

Part 1 : Version Control with git problem statement

Part 2 : Version Control with git to resolve conflicts in Problem Statement

Part 1

Problem Statement on Version Control with git :

Three Developers are working in Aperture Technology co. Their company wants a better Source Code Management System because the earlier tool had the tendency to save redundant code. Multiple Developers working simultaneously on the same block of code also caused problems.

You are Mike, and your manager has given you the task of moving the company's code base to git and Github.

Action Items:

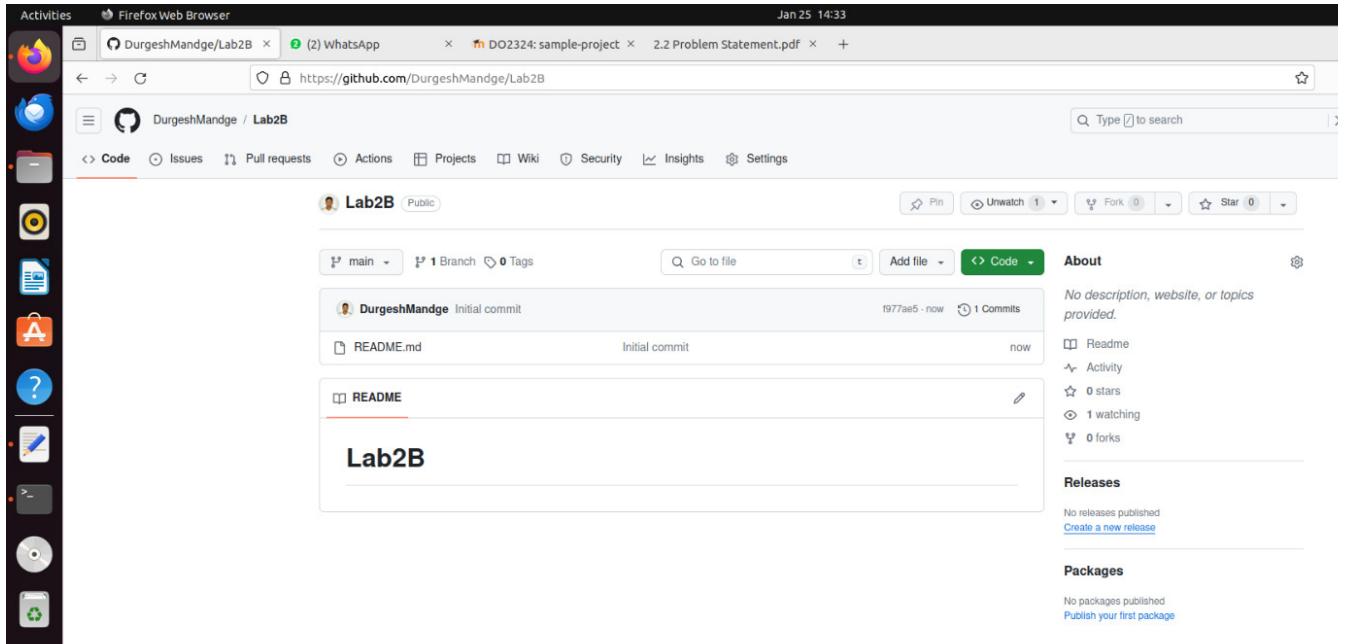
1. Create a local git repository and move the entire code base to it
2. Create a new branch for a new feature you want to add to the application
3. Merge back the created branch with the master branch
4. Create a remote repository
5. Push the local repository to company's remote repository

Solution:

We are going to follow following steps to move the code base to GitHub.

1. Download the Company code base on the local system on location X(say).
2. Create empty repository with only Readme.md file on the Git name it as "Lab2A".
3. Clone that repository into some location on local system.
4. Now that repository contains only Readme.md file and it is connect with remote github repository with a link named as "Origin".
5. Create the branch "branch1" and checkout to that branch
6. Now move the codebase from location X to current working directory.
7. Add and Commit these changes from branch1.
8. Now switch to main branch and merge the branch1 with it
9. And now push the main branch to remote repository and the CodeBase is now available on GitHub

1. Create empty repository with only Readme.md file on the Git name it as “Lab2A”.



2. Clone that repository into some location on local system.

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop$ git clone https://github.com/DurgeshMandge/Lab2A.git
Cloning into 'Lab2A'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
```

3. Create the branch “branch1” and checkout to that branch

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop$ cd Lab2A
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git branch
* main
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git branch branch1
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git checkout branch1
Switched to branch 'branch1'
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git status
On branch branch1
nothing to commit, working tree clean
```

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ ls  
README.md
```

4. Now move the codebase from location X to current working directory.

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ ls  
Lab2ABase README.md
```

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git status  
On branch branch1  
Untracked files:  
(use "git add <file>..." to include in what will be committed)  
css/  
fonts/  
img/  
index.html  
nothing added to commit but untracked files present (use "git add" to track)
```

5. Add and Commit these changes from branch1.

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git add .  
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git status  
On branch branch1  
Changes to be committed:  
(use "git restore --staged <file>..." to unstage)  
  new file: css/site.css  
  new file: fonts/segoeui.ttf  
  new file: img/cloneWhite.svg  
  new file: img/deployWhite.svg  
  new file: img/lightbulbWhite.svg  
  new file: img/stackWhite.svg  
  new file: img/successCloudNew.svg  
  new file: img/tweetThis.svg  
  new file: index.html
```

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git commit -m "first Commit"  
[branch1 1fa78e3] first Commit  
9 files changed, 198 insertions(+)  
create mode 100644 css/site.css  
create mode 100644 fonts/segoeui.ttf  
create mode 100644 img/cloneWhite.svg  
create mode 100644 img/deployWhite.svg  
create mode 100644 img/lightbulbWhite.svg  
create mode 100644 img/stackWhite.svg  
create mode 100644 img/successCloudNew.svg  
create mode 100644 img/tweetThis.svg  
create mode 100644 index.html
```

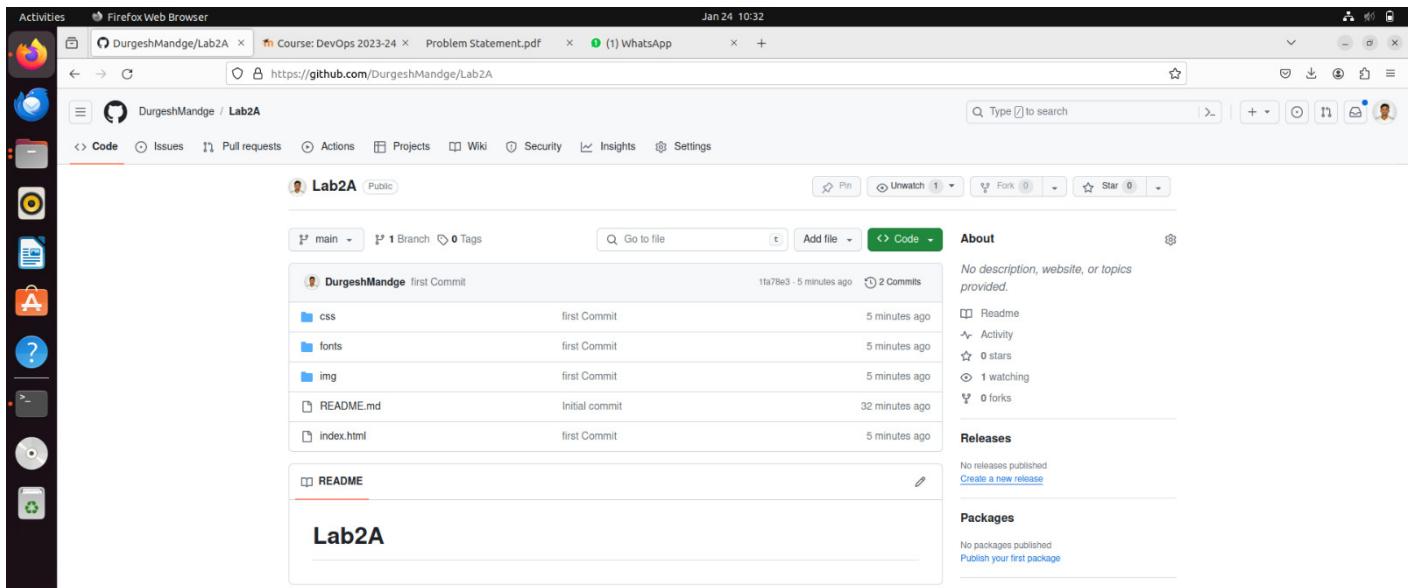
6. Now switch to main branch and merge the branch1 with it

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git merge branch1
Updating 3b3aa57..1fa78e3
Fast-forward
 css/site.css      | 134 ++++++=====
 fonts/segoeui.ttf | Bin 0 -> 808120 bytes
 img/cloneWhite.svg| 1 +
 img/deployWhite.svg| 1 +
 img/lightbulbWhite.svg| 1 +
 img/stackWhite.svg| 1 +
 img/successCloudNew.svg| 1 +
 img/tweetThis.svg| 1 +
 index.html        | 58 ++++++=====
 9 files changed, 198 insertions(+)
 create mode 100644 css/site.css
 create mode 100644 fonts/segoeui.ttf
 create mode 100644 img/cloneWhite.svg
 create mode 100644 img/deployWhite.svg
 create mode 100644 img/lightbulbWhite.svg
 create mode 100644 img/stackWhite.svg
 create mode 100644 img/successCloudNew.svg
 create mode 100644 img/tweetThis.svg
 create mode 100644 index.html
```

7. And now push the main branch to remote repository and the CodeBase is now available on GitHub

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2A$ git push origin main
Username for 'https://github.com': DurgeshMandge
Password for 'https://DurgeshMandge@github.com':
Enumerating objects: 15, done.
Counting objects: 100% (15/15), done.
Compressing objects: 100% (12/12), done.
Writing objects: 100% (14/14), 460.49 KiB | 5.55 MiB/s, done.
Total 14 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/DurgeshMandge/Lab2A.git
 3b3aa57..1fa78e3  main -> main
```

Result :



Part 1 Completed

Part 2

Problem Statement on Version Control with git :

Hooli Co. has put Harry and Kane to implement a new set of features in their featuresoftware. Both started working separately, making their own copies of the samesource code.

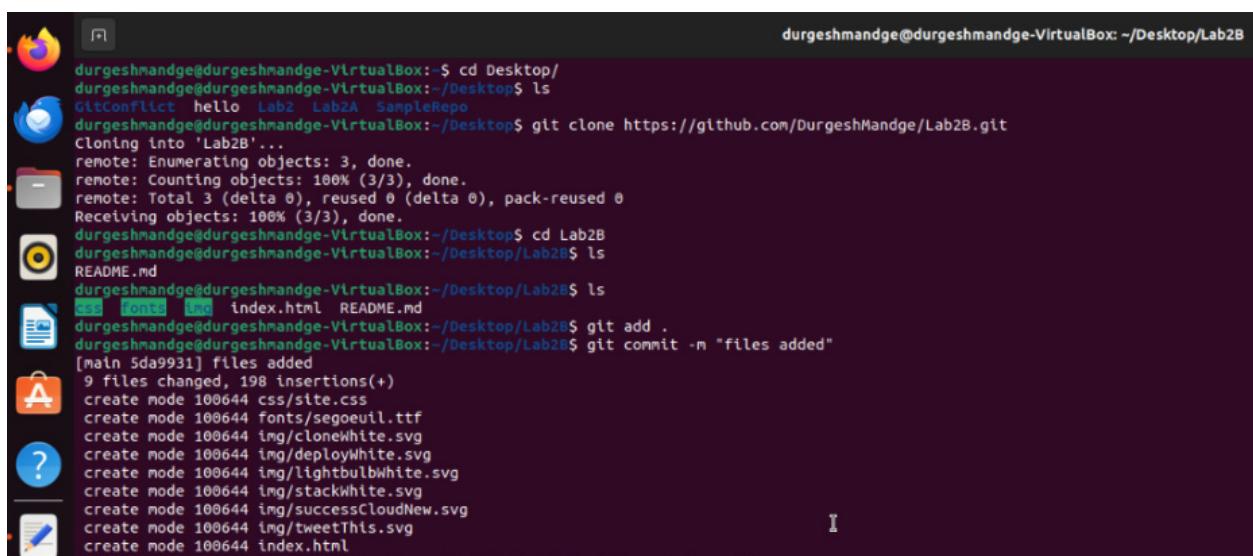
Now, it has become difficult for them to track the changes they've madein the original code, and they are finding it difficult to merge their code together.

Action Items :

1. Create two separate branches from master
2. Make changes in the same function of the source code in both the branches
3. Merge branch1 into the master
4. Try and merge branch2 into the master (merge conflict should arise)
5. Install a merge tool of your choice and resolve the merge conflict usinggit mergetool command

Solution :

1. Lets create the git repository which is connected with "GitHub" with link named "Origin" and which contains the "Source Code".



```
durgeshmandge@durgeshmandge-VirtualBox: ~$ cd Desktop/
durgeshmandge@durgeshmandge-VirtualBox: ~/Desktop$ ls
GitConflict hello LabZ LabZA SampleRepo
durgeshmandge@durgeshmandge-VirtualBox: ~/Desktop$ git clone https://github.com/DurgeshMandge/Lab2B.git
Cloning into 'Lab2B'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (3/3), done.
durgeshmandge@durgeshmandge-VirtualBox: ~/Desktop$ cd Lab2B
durgeshmandge@durgeshmandge-VirtualBox: ~/Desktop/Lab2B$ ls
README.md
durgeshmandge@durgeshmandge-VirtualBox: ~/Desktop/Lab2B$ ls
 README.md fonts img index.html
durgeshmandge@durgeshmandge-VirtualBox: ~/Desktop/Lab2B$ git add .
durgeshmandge@durgeshmandge-VirtualBox: ~/Desktop/Lab2B$ git commit -m "files added"
[main 5d9931] files added
 9 files changed, 198 insertions(+)
 create node 100644 css/site.css
 create node 100644 fonts/segoeui.ttf
 create node 100644 img/cloneWhite.svg
 create node 100644 img/deployWhite.svg
 create node 100644 img/lightbulbWhite.svg
 create node 100644 img/stackWhite.svg
 create node 100644 img/successCloudNew.svg
 create node 100644 img/tweetThis.svg
 create node 100644 index.html
```

2. Now create new branch “branch1” and “branch2” and checkout to “branch1”
3. Then make some changes in “index.html” file from branch1.

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git branch branch1
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git branch branch2
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git checkout branch1
Switched to branch 'branch1'
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ nano index.html
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git status
On branch branch1
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
    (use "git restore <file>..." to discard changes in working directory)
      modified:   index.html

no changes added to commit (use "git add" and/or "git commit -a")
```

4. Commit changes from “branch1”

```
no changes added to commit (use "git add" and/or "git commit -a")
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git add .
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git commit -m "Commit from branch1"
[branch1 2cff0fa] Commit from branch1
 1 file changed, 2 insertions(+), 2 deletions(-)
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git checkout branch2
```

5. Checkout to “branch2” and do some changes in “index.html”

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git checkout branch2
Switched to branch 'branch2'
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ nano index.html
```

```

GNU nano 6.2                                         index.html *

<!DOCTYPE html>
<html>

<head>
    <title>Changes from Branch2</title>
    <link href="css/site.css" rel="stylesheet">
</head>

<body>
    <div class="main-container">
        <div class="cloud-image">
            
        </div>
        <div class="content">
            <div class="tweet-container">
                <a href="http://twitter.com/intent/tweet/?text=I%20just%20created%20a%20new%20HTML%20website%20on%20Azure">
                    
                </a>
            </div>
            <div class="content-body">
                <div class="success-text">Success Comes!</div>
                <div class="description line-1"> Azure DevOps Project has been successfully setup</div>
                <div class="description line-2"> Your HTML app is up and running on Azure</div>
                <div class="next-steps-container">
                    <div class="next-steps-header">Next up</div>
                    <div class="next-steps-body">
                        <div class="step">
                            <div class="step-icon">
                                
                            </div>
                            <div class="step-text"><a href="https://go.microsoft.com/fwlink/?linkid=862409">Clone your</a>
                        </div>
                        <div class="step">
                            <div class="step-icon">
                                
                            </div>
                            <div class="step-text"><a href="https://go.microsoft.com/fwlink/?linkid=862410">View your</a>
                        </div>
                        <div class="step">
...

```

```

durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git status
On branch branch2
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    modified:   index.html

no changes added to commit (use "git add" and/or "git commit -a")

```

6. Commit changes from “branch2”

```

no changes added to commit (use "git add" and/or "git commit -a")
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git add .
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git commit -m "Commit from branch2"
[branch2 9b84224] Commit from branch2
 1 file changed, 2 insertions(+), 2 deletions(-)
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git checkout main

```

7. Checkout to “main” branch and merge “branch1”

```
1 file changed, 2 insertions(+), 2 deletions(-)
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git checkout main
Switched to branch 'main'
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git merge branch1
Updating 5da9931..2cff0fa
Fast-forward
 index.html | 4 +--- 
 1 file changed, 2 insertions(+), 2 deletions(-)
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git merge branch2
```

8. Now if we try to merge “branch2” we will get conflict in merging

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git merge branch2
Auto-merging index.html
CONFLICT (content): Merge conflict in index.html
Automatic merge failed; fix conflicts and then commit the result.
```

9. To solve these conflicts we are going to use “merge conflict tool” i.e “Kdiff3”

```
AUTOMATIC MERGE FAILED; FIX CONFLICTS AND THEN COMMIT THE RESULT.
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git mergetool

This message is displayed because 'merge.tool' is not configured.
See 'git mergetool --tool-help' or 'git help config' for more details.
'git mergetool' will now attempt to use one of the following tools:
meld opendiff kdiff3 tkdiff xxdiff tortoiseMerge gvimdiff diffuse diffmerge ecmerge p4merge araxis bc codecompare smerge emerge vimdiff nvimdiff
Merging:
index.html

Normal merge conflict for 'index.html':
{local}: modified file
{remote}: modified file
Hit return to start merge resolution tool (kdiff3):
^C
```

10. In the Kdiff3 tool we can see the deltas present in the files which we have to resolve

Delta: it is a collection of consecutive lines which are producing conflicts in the files to be merged.

Activities kdif3

A (Base) index.html (Base) Encoding: UTF-8 Line end style: Unix

```

<head>
  <title>HTML Application</title>
  <link href="css/site.css" rel="stylesheet">
</head>
<body>
  <div class="main-container">
    <div class="cloud-image">
      
    </div>
    <div class="content">
      <div class="tweet-container">
        <a href="http://twitter.com/intent/tweet/?text=I%20just%20created%20a%20new%20HTML%20website%20on%20Azure%20using%20Azure%20DevOps%20Project&hashtags=AzureDevOpsProject%2CVSTS%2040Azure%20Cloud%20Computing">
          
        </a>
      </div>
      <div class="content-body">
        <div class="success-text">Success!</div>
        <div class="description-line-1">Azure DevOps Project has been successfully setup</div>
        <div class="description-line-2">Your HTML application is now live on Azure Cloud Computing</div>
        <div class="next-steps-header">Next up:</div>
        <div class="next-steps-body">
          <div class="step-icon">
            
          </div>
        </div>
      </div>
    </div>
  </div>
</body>

```

B: index.html (Local) Encoding: UTF-8 Line end style: Unix

```

<head>
  <title>Change from Branch1</title>
  <link href="css/site.css" rel="stylesheet">
</head>
<body>
  <div class="main-container">
    <div class="cloud-image">
      
    </div>
    <div class="content">
      <div class="tweet-container">
        <a href="http://twitter.com/intent/tweet/?text=I%20just%20created%20a%20new%20HTML%20website%20on%20Azure%20using%20Azure%20DevOps%20Project&hashtags=AzureDevOpsProject%2CVSTS%2040Azure%20Cloud%20Computing">
          
        </a>
      </div>
      <div class="content-body">
        <div class="success-text">Success!</div>
        <div class="description-line-1">Azure DevOps Project has been successfully setup</div>
        <div class="description-line-2">Your HTML application is now live on Azure Cloud Computing</div>
        <div class="next-steps-header">Next up:</div>
        <div class="next-steps-body">
          <div class="step-icon">
            
          </div>
        </div>
      </div>
    </div>
  </div>
</body>

```

C: index.html (Remote) Encoding: UTF-8 Line end style: Unix

```

<head>
  <title>Changes from Branch2</title>
  <link href="css/site.css" rel="stylesheet">
</head>
<body>
  <div class="main-container">
    <div class="cloud-image">
      
    </div>
    <div class="content">
      <div class="tweet-container">
        <a href="http://twitter.com/intent/tweet/?text=I%20just%20created%20a%20new%20HTML%20website%20on%20Azure%20using%20Azure%20DevOps%20Project&hashtags=AzureDevOpsProject%2CVSTS%2040Azure%20Cloud%20Computing">
          
        </a>
      </div>
      <div class="content-body">
        <div class="success-text">Success!</div>
        <div class="description-line-1">Azure DevOps Project has been successfully setup</div>
        <div class="description-line-2">Your HTML application is now live on Azure Cloud Computing</div>
        <div class="next-steps-header">Next up:</div>
        <div class="next-steps-body">
          <div class="step-icon">
            
          </div>
        </div>
      </div>
    </div>
  </div>
</body>

```

Output: /home/durgeshmandge/Desktop/Lab2B/index.html

Encoding for saving: Codec from B: UTF-8 Line end style: Unix (A, B, C)

Number of remaining unsolved conflicts: 2 (of which 0 are whitespace)

11. We can navigate from one delta to next delta with help of navigator button in the headers and then choose which content we want to upload in resultant file which is shown in bottom.

12. We have **2 deltas** in our file

a. For 1st delta I have selected files **B** and **C** both

Output: /home/durgeshmandge/Desktop/Lab2B/index.html

```

<!Doctype html>
<html>

<head>
  <title>Changes from Branch2</title>
  <title>Change from Branch1</title> [Cursor]
  <link href="css/site.css" rel="stylesheet">
</head>

<body>
  <div class="main-container">
    <div class="cloud-image">
      
    </div>
    <div class="content">
      <div class="tweet-container">
        <a href="http://twitter.com/intent/tweet/?text=I%20just%20created%20a%20new%20HTML%20website%20on%20Azure%20using%20Azure%20DevOps%20Project&hashtags=AzureDevOpsProject%2CVSTS%2040Azure%20Cloud%20Computing">
          
        </a>
      </div>
      <div class="content-body">
        <div class="success-text">Success!</div>
        <div class="description-line-1">Azure DevOps Project has been successfully setup</div>
        <div class="description-line-2">Your HTML application is now live on Azure Cloud Computing</div>
        <div class="next-steps-header">Next up:</div>
        <div class="next-steps-body">
          <div class="step-icon">
            
          </div>
        </div>
      </div>
    </div>
  </div>
</body>

```

b. For 2nd delta I have selected files **A**, **B**, **C** to be added

```
Output: /home/durgeshmandge/Desktop/Lab2B/index.html
.....<div><div>
.....<a href="http://twitter.com/intent/tweet/?text=I%20just%20created%20a%20new%2
.....</a>
.....</div>
.....<div><div>
.....<div>Success·Mantra!</div>
.....<div>Success!</div>
.....<div>Success·Comes!</div>
.....<div>·Azure·DevOps·Project·has·been·successful
.....<div>·Your·HTML·app·is·up·and·running·on·Azure
.....<div><div>
.....<div>Next·up</div>
.....<div><div>
```

13. Now we have resolved both conflicts in the index.html file

We can save this changes from Kdiff3 which will create some files in working directory for us.

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git status
On branch main
Your branch is ahead of 'origin/main' by 2 commits.
  (use "git push" to publish your local commits)

You have unmerged paths.
  (fix conflicts and run "git commit")
  (use "git merge --abort" to abort the merge)

Unmerged paths:
  (use "git add <file>..." to mark resolution)
    both modified:  index.html

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    index.html.orig
    index_BACKUP_5387.html
    index_BASE_5387.html
    index_LOCAL_5387.html
    index_REMOTE_5387.html

no changes added to commit (use "git add" and/or "git commit -a")
```

14. Among all 6 files only index.html file is useful for us
Hence we will add it to staging area and then commit it.

```
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git add index.html
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git commit -m "Conflict solved"
[main 29f46c8] Conflict solved
```

15. As both of the branches “branch1” and “branch2” are merged together without any conflicts we are ready to push all changes to the remote repository.

```
[main 29f46c8] Conflict solved
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$ git push origin main
Username for 'https://github.com': DurgeshMandge
Password for 'https://DurgeshMandge@github.com':
Enumerating objects: 24, done.
Counting objects: 100% (24/24), done.
Compressing objects: 100% (21/21), done.
Writing objects: 100% (23/23), 461.17 KiB | 6.78 MiB/s, done.
Total 23 (delta 7), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (7/7), done.
To https://github.com/DurgeshMandge/Lab2B.git
  f977ae5..29f46c8  main -> main
durgeshmandge@durgeshmandge-VirtualBox:~/Desktop/Lab2B$
```

16. We can see the changes made by Kdiff3 tool over index.html on the remote repository.

Activities Firefox Web Browser Jan 25 15:25

Lab2B/index.html at main · (3) WhatsApp DO2324: sample-project · 2.2 Problem Statement.pdf +

https://github.com/DurgeshMandge/Lab2B/blob/main/index.html

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

Files

main Go to file

css fonts img README.md index.html

Lab2B / index.html

DurgeshMandge Conflict solved

Code Blame 61 lines (58 loc) · 2.97 KB

```
1 <!Doctype html>
2 <html>
3
4 <head>
5   <title>Changes from Branch2</title>
6   <title>Change from Branch1</title>
7   <link href="css/site.css" rel="stylesheet">
8 </head>
9
10 <body>
11   <div class="main-container">
12     <div class="cloud-image">
13       
```

Activities Firefox Web Browser Jan 25 15:25

Lab2B/index.html at main · (3) WhatsApp DO2324: sample-project · 2.2 Problem Statement.pdf +

https://github.com/DurgeshMandge/Lab2B/blob/main/index.html

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Files

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css fonts img README.md index.html

Lab2B / index.html

DurgeshMandge Conflict solved

Code Blame 61 lines (58 loc) · 2.97 KB

```
1 <!Doctype html>
2 <html>
3
4 <head>
5   <title>Changes from Branch2</title>
6   <title>Change from Branch1</title>
7   <link href="css/site.css" rel="stylesheet">
8 </head>
9
10 <body>
11   <div class="main-container">
12     <div class="cloud-image">
13       
14     </div>
15     <div class="content">
16       <div class="tweet-container">
17         <a href="http://twitter.com/intent/tweet/?text=I%20just%20created%20a%20new%20HTML%20website%20on%20Azure%20using%20DevOps%20Project&hashtags=AzureDevOpsProject%2CSTS%20402" target="_blank">
18           
19         </a>
20       </div>
21       <div class="content-body">
22         <div class="success-text">Success Mantra!</div>
23         <div class="success-text">Success!</div>
24         <div class="success-text">Success Comes!</div>
25         <div class="description line-2">Our HTML app is up and running on Azure!</div>
26       </div>
27       <div class="next-steps-container">
28         <div class="next-steps-header">Next up:</div>
29         <div class="next-steps-body">
30           <div class="step">
31             <div class="step-icon">
32               
33             </div>
34             <div class="step-text"><a href="https://go.microsoft.com/fwlink/?LinkId=862409">Clone your code repository and start developing your application on IDE of your choice</a>
35           </div>
36         </div>

```

Part 2 Completed

