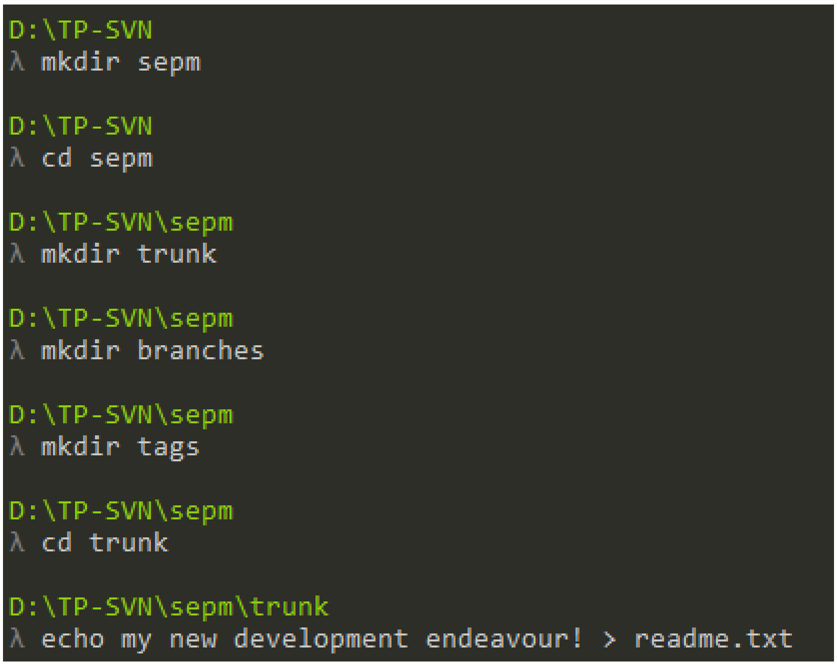
Software Engineering and Project Management

SVN TP

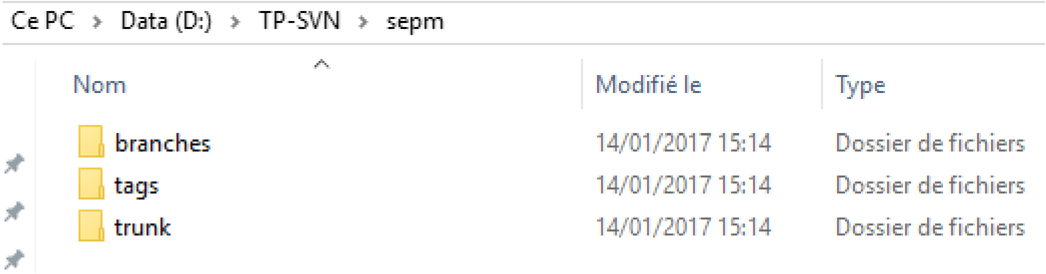
I. New repository, adding, moving, deleting, resolving conflicts, tagging

1. Create a new directory project named sepm. In that project directory write a new readme.txt file containing some introduction information about your project, its name, developer names, date, company name etc. The file should start with the line "sepm – my new development endeavour". This is the initial project directory.

Let's create the project using SVN's conventions with three folders: trunk, branches and tags. They will be explained later.



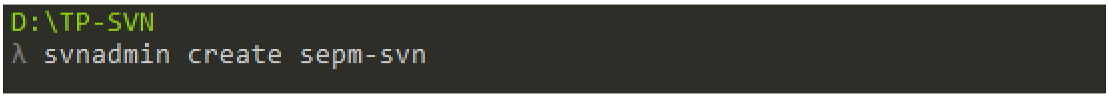
```
D:\TP-SVN
λ mkdir sepm

D:\TP-SVN
λ cd sepm

D:\TP-SVN\sepm
λ mkdir trunk

D:\TP-SVN\sepm
λ mkdir branches

D:\TP-SVN\sepm
λ mkdir tags

D:\TP-SVN\sepm
λ cd trunk

D:\TP-SVN\sepm\trunk
λ echo my new development endeavour! > readme.txt
```



Ce PC › Data (D:) › TP-SVN › sepm

Nom	Modifié le	Type
branches	14/01/2017 15:14	Dossier de fichiers
tags	14/01/2017 15:14	Dossier de fichiers
trunk	14/01/2017 15:14	Dossier de fichiers

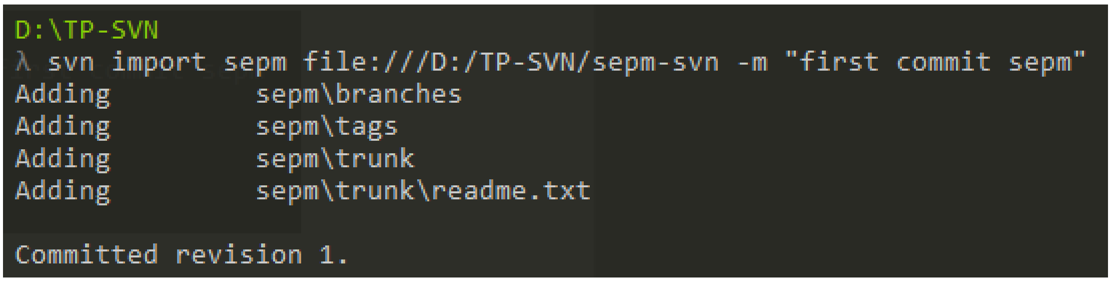
2. Create a new local svn repository named sepm-svn.



```
D:\TP-SVN
λ svnadmin create sepm-svn
```

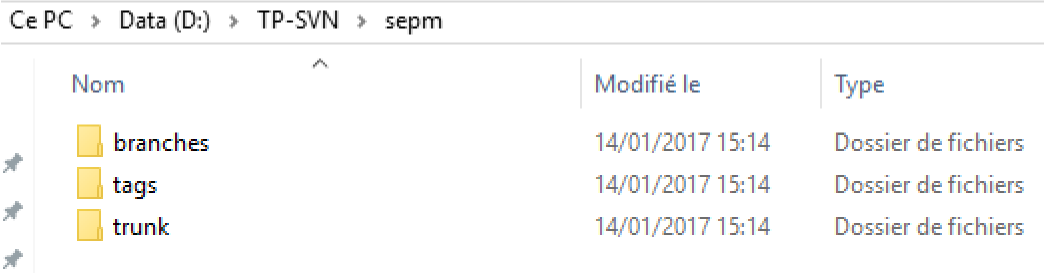
It creates the "sepm-svn" folder containing the files shown in the third question.

3. Import your sepm project in the sepm-svn repository (trunk). Notice the difference between the initial project directory and the svn repository. Understand the role of the three folders (trunk, branches and tags).



```
D:\TP-SVN
λ svn import sepm file:///D:/TP-SVN/sepm-svn -m "first commit sepm"
Adding         sepm\branches
Adding         sepm\tags
Adding         sepm\trunk
Adding         sepm\trunk\readme.txt

Committed revision 1.
```

Initial project directory:

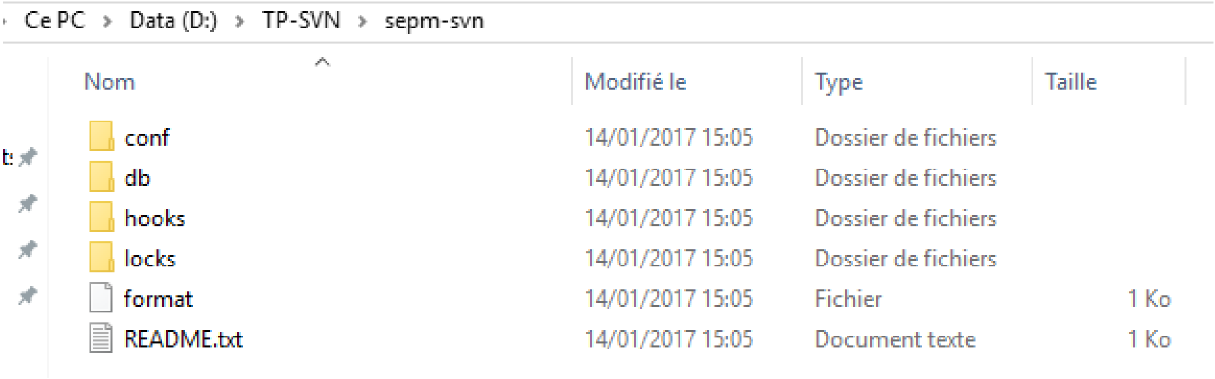


Ce PC › Data (D:) › TP-SVN › sepm

Nom	Modifié le	Type
branches	14/01/2017 15:14	Dossier de fichiers
tags	14/01/2017 15:14	Dossier de fichiers
trunk	14/01/2017 15:14	Dossier de fichiers

- **Trunk**: main development area. This is where the current source code lives.
- **Branches**: copy of code coming from a certain point in the trunk that is used for applying major changes to the code while preserving the original code in the trunk
- **Tags**: a point in time on the trunk or a branch that one wishes to preserve

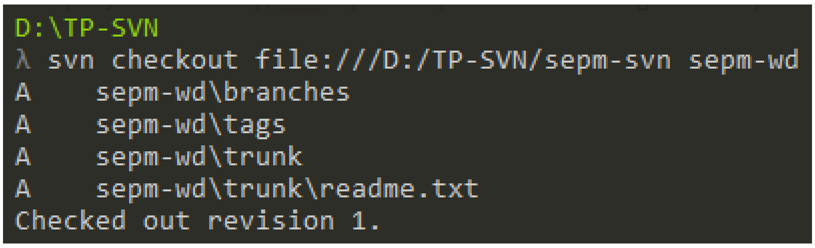
New local SVN repository:



Ce PC › Data (D:) › TP-SVN › sepm-svn

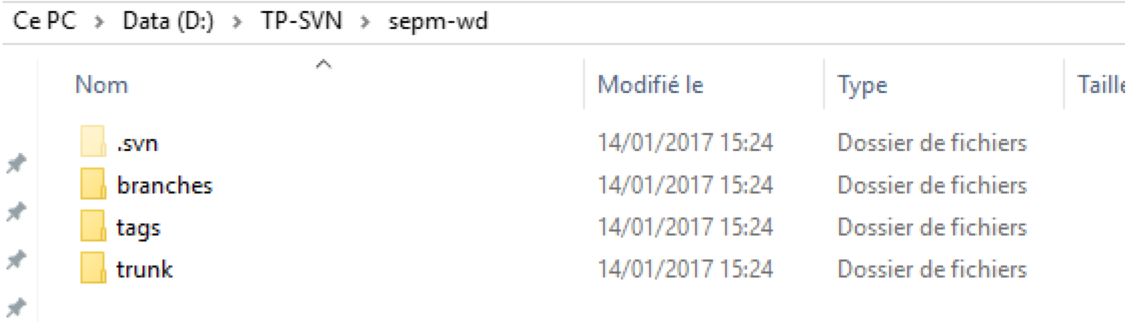
Nom	Modifié le	Type	Taille
conf	14/01/2017 15:05	Dossier de fichiers	
db	14/01/2017 15:05	Dossier de fichiers	
hooks	14/01/2017 15:05	Dossier de fichiers	
locks	14/01/2017 15:05	Dossier de fichiers	
format	14/01/2017 15:05	Fichier	1 Ko
README.txt	14/01/2017 15:05	Document texte	1 Ko

4. Checkout a working copy of the newly created project in a new directory named sepm-wd. Notice the difference between initial project directory, svn repository and the working directory.



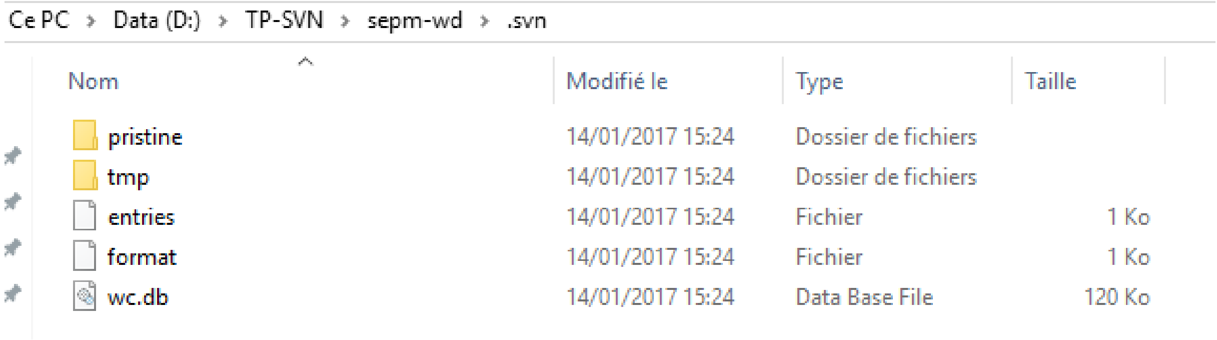
```
D:\TP-SVN
λ svn checkout file:///D:/TP-SVN/sepm-svn sepm-wd
A    sepm-wd\branches
A    sepm-wd\tags
A    sepm-wd\trunk
A    sepm-wd\trunk\readme.txt
Checked out revision 1.
```

Both “sepm-svn” and “sepm” remain unchanged, however the new “sepm-wd” is like the original “sepm” with a new “.svn” hidden folder at the root:



Ce PC › Data (D:) › TP-SVN › sepm-wd

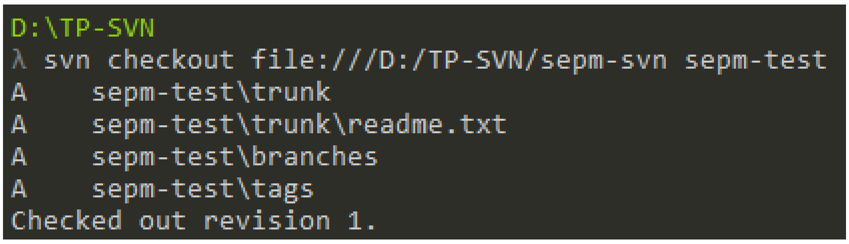
Nom	Modifié le	Type	Taille
.svn	14/01/2017 15:24	Dossier de fichiers	
branches	14/01/2017 15:24	Dossier de fichiers	
tags	14/01/2017 15:24	Dossier de fichiers	
trunk	14/01/2017 15:24	Dossier de fichiers	



Ce PC › Data (D:) › TP-SVN › sepm-wd › .svn

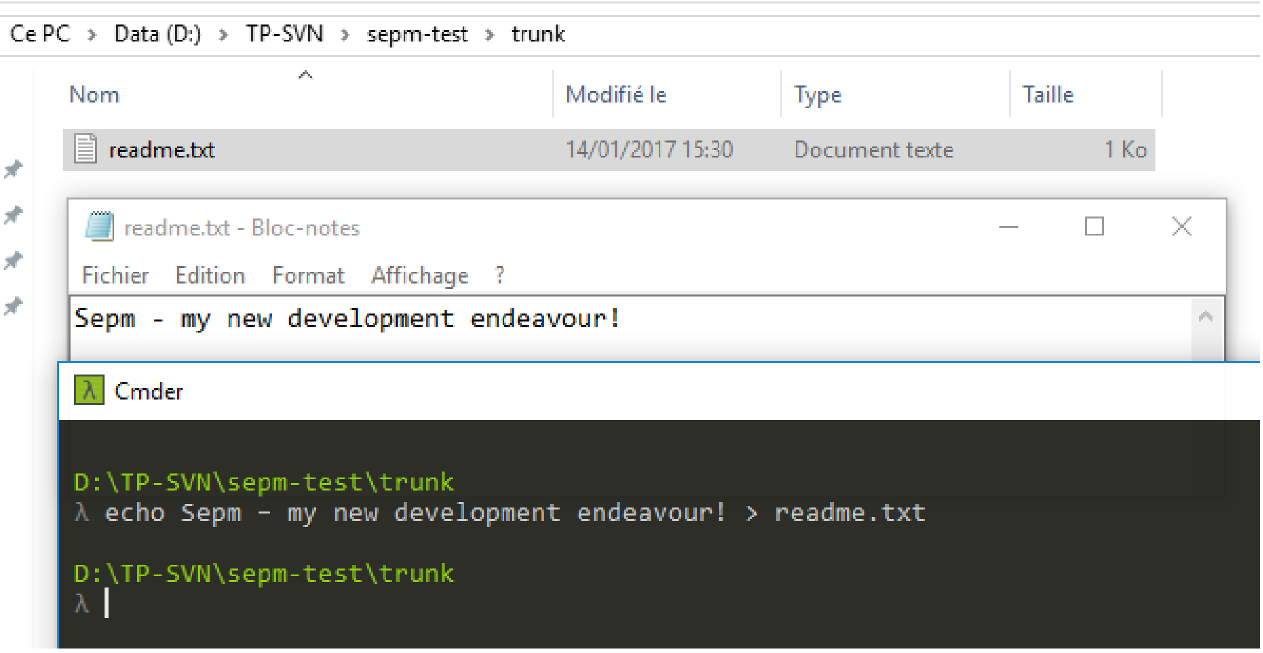
Nom	Modifié le	Type	Taille
pristine	14/01/2017 15:24	Dossier de fichiers	
tmp	14/01/2017 15:24	Dossier de fichiers	
entries	14/01/2017 15:24	Fichier	1 Ko
format	14/01/2017 15:24	Fichier	1 Ko
wc.db	14/01/2017 15:24	Data Base File	120 Ko

5. Checkout a second working copy of the project in a different working directory, called sepm-test. Now you can work in two distinct working directories, simulating a two developers team using the same repository.



```
D:\TP-SVN
λ svn checkout file:///D:/TP-SVN/sepm-svn sepm-test
A    sepm-test\trunk
A    sepm-test\trunk\readme.txt
A    sepm-test\branches
A    sepm-test\tags
Checked out revision 1.
```

*6. In the sepm-test working directory, modify the readme.txt file so that the first line looks like “***S***epm – my new development endeavour***!***” (differences are underlined).*

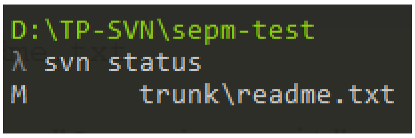

Ce PC › Data (D:) › TP-SVN › sepm-test › trunk
readme.txt - Bloc-notes
Fichier Edition Format Affichage ?
Cmder

Nom	Modifié le	Type	Taille
readme.txt	14/01/2017 15:30	Document texte	1 Ko

```
Sepm - my new development endeavour!
```

```
D:\TP-SVN\sepm-test\trunk
λ echo Sepm - my new development endeavour! > readme.txt

D:\TP-SVN\sepm-test\trunk
λ |
```

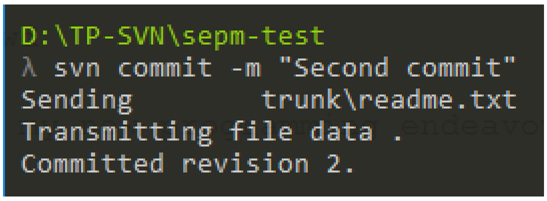
7. Check the status of your working directory. What do you get?



```
D:\TP-SVN\sepm-test
λ svn status
M       trunk\readme.txt
```

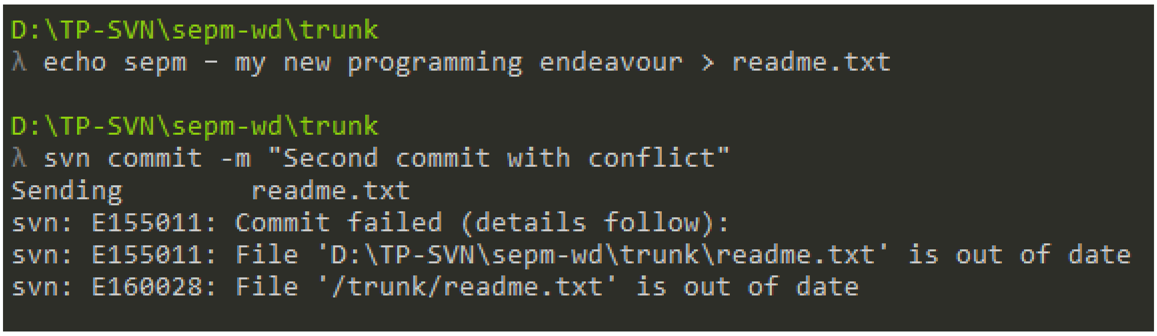
The file readme.txt is flagged as “Modified”.

8. Commit the change. Don’t forget to write an informative message!



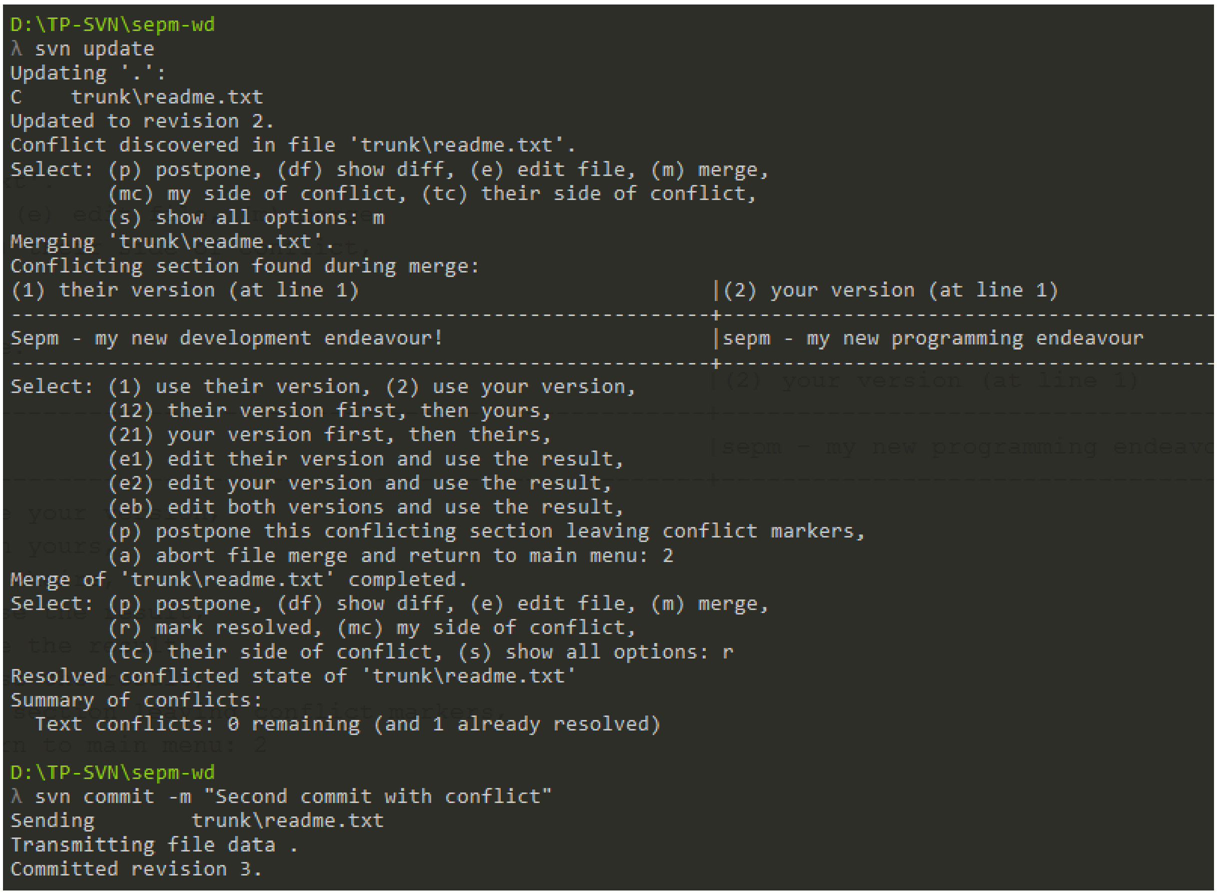
```
D:\TP-SVN\sepm-test
λ svn commit -m "Second commit"
Sending        trunk\readme.txt
Transmitting file data .
Committed revision 2.
```

9. In the first working directory (sepm-wd), change the first line to “sepm – my new programming endeavour”. Try to commit the change. Resolve the conflict.



```
D:\TP-SVN\sepm-wd\trunk
λ echo sepm - my new programming endeavour > readme.txt

D:\TP-SVN\sepm-wd\trunk
λ svn commit -m "Second commit with conflict"
Sending        readme.txt
svn: E155011: Commit failed (details follow):
svn: E155011: File 'D:\TP-SVN\sepm-wd\trunk\readme.txt' is out of date
svn: E160028: File '/trunk/readme.txt' is out of date
```

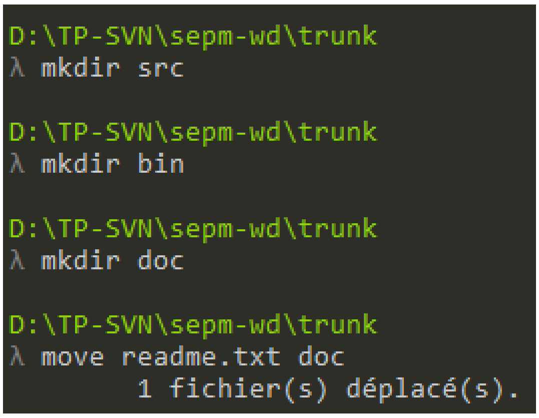
To solve the conflict, we will do a “svn update”:



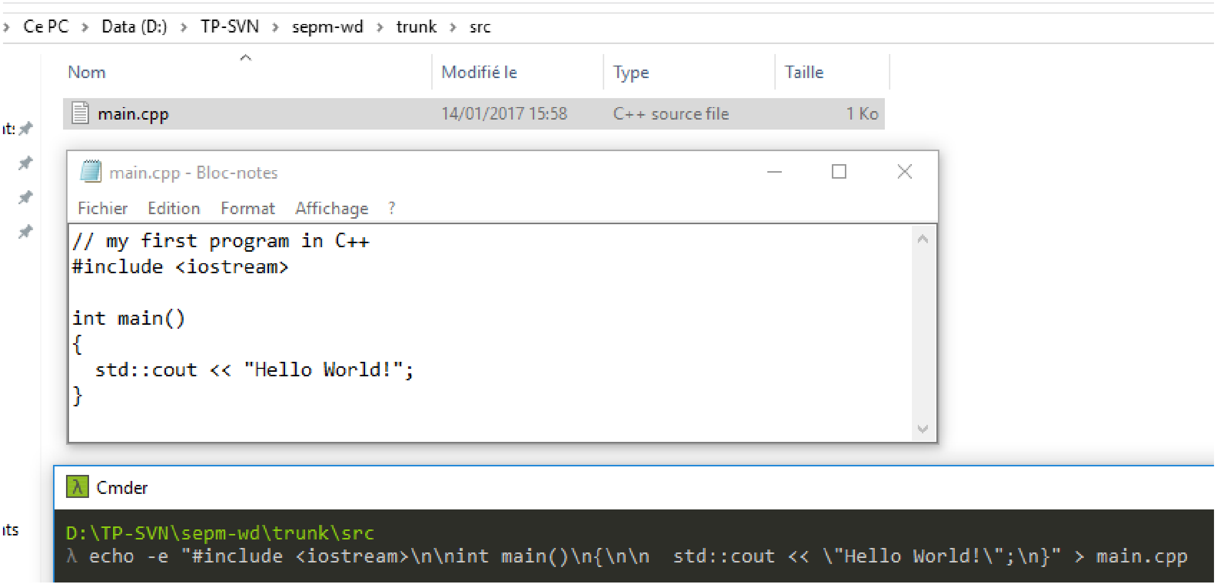
```
D:\TP-SVN\sepm-wd
λ svn update
Updating '.':
C    trunk\readme.txt
Updated to revision 2.
Conflict discovered in file 'trunk\readme.txt'.
Select: (p) postpone, (df) show diff, (e) edit file, (m) merge,
        (mc) my side of conflict, (tc) their side of conflict,
        (s) show all options: m
Merging 'trunk\readme.txt'.
Conflicting section found during merge:
(1) their version (at line 1)                             |(2) your version (at line 1)
----------------------------------------------------------+-----------------------------------------
Sepm - my new development endeavour!                      |sepm - my new programming endeavour
----------------------------------------------------------+-----------------------------------------
Select: (1) use their version, (2) use your version,
        (12) their version first, then yours,
        (21) your version first, then theirs,
        (e1) edit their version and use the result,
        (e2) edit your version and use the result,
        (eb) edit both versions and use the result,
        (p) postpone this conflicting section leaving conflict markers,
        (a) abort file merge and return to main menu: 2
Merge of 'trunk\readme.txt' completed.
Select: (p) postpone, (df) show diff, (e) edit file, (m) merge,
        (r) mark resolved, (mc) my side of conflict,
        (tc) their side of conflict, (s) show all options: r
Resolved conflicted state of 'trunk\readme.txt'
Summary of conflicts:
  Text conflicts: 0 remaining (and 1 already resolved)

D:\TP-SVN\sepm-wd
λ svn commit -m "Second commit with conflict"
Sending        trunk\readme.txt
Transmitting file data .
Committed revision 3.
```

We are asked to choose a version to commit. Then, we can commit normally.

10. In your current working directory (sepm-wd), create three new folders named src, bin and doc. Move the readme.txt file in the doc directory and create a new main.cpp file inside src (the main function should print a silly message in the console).



```
D:\TP-SVN\sepm-wd\trunk
λ mkdir src

D:\TP-SVN\sepm-wd\trunk
λ mkdir bin

D:\TP-SVN\sepm-wd\trunk
λ mkdir doc

D:\TP-SVN\sepm-wd\trunk
λ move readme.txt doc
        1 fichier(s) déplacé(s).
```

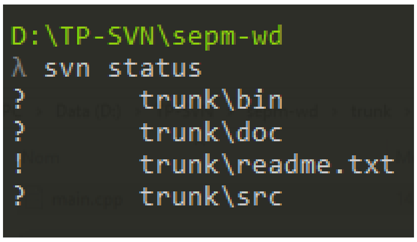

Ce PC › Data (D:) › TP-SVN › sepm-wd › trunk › src
main.cpp - Bloc-notes
Fichier Edition Format Affichage ?
Cmder

Nom	Modifié le	Type	Taille
main.cpp	14/01/2017 15:58	C++ source file	1 Ko

```
// my first program in C++
#include <iostream>

int main()
{
  std::cout << "Hello World!";
}
```

```
D:\TP-SVN\sepm-wd\trunk\src
λ echo -e "#include <iostream>\n\nint main()\n{\n\n  std::cout << \"Hello World!\";\n}" > main.cpp
```

11. Check the svn status. What happens?

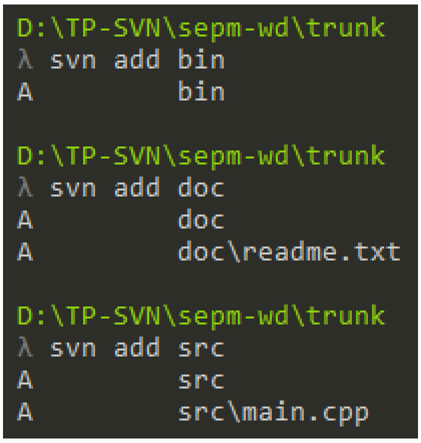


```
D:\TP-SVN\sepm-wd
λ svn status
?       trunk\bin
?       trunk\doc
!       trunk\readme.txt
?       trunk\src
```

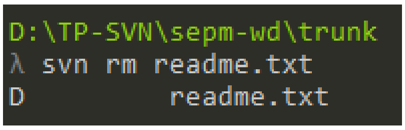
The folders bin, doc and src are flagged as "?", which is untracked. The readme has a "!" because it has been deleted and is no longer tracked. The content of the new folders is not yet detected.

12. Do what's necessary to add/remove the new directories and files and commit successfully.

First, we must add the new folders:



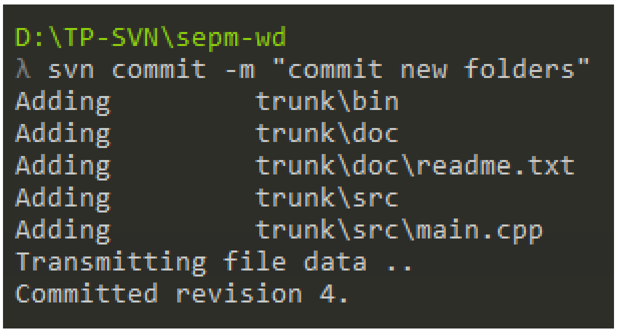
```
D:\TP-SVN\sepm-wd\trunk
λ svn add bin
A         bin

D:\TP-SVN\sepm-wd\trunk
λ svn add doc
A         doc
A         doc\readme.txt

D:\TP-SVN\sepm-wd\trunk
λ svn add src
A         src
A         src\main.cpp
```



```
D:\TP-SVN\sepm-wd\trunk
λ svn rm readme.txt
D         readme.txt
```

The content of the new folders is now detected.

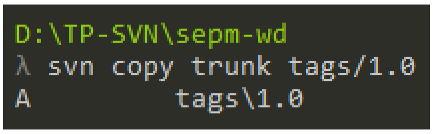
We can now commit:



```
D:\TP-SVN\sepm-wd
λ svn commit -m "commit new folders"
Adding         trunk\bin
Adding         trunk\doc
Adding         trunk\doc\readme.txt
Adding         trunk\src
Adding         trunk\src\main.cpp
Transmitting file data ..
Committed revision 4.
```

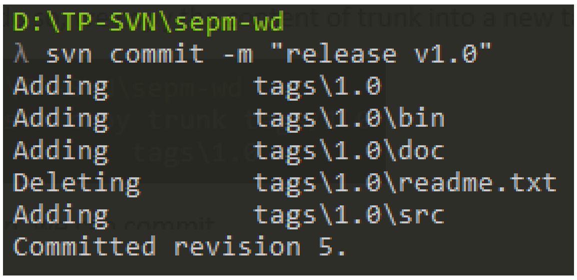
13. Release version 1.0 of your project

To do so, we copy the content of trunk into a new tag in the tags folder, 1.0.



```
D:\TP-SVN\sepm-wd
λ svn copy trunk tags/1.0
A         tags\1.0
```

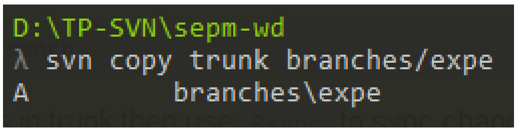
Then, we can commit.



```
D:\TP-SVN\sepm-wd
λ svn commit -m "release v1.0"
Adding         tags\1.0
Adding         tags\1.0\bin
Adding         tags\1.0\doc
Deleting       tags\1.0\readme.txt
Adding         tags\1.0\src
Committed revision 5.
```

II. Tagging, branching, merging

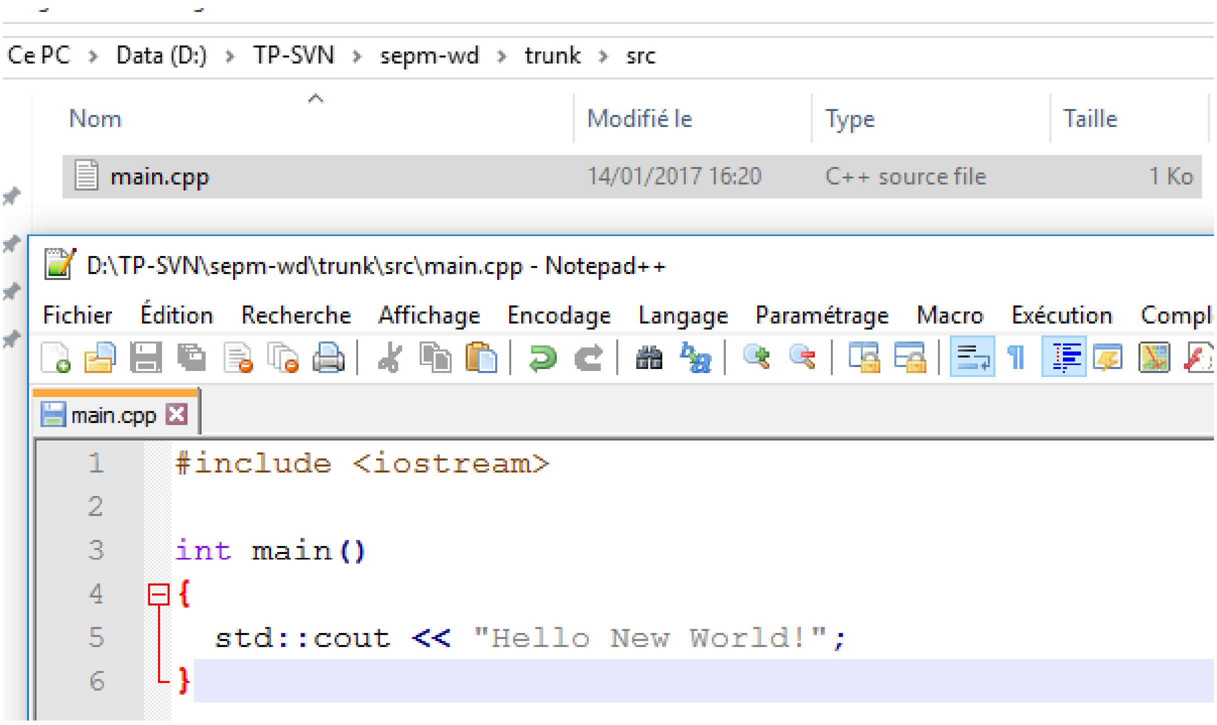
1. *Create an experimental branch named expe.*



```
D:\TP-SVN\sepm-wd
λ svn copy trunk branches/expe
A         branches\expe
```

We do not commit it yet.

2. *On the main branch, update the main.cpp file to change the content of the first displayed silly message. Commit.*

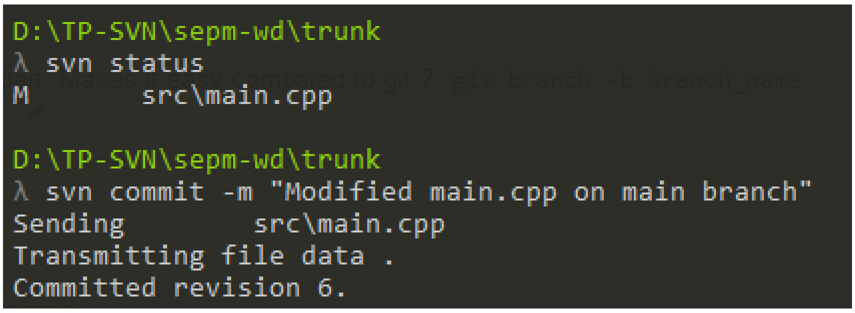


Ce PC › Data (D:) › TP-SVN › sepm-wd › trunk › src

Nom	Modifié le	Type	Taille
main.cpp	14/01/2017 16:20	C++ source file	1 Ko

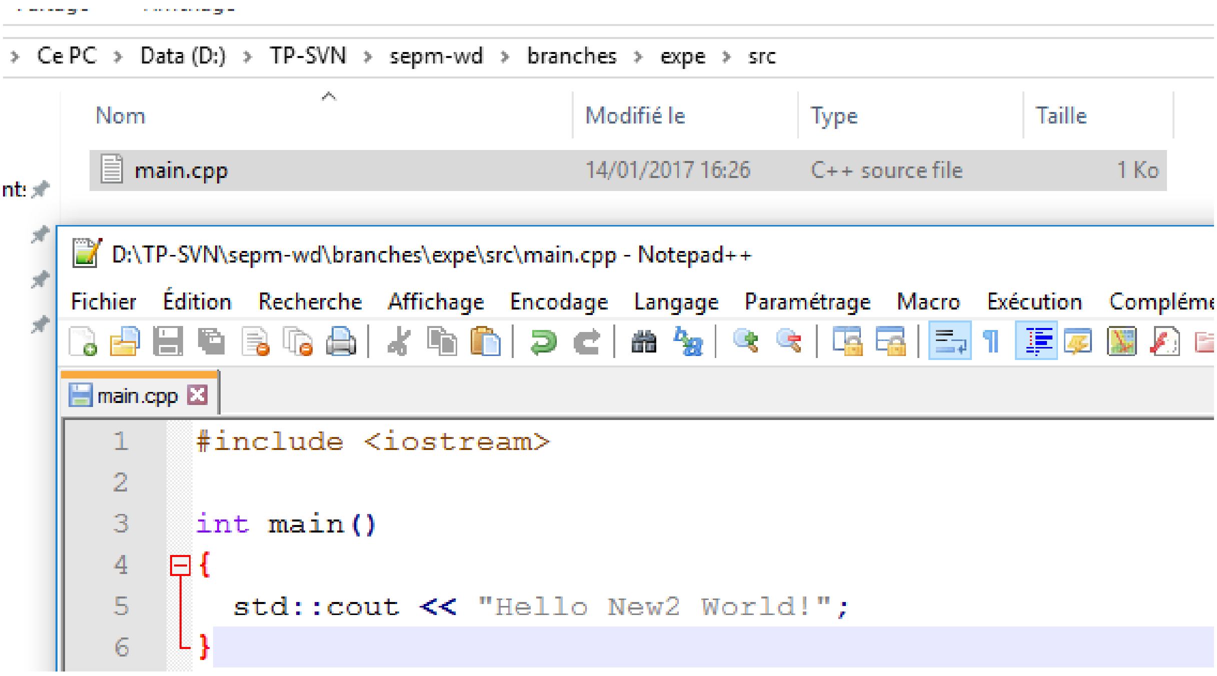
D:\TP-SVN\sepm-wd\trunk\src\main.cpp - Notepad++

```cpp
#include <iostream>

int main()
{
   std::cout << "Hello New World!";
}
```



```
D:\TP-SVN\sepm-wd\trunk
λ svn status
M       src\main.cpp

D:\TP-SVN\sepm-wd\trunk
λ svn commit -m "Modified main.cpp on main branch"
Sending        src\main.cpp
Transmitting file data .
Committed revision 6.
```

3. *On the experimental branch, update the main.cpp by adding a line of code to print the second silly message.*



› Ce PC › Data (D:) › TP-SVN › sepm-wd › branches › expe › src

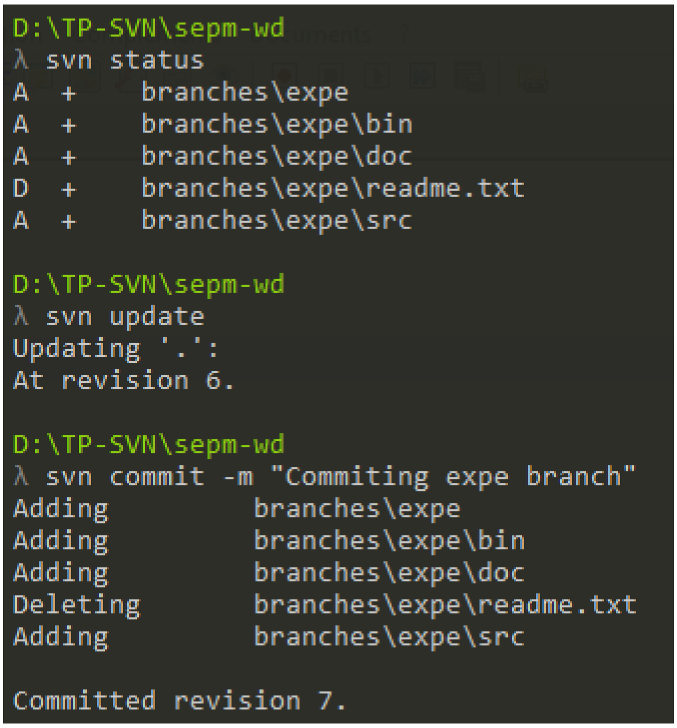
Nom	Modifié le	Type	Taille
main.cpp	14/01/2017 16:26	C++ source file	1 Ko

D:\TP-SVN\sepm-wd\branches\expe\src\main.cpp - Notepad++

```cpp
#include <iostream>

int main()
{
  std::cout << "Hello New2 World!";
}
```

4. *Update the repository.*

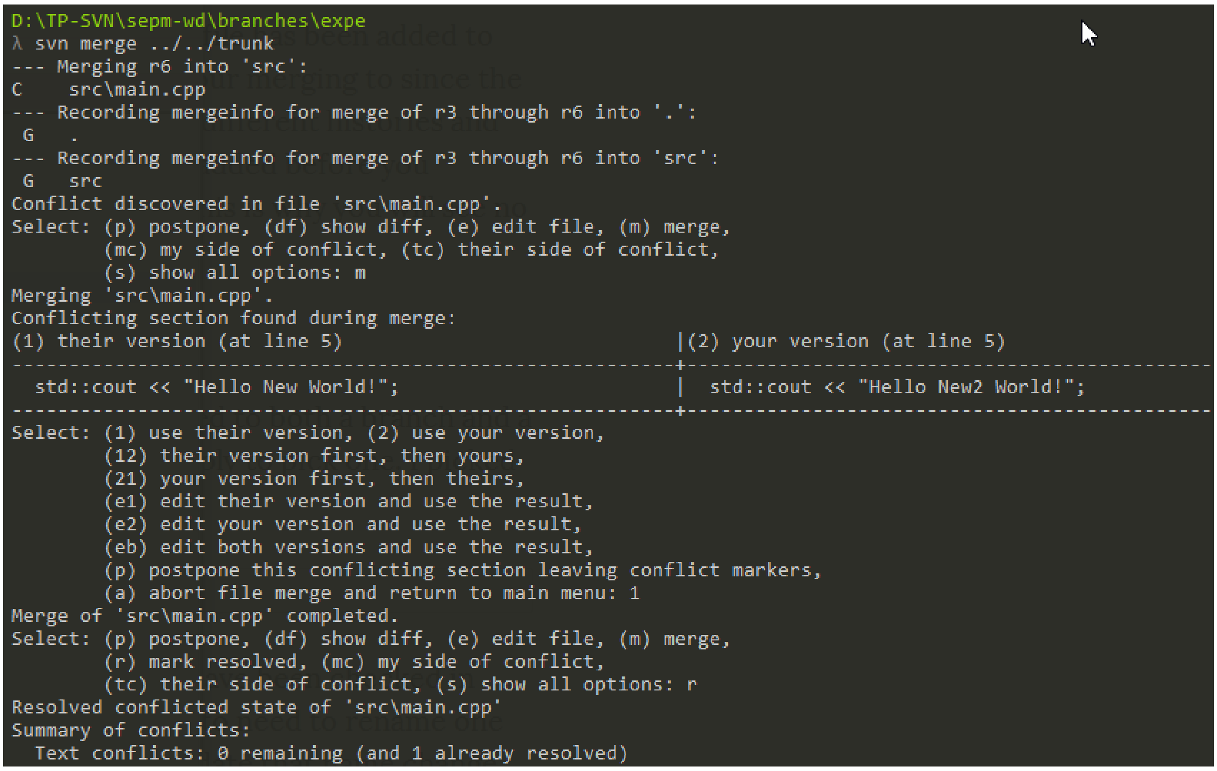
Now we can commit.



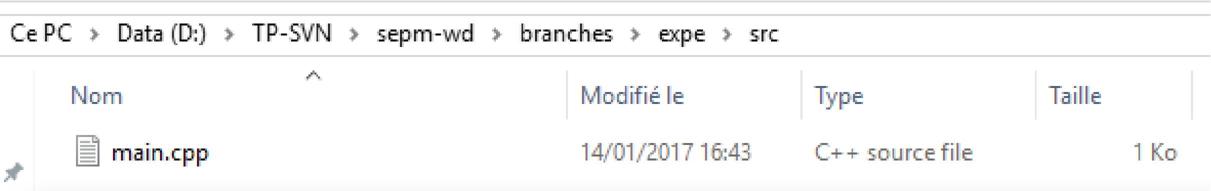
```
D:\TP-SVN\sepm-wd
λ svn status
A  +    branches\expe
A  +    branches\expe\bin
A  +    branches\expe\doc
D  +    branches\expe\readme.txt
A  +    branches\expe\src

D:\TP-SVN\sepm-wd
λ svn update
Updating '.':
At revision 6.

D:\TP-SVN\sepm-wd
λ svn commit -m "Commiting expe branch"
Adding         branches\expe
Adding         branches\expe\bin
Adding         branches\expe\doc
Deleting       branches\expe\readme.txt
Adding         branches\expe\src

Committed revision 7.
```

5. *You have heard that some important modifications have been made to the main file in the trunk branch that you should integrate in your experimental branch. Do what’s necessary to merge the main branch into the experimental branch.*

First, let’s cd into the branch directory. From there, request a merge from the trunk. Solve the conflict and we are done.

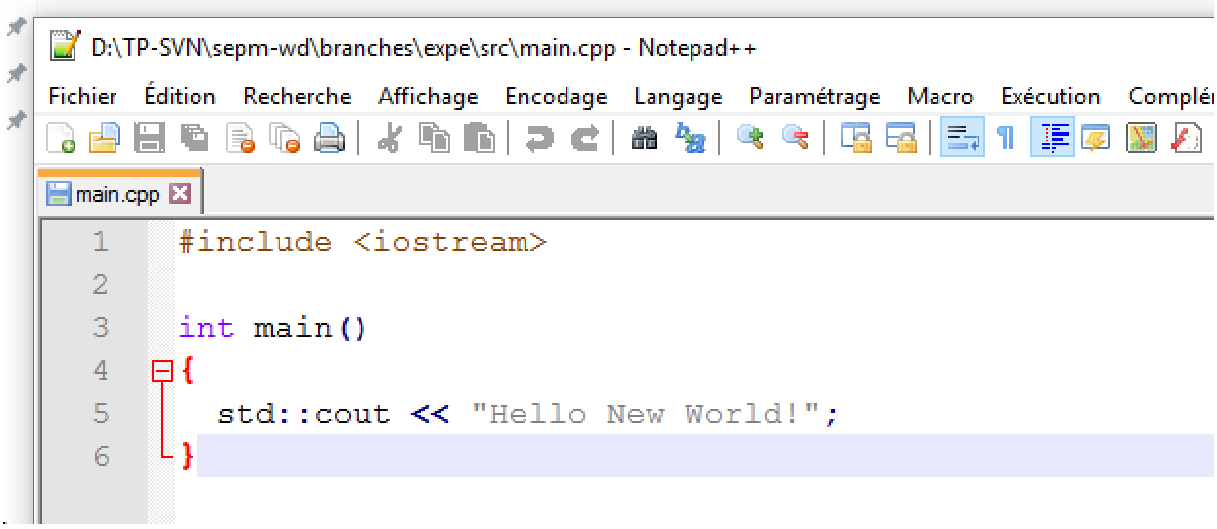


```
D:\TP-SVN\sepm-wd\branches\expe
λ svn merge ../../trunk
--- Merging r6 into 'src':
C    src\main.cpp
--- Recording mergeinfo for merge of r3 through r6 into '.':
 G   .
--- Recording mergeinfo for merge of r3 through r6 into 'src':
 G   src
Conflict discovered in file 'src\main.cpp'.
Select: (p) postpone, (df) show diff, (e) edit file, (m) merge,
        (mc) my side of conflict, (tc) their side of conflict,
        (s) show all options: m
Merging 'src\main.cpp'.
Conflicting section found during merge:
(1) their version (at line 5)                         |(2) your version (at line 5)
------------------------------------------------------+------------------------------------------------------
  std::cout << "Hello New World!";                    |  std::cout << "Hello New2 World!";
------------------------------------------------------+------------------------------------------------------
Select: (1) use their version, (2) use your version,
        (12) their version first, then yours,
        (21) your version first, then theirs,
        (e1) edit their version and use the result,
        (e2) edit your version and use the result,
        (eb) edit both versions and use the result,
        (p) postpone this conflicting section leaving conflict markers,
        (a) abort file merge and return to main menu: 1
Merge of 'src\main.cpp' completed.
Select: (p) postpone, (df) show diff, (e) edit file, (m) merge,
        (r) mark resolved, (mc) my side of conflict,
        (tc) their side of conflict, (s) show all options: r
Resolved conflicted state of 'src\main.cpp'
Summary of conflicts:
  Text conflicts: 0 remaining (and 1 already resolved)
```



Ce PC › Data (D:) › TP-SVN › sepm-wd › branches › expe › src

Nom	Modifié le	Type	Taille
main.cpp	14/01/2017 16:43	C++ source file	1 Ko



D:\TP-SVN\sepm-wd\branches\expe\src\main.cpp - Notepad++

```cpp
#include <iostream>

int main()
{
   std::cout << "Hello New World!";
}
```

References:

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