

Task 8: Merge Changes

Merge changes from the branch back to the trunk: `svn merge
svn://localhost/myrepo/branches/feature branch`

```
svn commit -m "Merged feature-branch into trunk"
```

Task 9: Resolve Conflicts

If there are conflicts during an update or merge, resolve them:

```
svn resolve --accept working file.txt
```

Task 10: Delete a File

Delete a file and commit the change:

```
svn delete file.txt
```

```
svn commit -m "Deleted file.txt"
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ sudo apt update
[sudo] password for raghav-agarwal:
Get:1 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:2 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [618 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [118 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [8,972 B]
Get:5 http://security.ubuntu.com/ubuntu noble-security/main Icons (48x48) [10.0 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main Icons (64x64) [14.8 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [625 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [121 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [208 B]
Get:10 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [803 kB]
Get:11 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [171 kB]
Get:12 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [51.9 kB]
Get:13 http://security.ubuntu.com/ubuntu noble-security/universe Icons (48x48) [45.0 kB]
Get:14 http://security.ubuntu.com/ubuntu noble-security/universe Icons (64x64) [70.7 kB]
Get:15 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Ign:16 http://archive.ubuntu.com/ubuntu noble InRelease
Get:17 https://download.docker.com/linux/ubuntu noble InRelease [48.8 kB]
Get:18 https://download.docker.com/linux/ubuntu noble/stable amd64 Packages [18.9 kB]
Get:19 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:20 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Hit:16 http://archive.ubuntu.com/ubuntu noble InRelease
Get:21 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [866 kB]
Get:22 http://archive.ubuntu.com/ubuntu noble-updates/main Translation-en [196 kB]
Get:23 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [150 kB]
Get:24 http://archive.ubuntu.com/ubuntu noble-updates/main Icons (48x48) [31.3 kB]
Get:25 http://archive.ubuntu.com/ubuntu noble-updates/main Icons (64x64) [44.5 kB]
Get:26 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [654 kB]
Get:27 http://archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [128 kB]
Get:28 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:29 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1,014 kB]
Get:30 http://archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [253 kB]
Get:31 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [363 kB]
Get:32 http://archive.ubuntu.com/ubuntu noble-updates/universe Icons (48x48) [212 kB]
Get:33 http://archive.ubuntu.com/ubuntu noble-updates/universe Icons (64x64) [330 kB]
Get:34 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [16.3 kB]
Get:35 http://archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [3,944 B]
Get:36 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:37 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:38 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [212 B]
Get:39 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [13.4 kB]
Get:40 http://archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [11.4 kB]
Get:41 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [17.6 kB]
Get:42 http://archive.ubuntu.com/ubuntu noble-backports/universe Icons (48x48) [11.2 kB]
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ sudo apt install subversion
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
subversion is already the newest version (1.14.3-1build4).
0 upgraded, 0 newly installed, 0 to remove and 463 not upgraded.
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ sudo mkdir -p /var/svn/repos
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ sudo svnadmin create /var/svn/repos/myrepo
svnadmin: E165002: '/var/svn/repos/myrepo' is an existing repository
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ sudo nano /var/svn/repos/myrepo/conf/svnserve.conf
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ sudo nano /var/svn/repos/myrepo/conf/passwd
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ sudo svnserve -d -r /var/svn/repos
```

```
### This file controls the configuration of the svnserve daemon, if you
### use it to allow access to this repository. (If you only allow
### access through http: and/or file: URLs, then this file is
### irrelevant.)

### Visit http://subversion.apache.org/ for more information.

[general]
### The anon-access and auth-access options control access to the
### repository for unauthenticated (a.k.a. anonymous) users and
### authenticated users, respectively.
### Valid values are "write", "read", and "none".
### Setting the value to "none" prohibits both reading and writing;
### "read" allows read-only access, and "write" allows complete
### read/write access to the repository.
### The sample settings below are the defaults and specify that anonymous
### users have read-only access to the repository, while authenticated
### users have read and write access to the repository.
anon-access = none
auth-access = write
### The password-db option controls the location of the password
### database file. Unless you specify a path starting with a /,
### the file's location is relative to the directory containing
### this configuration file.
### If SASL is enabled (see below), this file will NOT be used.
### Uncomment the line below to use the default password file.
password-db = passwd
### The authz-db option controls the location of the authorization
### rules for path-based access control. Unless you specify a path
### starting with a /, the file's location is relative to the
### directory containing this file. The specified path may be a
### repository relative URL (^/) or an absolute file:// URL to a text
### file in a Subversion repository. If you don't specify an authz-db,
### no path-based access control is done.
### Uncomment the line below to use the default authorization file.
# authz-db = authz
### The groups-db option controls the location of the file with the
### group definitions and allows maintaining groups separately from the
### authorization rules. The groups-db file is of the same format as the
### authz-db file and should contain a single [groups] section with the
### group definitions. If the option is enabled, the authz-db file cannot
```

```
### This file is an example password file for svnserve.
### Its format is similar to that of svnserve.conf. As shown in the
### example below it contains one section labelled [users].
### The name and password for each user follow, one account per line.
```

```
[users]
# harry = harryssecret
# sally = sallyssecret
alice = alicepassword
bob = bobpassword
```



```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ sudo nano /var/svn/repos/myrepo/conf/svnserve.conf
[sudo] password for raghav-agarwal:
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ svn checkout svn://localhost/myrepo --username alice
Authentication realm: <svn://localhost:3690> 63d693a3-932a-47c2-8b64-d22c55b40897
Password for 'alice': *****

Checked out revision 0.
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ cd myrepo
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ echo "Hello, SVN!" > file.txt
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn add file.txt
A      file.txt
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn commit -m "Added file.txt"
Adding      file.txt
Transmitting file data .done
Committing transaction...
Committed revision 1.
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn update
Updating '.':
At revision 1.
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn status
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn log
-----
r1 | alice | 2025-02-13 23:05:25 +0530 (Thu, 13 Feb 2025) | 1 line

Added file.txt
-----
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn list svn://localhost/myrepo/
file.txt
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn mkdir svn://localhost/myrepo/trunk svn://localhost/myrepo/branches svn://localhost/myrepo/tags -m "Creating trunk, branches, and tags directories"
Committing transaction...
Committed revision 2.
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn copy svn://localhost/myrepo/trunk svn://localhost/myrepo/branches/feature-branch -m "Creating feature branch"
Committing transaction...
Committed revision 3.
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn switch svn://localhost/myrepo/branches/feature-branch
svn: E195012: Path '.' does not share common version control ancestry with the requested switch location. Use --ignore-ancestry to disable this check.
svn: E195012: 'svn://localhost/myrepo/branches/feature-branch' shares no common ancestry with '/home/raghav-agarwal/myrepo'
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$ svn merge svn://localhost/myrepo/branches/feature-branch
svn: E195016: 'svn://localhost/myrepo/branches/feature-branch@3' must be ancestrally related to 'svn://localhost/myrepo@1'
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/myrepo$
```

INTRODUCTION TO MERCURIAL

- Mercurial is a distributed version control system (DVCS) designed for efficient handling of projects of all sizes. It is similar to Git in functionality but emphasizes simplicity and ease of use. Mercurial is written in Python and is known for its intuitive commands, robust performance, and cross-platform compatibility. It is widely used in both open-source and enterprise projects.

Key Features of Mercurial:

- **Distributed Version Control:** Every developer has a full copy of the repository, enabling offline work and independent branching.
- **Lightweight and Fast:** Efficient handling of large projects and binary files.
- **Simple and Intuitive Commands:** Commands are easy to learn and use, with a consistent syntax.
- **Cross-Platform:** Works on Windows, macOS, and Linux.
- **Extensible:** Supports plugins for additional functionality.
- **Secure:** Uses SHA-1 hashing for data integrity and supports signed commits.

How to Use Mercurial

1. Installation

- **Windows:** Download and install from Mercurial's official website.
- **Linux:** Use your package manager (e.g., `sudo apt-get install mercurial` for Ubuntu).
- **macOS:** Use Homebrew (`brew install mercurial`).
- **NIX:** `nix-shell -p mercurial`

2. Basic Commands

1. Initialize a Repository:

```
hg init my_project cd my_project
```

2. Add Files:

```
echo "Hello, Mercurial!" > file.txt hg add file.txt
```

3. Commit Changes:

```
hg commit -m "Initial commit"
```

4. Clone a Remote Repository:

```
hg clone https://hg.example.com/my_project
```

5. Push Changes to Remote:

```
hg push
```

6. Pull Changes from Remote:

hg pull

7. View Commit History:

hg log

8. Create and Switch Branches:

hg branch feature-branch

hg commit -m "Started feature branch"

hg update default # Switch back to the main branch

9. Merge Branches:

hg merge feature-branch

hg commit -m "Merged feature-branch int

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ sudo apt-get install mercurial
[sudo] password for raghav-agarwal:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  mercurial-common
Suggested packages:
  kdiff3 | kdiff3-qt | kompare | meld | tkcvs | mgdiff qct python3-mysqldb python3-openssl wish
The following NEW packages will be installed:
  mercurial mercurial-common
0 upgraded, 2 newly installed, 0 to remove and 401 not upgraded.
Need to get 3,283 kB of archives.
After this operation, 16.3 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 mercurial-common all 6.7.2-1ubuntu2.2 [2,955 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 mercurial amd64 6.7.2-1ubuntu2.2 [328 kB]
Fetched 3,283 kB in 5s (722 kB/s)
Selecting previously unselected package mercurial-common.
(Reading database ... 154594 files and directories currently installed.)
Preparing to unpack .../mercurial-common_6.7.2-1ubuntu2.2_all.deb ...
Unpacking mercurial-common (6.7.2-1ubuntu2.2) ...
Selecting previously unselected package mercurial.
Preparing to unpack .../mercurial_6.7.2-1ubuntu2.2_amd64.deb ...
Unpacking mercurial (6.7.2-1ubuntu2.2) ...
Setting up mercurial-common (6.7.2-1ubuntu2.2) ...
Setting up mercurial (6.7.2-1ubuntu2.2) ...

Creating config file /etc/mercurial/hgrc.d/hgext.rc with new version
Processing triggers for man-db (2.12.0-4build2) ...
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ hg init my_project
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~$ cd my_project
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/my_project$ echo "Hello, Mercurial!" > file.txt
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/my_project$ hg add file.txt
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/my_project$ hg config --edit
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/my_project$ hg commit -m "Initial commit"
```

```
abort: error: temporary failure in name resolution
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/my_project$ hg clone https://www.mercurial-scm.org/repo/hello
real URL is https://repo.mercurial-scm.org/hello
destination directory: hello
requesting all changes
adding changesets
adding manifests
adding file changes
added 2 changesets with 2 changes to 2 files
new changesets 0a04b987be5a:82e55d328c8c
updating to branch default
2 files updated, 0 files merged, 0 files removed, 0 files unresolved
```

```
raghav-agarwal@raghav-agarwal-HP-Laptop-15s-fq5xxx:~/my_project$ hg push
config error: default repository not configured!
(see 'hg help config.paths')
```