Software Development and Version Control

Laboratory Proficiency 1

Problem Statement: Study of any open source system/application software like Version /control in Linux Kernel.

Solution:

Version control system

Version control system is a piece of software that helps the developer on a software team work together and also archives a complete history of their work. There are three goals of

1. We want people to be able to work simultaneously , not serially
2. When people are working at the same time, we want their changes to not conflict with each other.
3. We want to archive every version of everything that has ever existed.

Team Foundation Server

Team Foundation Server (commonly abbreviated to **TFS**) is a Microsoft product that provides source code management (either with Team Foundation Version Control or Git), reporting, requirements management, project management (for both agile software development and waterfall teams), automated builds, lab management, testing and release management capabilities. It covers the entire application lifecycle, and enables DevOps capabilities. TFS can be used as a back-end to numerous integrated development environments (IDEs) but is tailored for Microsoft Visual Studio and Eclipse on all platforms

Developer(s)	Microsoft
Stable release	2017 update 2
Operating system	Microsoft Windows
Type	Version control
Website	visualstudio.com/tfs

Team Foundation Server is available in two different forms: on-premises and online. The latter form is called Visual Studio Team Services (formerly Visual Studio Online). The cloud service is backed by Microsoft’s cloud platform, Microsoft Azure. It uses the same code as the on-premises version of TFS, with minor modifications, and implements the most recent features. Visual Studio Team Services requires no setup. A user signs in using a Microsoft account to set up an environment, creating projects and adding team members. New features developed in short development cycles are added to the cloud version first. These features migrate to the on-premises version as updates, at approximately three-month intervals

Team Foundation Version Control

TFVC is a centralized version control system allowing teams to store any type of artifact within its repository. TFVC supports two different types of workspaces when working with client tools - Server Workspaces and Local Workspaces.[12] Server workspaces allow developers to lock files for check-out and provide notification to other developers that files are being edited. A frequent complaint for this model is that files on the development machine are marked as read-only. It also requires developers to "go offline" when the server can't be contacted. Local workspaces were designed to avoid these problems. In a local workspace scenario files are not read-only and they do not have to be checked out before working on them. As long as the files are on the developer's local machine, it doesn't matter if the server is connected or not. Conflicts are dealt with at check-in time.

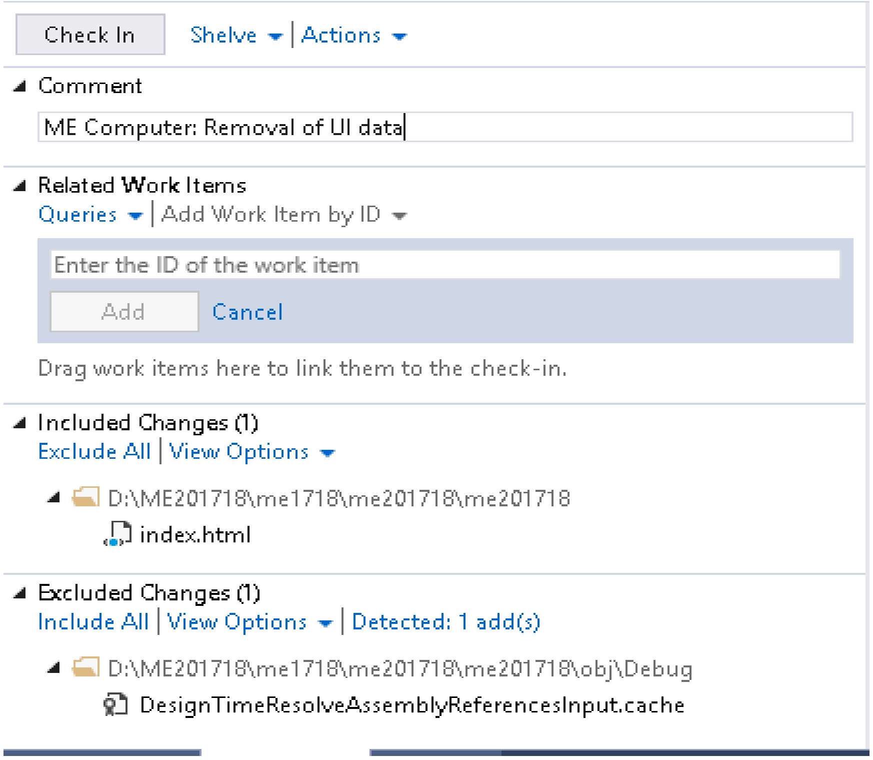
To improve performance for remote clients, TFS includes the ability to install Proxy Servers.[13] Proxy servers allow source control contents to be cached at a site closer to the developers to avoid long network trips and the associated latency. Check-ins are still performed directly against the TFS application tier so the Proxy Server is most beneficial in read scenarios.

As part of the source control engine, TFS supports a number of features to help developers ensure the code that is checked in follows configurable rules. This rule engine is called a Check-in Policy. There are several out of the box policies such as the Changeset Comments Policy which will not allow a check-in unless the developer enters a check-in comment. These policies are extensible and can be used to examine all aspects of the code being checked in, the comments and the related work items. TFS also supports a Code Analysis feature that when used independently is known as FxCop. The inclusion in TFS means that the analysis can run against code checked into the server and during automated builds

Basic Operations

Check-in

When you check in files, the system commits pending changes in your workspace to the Team Foundation version control server



Check In | Shelve | Actions

Comment

ME Computer: Removal of UI data

Related Work Items

Queries | Add Work Item by ID

Enter the ID of the work item

Add | Cancel

Drag work items here to link them to the check-in.

Included Changes (1)

Exclude All | View Options

D:\ME201718\me1718\me201718\me201718

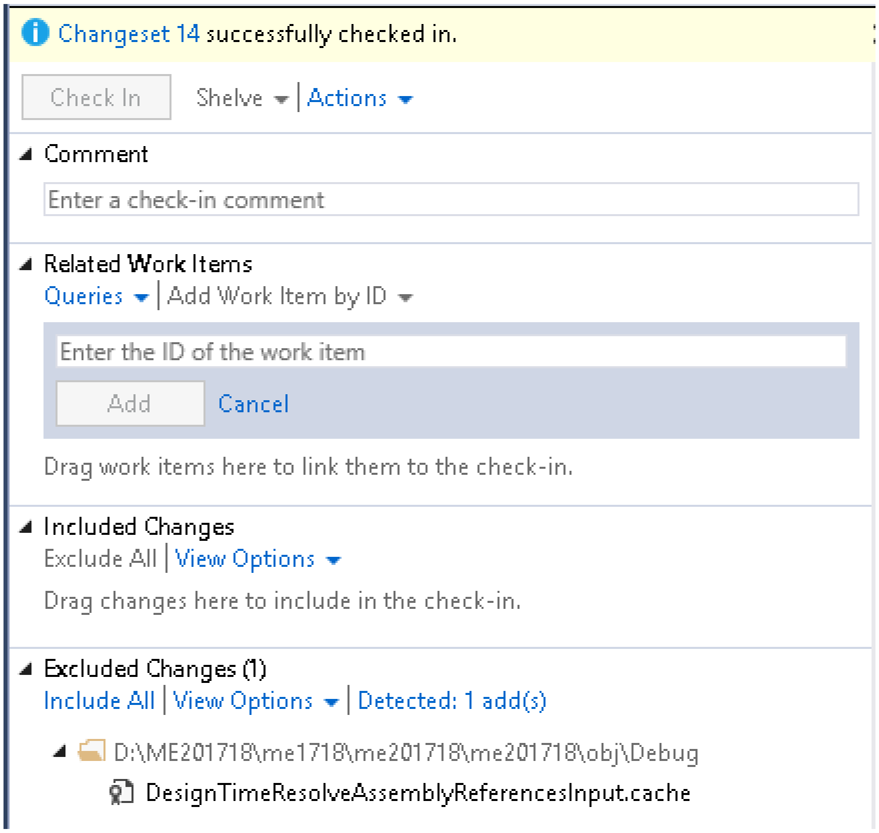
index.html

Excluded Changes (1)

Include All | View Options | Detected: 1 add(s)

D:\ME201718\me1718\me201718\me201718\obj\Debug

DesignTimeResolveAssemblyReferencesInput.cache



Changeset 14 successfully checked in.

Check In | Shelve | Actions

Comment

Enter a check-in comment

Related Work Items

Queries | Add Work Item by ID

Enter the ID of the work item

Add | Cancel

Drag work items here to link them to the check-in.

Included Changes

Exclude All | View Options

Drag changes here to include in the check-in.

Excluded Changes (1)

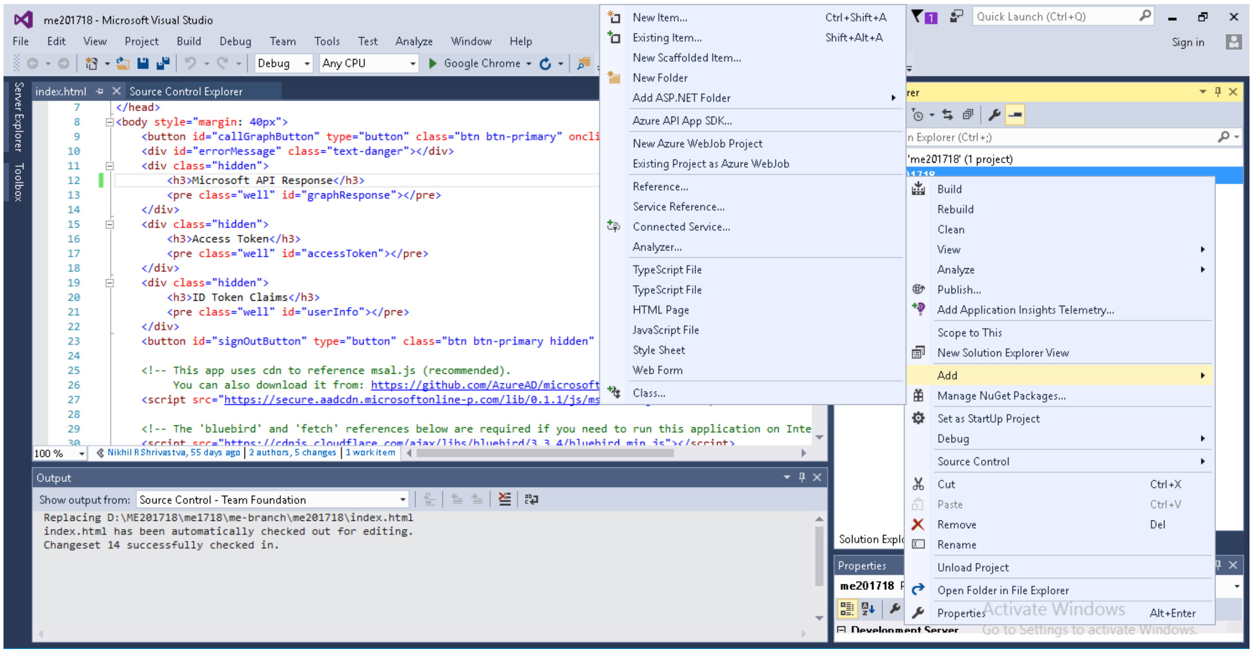
Include All | View Options | Detected: 1 add(s)

D:\ME201718\me1718\me201718\me201718\obj\Debug

DesignTimeResolveAssemblyReferencesInput.cache

Adding a new file

Adding a file to version control is often automatic when you use Solution Explorer and your project is under version control. However, in some cases, you have to take some extra steps to add the project to version control



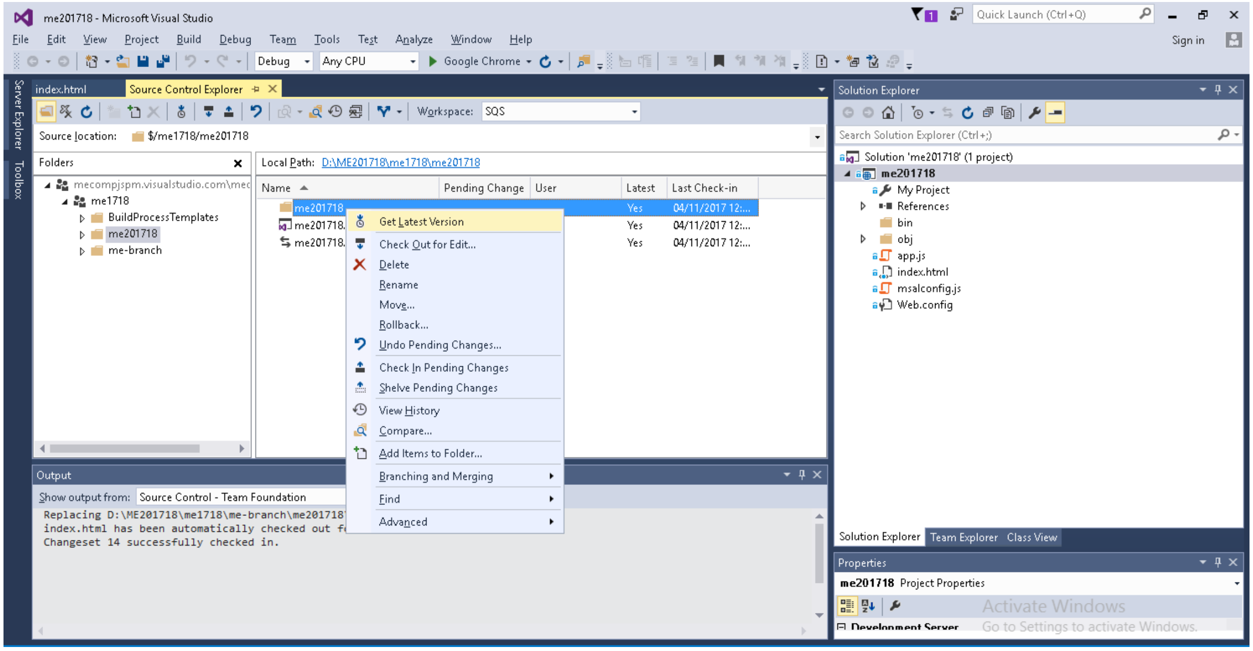
```
</head>
<body style="margin: 40px">
    <button id="callGraphButton" type="button" class="btn btn-primary" oncli
    <div id="errorMessage" class="text-danger"></div>
    <div class="hidden">
        <h3>Microsoft API Response</h3>
        <pre class="well" id="graphResponse"></pre>
    </div>
    <div class="hidden">
        <h3>Access Token</h3>
        <pre class="well" id="accessToken"></pre>
    </div>
    <div class="hidden">
        <h3>ID Token Claims</h3>
        <pre class="well" id="userInfo"></pre>
    </div>
    <button id="signOutButton" type="button" class="btn btn-primary hidden"

    <!-- This app uses cdn to reference msal.js (recommended).
         You can also download it from: https://github.com/AzureAD/microsoft
    <script src="https://secure.aadcdn.microsoftonline-p.com/lib/0.1.1/js/ms

    <!-- The 'bluebird' and 'fetch' references below are required if you need to run this application on Inte
    <script src="https://cdnjs.cloudflare.com/ajax/libs/bluebird/3.3.4/bluebird.min.js"></script>
```

Show output from: Source Control - Team Foundation

```
Replacing D:\ME201718\me1718\me-branch\me201718\index.html
index.html has been automatically checked out for editing.
Changeset 14 successfully checked in.
```

Downloading a file

You can download the latest version or a previous version of one or more files from your Team Foundation Server to your workspace on your development machine.



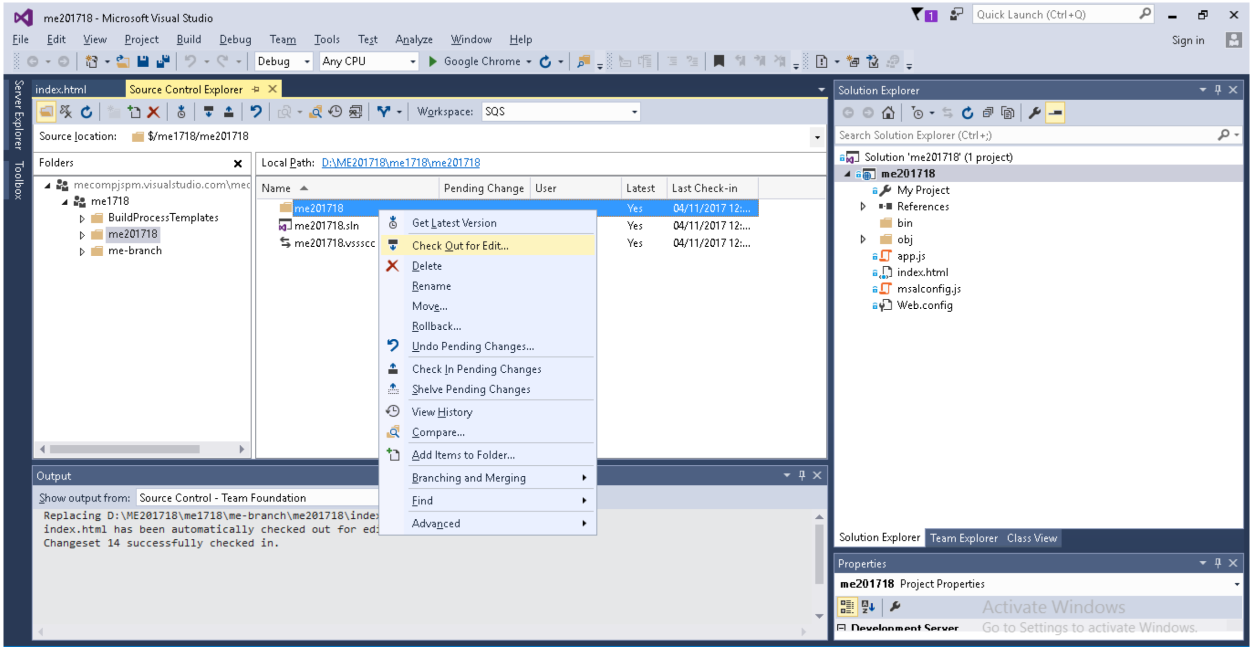
Workspace: SQS
Source location: $/me1718/me201718
Local Path: D:\ME201718\me1718\me201718

Show output from: Source Control - Team Foundation

```
Replacing D:\ME201718\me1718\me-branch\me201718
index.html has been automatically checked out f
Changeset 14 successfully checked in.
```

Check out and edit

When you want to edit a file you can open it from Solution Explorer or from Source Control Explorer. When you begin editing a file, it is automatically checked out to you



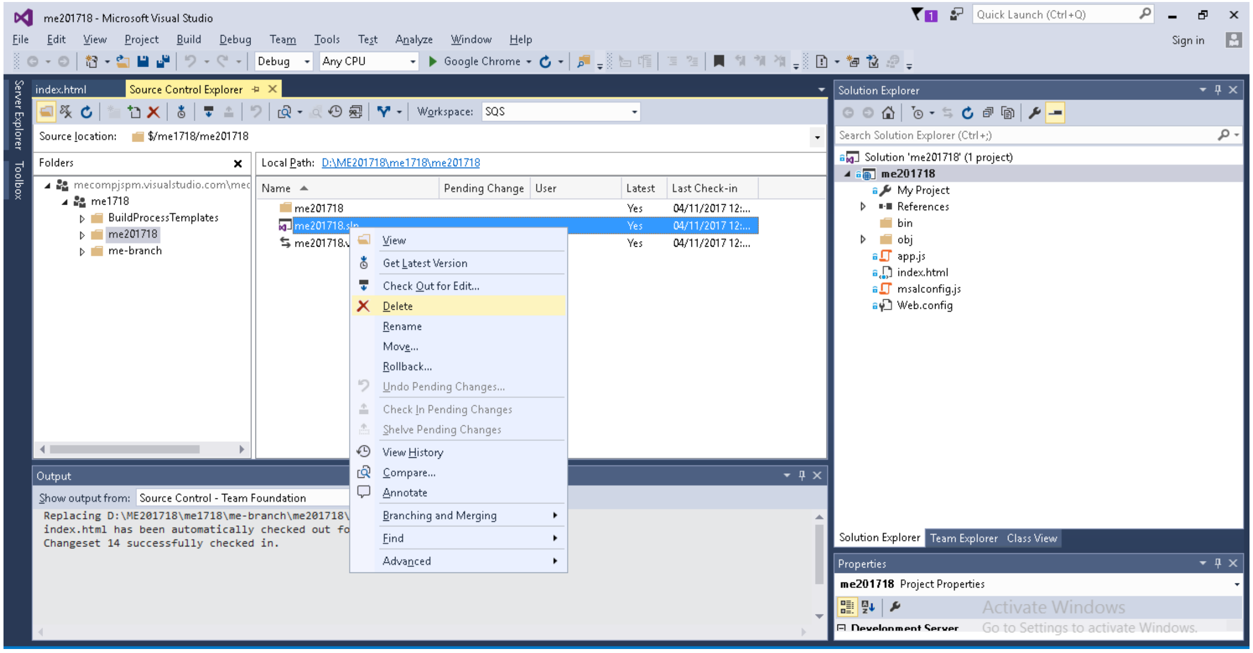
Workspace: SQS
Source location: $/me1718/me201718
Local Path: D:\ME201718\me1718\me201718

Show output from: Source Control - Team Foundation

```
Replacing D:\ME201718\me1718\me-branch\me201718\inde
index.html has been automatically checked out for ed
Changeset 14 successfully checked in.
```

Delete and edit files

You can delete files and folders from TFVC and also restore them, from both in the workspace on your dev machine or on the server



Workspace: SQS

Source location: $/me1718/me201718

Local Path: D:\ME201718\me1718\me201718

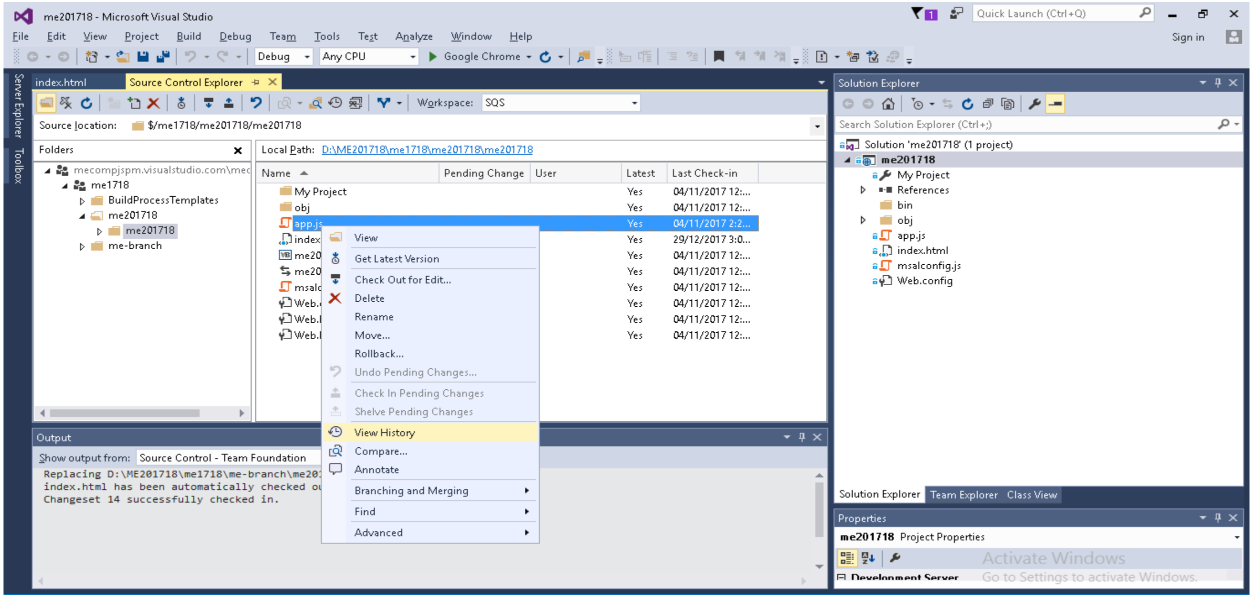
Name	Pending Change	User	Latest	Last Check-in
me201718			Yes	04/11/2017 12:...
me201718.sln			Yes	04/11/2017 12:...
me201718.v			Yes	04/11/2017 12:...

Show output from: Source Control - Team Foundation

```
Replacing D:\ME201718\me1718\me-branch\me201718\
index.html has been automatically checked out fo
Changeset 14 successfully checked in.
```

Getting History

One advantage of a version control system is that you can look back in time to get detailed information about what changes have been made to your files. Team Foundation version control maintains historical data related to every version of every file that has ever been checked in.



Workspace: SQS

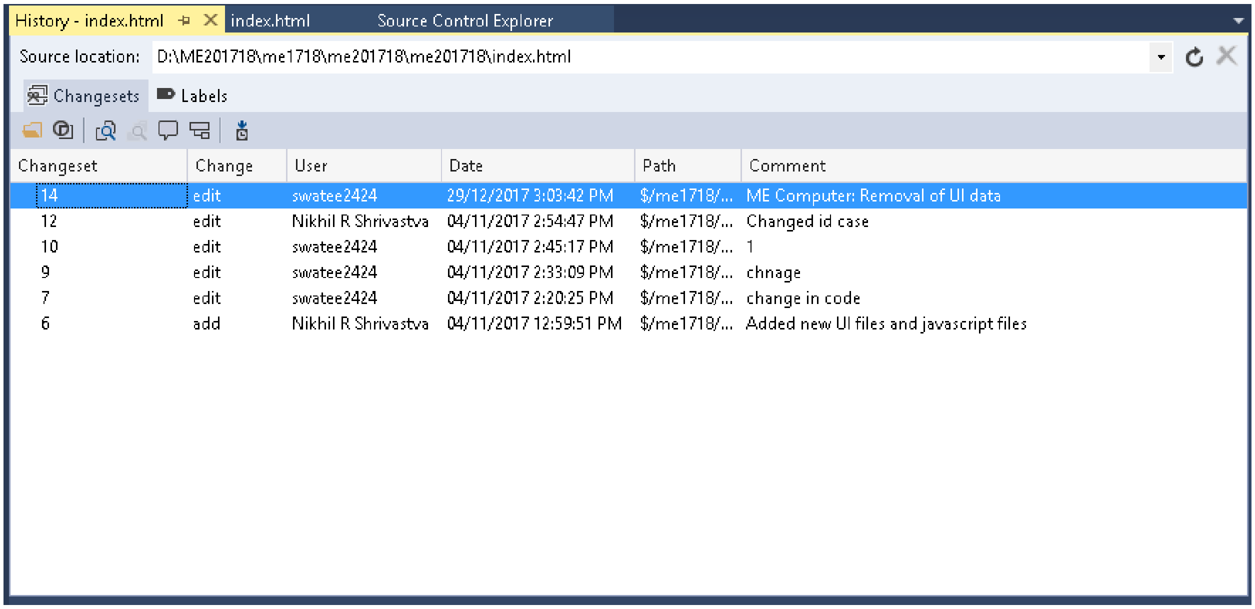
Source location: $/me1718/me201718/me201718

Local Path: D:\ME201718\me1718\me201718\me201718

Name	Pending Change	User	Latest	Last Check-in
My Project			Yes	04/11/2017 12:...
obj			Yes	04/11/2017 12:...
app.js			Yes	04/11/2017 2:2...
index			Yes	29/12/2017 3:0...
me20			Yes	04/11/2017 12:...
me20			Yes	04/11/2017 12:...
msalc			Yes	04/11/2017 12:...
Web.			Yes	04/11/2017 12:...
Web.			Yes	04/11/2017 12:...
Web.			Yes	04/11/2017 12:...

Show output from: Source Control - Team Foundation

```
Replacing D:\ME201718\me1718\me-branch\me20
index.html has been automatically checked ou
Changeset 14 successfully checked in.
```

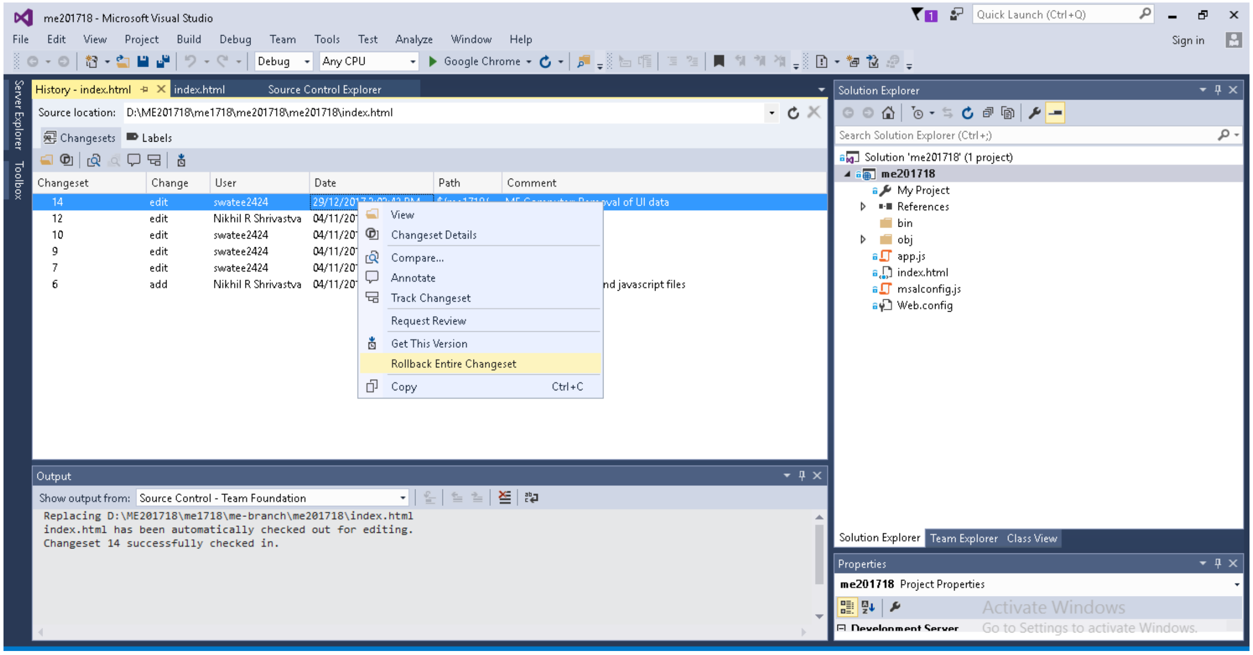


Source location: D:\ME201718\me1718\me201718\me201718\index.html

Changeset	Change	User	Date	Path	Comment
14	edit	swatee2424	29/12/2017 3:03:42 PM	$/me1718/...	ME Computer: Removal of UI data
12	edit	Nikhil R Shrivastva	04/11/2017 2:54:47 PM	$/me1718/...	Changed id case
10	edit	swatee2424	04/11/2017 2:45:17 PM	$/me1718/...	1
9	edit	swatee2424	04/11/2017 2:33:09 PM	$/me1718/...	chnage
7	edit	swatee2424	04/11/2017 2:20:25 PM	$/me1718/...	change in code
6	add	Nikhil R Shrivastva	04/11/2017 12:59:51 PM	$/me1718/...	Added new UI files and javascript files

Roll Back Changes

A changeset is a permanent part of the history of your version-controlled items and cannot be undone or removed. However, you can roll back the effects of one or more changesets



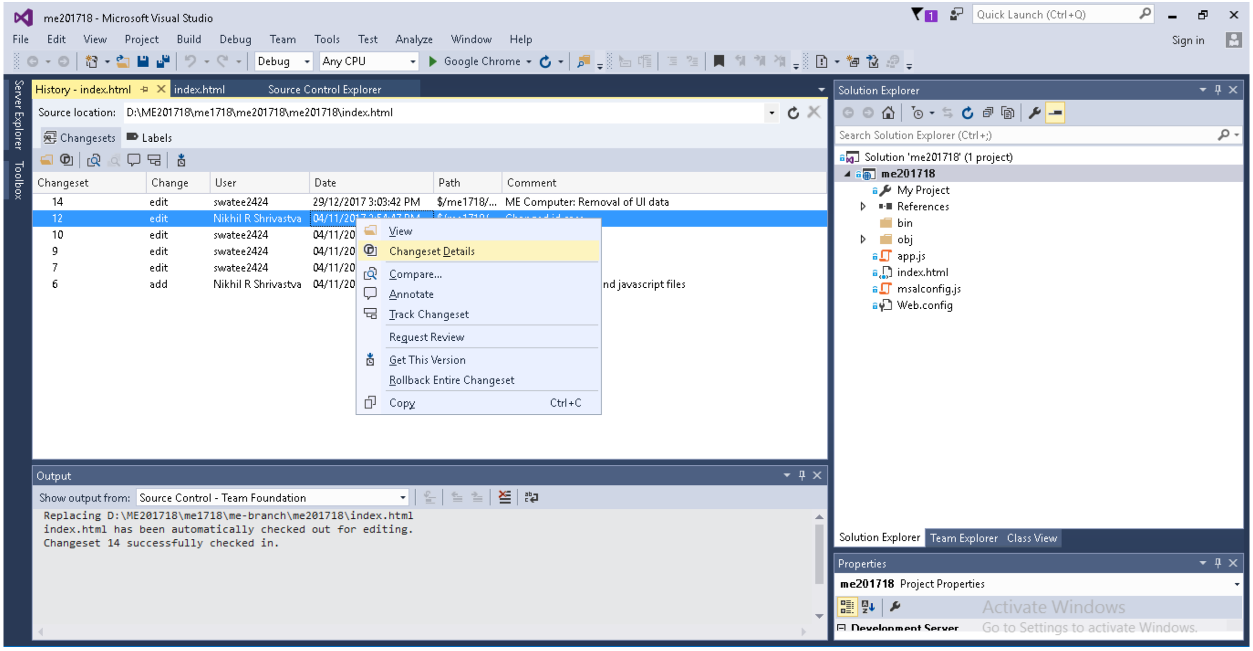
Source location: D:\ME201718\me1718\me201718\me201718\index.html

Show output from: Source Control - Team Foundation

```
Replacing D:\ME201718\me1718\me-branch\me201718\index.html
index.html has been automatically checked out for editing.
Changeset 14 successfully checked in.
```

Find and view changeset

When you check in your changes, they are stored on the server as a changeset. Changesets contain the history of each item in version control.

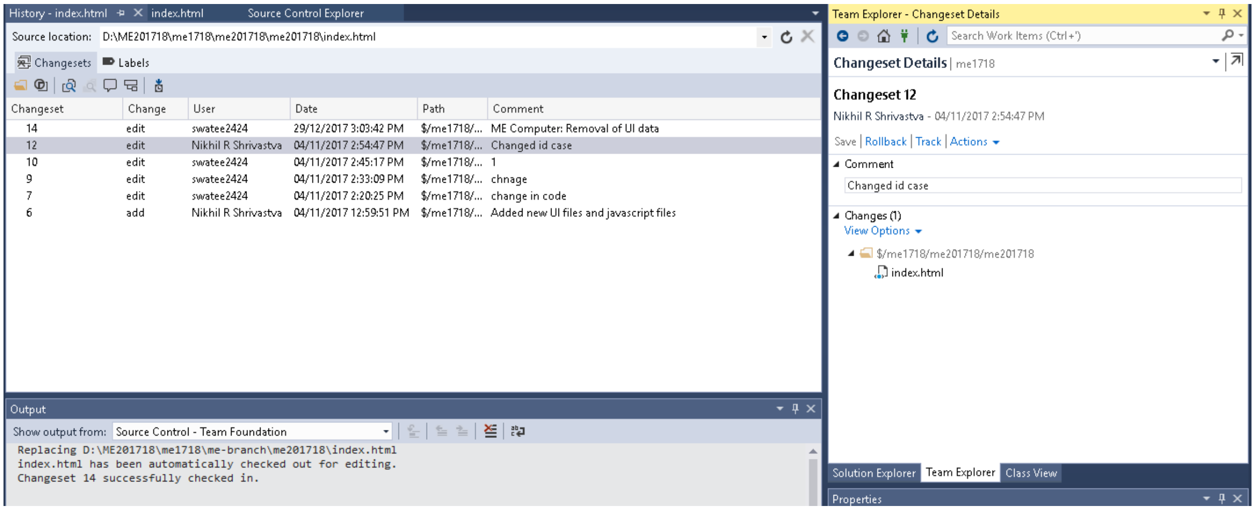


Source location: D:\ME201718\me1718\me201718\index.html

Changeset	Change	User	Date	Path	Comment
14	edit	swatee2424	29/12/2017 3:03:42 PM	$/me1718/...	ME Computer: Removal of UI data
12	edit	Nikhil R Shrivastva	04/11/2017 2:54:47 PM	$/me1718/...	Changed id case
10	edit	swatee2424	04/11/20		
9	edit	swatee2424	04/11/20		
7	edit	swatee2424	04/11/20		
6	add	Nikhil R Shrivastva	04/11/20		nd javascript files

Show output from: Source Control - Team Foundation

```
Replacing D:\ME201718\me1718\me-branch\me201718\index.html
index.html has been automatically checked out for editing.
Changeset 14 successfully checked in.
```



Source location: D:\ME201718\me1718\me201718\index.html

Changeset	Change	User	Date	Path	Comment
14	edit	swatee2424	29/12/2017 3:03:42 PM	$/me1718/...	ME Computer: Removal of UI data
12	edit	Nikhil R Shrivastva	04/11/2017 2:54:47 PM	$/me1718/...	Changed id case
10	edit	swatee2424	04/11/2017 2:45:17 PM	$/me1718/...	1
9	edit	swatee2424	04/11/2017 2:33:09 PM	$/me1718/...	chnage
7	edit	swatee2424	04/11/2017 2:20:25 PM	$/me1718/...	change in code
6	add	Nikhil R Shrivastva	04/11/2017 12:59:51 PM	$/me1718/...	Added new UI files and javascript files

Changeset Details | me1718

Changeset 12

Nikhil R Shrivastva - 04/11/2017 2:54:47 PM

Comment

Changed id case

Changes (1)

$/me1718/me201718/me201718

index.html

Show output from: Source Control - Team Foundation

```
Replacing D:\ME201718\me1718\me-branch\me201718\index.html
index.html has been automatically checked out for editing.
Changeset 14 successfully checked in.
```

Conclusion

This assignment has barely scratched the surface of Team Foundation Server capabilities, basic operations and architecture