

1 Semistructured Merge

1.1 Early Concepts

- Every node's origin is set to UNKNOWN beforehand

1.2 Merge Algorithms

Algorithm 1: Merge Files

```
Input: l, b, r, o
1 if  $l.content = b.content$  then
2   |  $o.content \leftarrow r.content$ ;
3 else if  $b.content = r.content \vee l.content = r.content$  then
4   |  $o.content \leftarrow l.content$ ;
5 else
6   |  $L \leftarrow fileToTree(l)$ ;
7   |  $B \leftarrow fileToTree(b)$ ;
8   |  $R \leftarrow fileToTree(r)$ ;
9   |  $M \leftarrow mergeTrees(L, B, R)$ ;
10  |  $H \leftarrow getActiveHandlers()$ ;
11  | foreach  $h \in H$  do
12  |   |  $h.handle(M)$ ;
13  | end
14  |  $o.content \leftarrow treeToText(M)$ ;
15 end
```

Algorithm 2: Merge Trees

```
Input: L, B, R
Output: result of merging left, base and right trees
1  $L.origin \leftarrow LEFT$ ;
2  $B.origin \leftarrow BASE$ ;
3  $R.origin \leftarrow RIGHT$ ;
4  $LB \leftarrow mergeNodes(L, B)$ ;
5  $M \leftarrow mergeNodes(LB, R)$ ;
6 foreach  $d \in D_L \cap D_R$  do
7   |  $removeNode(d, M)$ ;
8 end
9  $runTextualMergeOnLeaves(M)$ ;
10 return  $M$ ;
```

Algorithm 3: Run Textual Merge On Leaves

```
Input: T
1 foreach  $t \in T.children$  do
2   |  $runTextualMergeOnLeaves(t)$ ;
3 end
4 if  $T.children = \emptyset \wedge SEPARATOR \in T.body$  then
5   |  $l, b, r \leftarrow split(T.body, SEPARATOR)$ ;
6   |  $l \leftarrow l - MARKER$ ;
7   |  $T.body \leftarrow textualMerge(l, b, r)$ ;
8 end
```

Algorithm 4: Merge Nodes**Input:** A, B**Output:** result of merging nodes A and B

```

1 if  $A = null$  then return B;
2 if  $B = null$  then return A;
3 if  $A.type \neq B.type \vee A.id \neq B.id$  then return null;
4  $M.id \leftarrow B.id$ ;
5  $M.type \leftarrow B.type$ ;
6  $M.origin \leftarrow B.origin$ ;
7  $M.children \leftarrow \emptyset$ ;
8 if  $A.children = \emptyset \wedge B.children = \emptyset$  then
9   if  $MARKER \in A.body$  then
10      $M.body \leftarrow A.body + B.body$ ;
11   else if  $A.origin = LEFT \wedge B.origin = BASE$  then
12      $M.body \leftarrow MARKER + A.body + SEPARATOR + B.body + SEPARATOR$ ;
13   else if  $A.origin = LEFT$  then
14      $M.body \leftarrow MARKER + A.body + SEPARATOR + SEPARATOR + B.body$ ;
15   else
16      $M.body \leftarrow MARKER + SEPARATOR + A.body + SEPARATOR + B.body$ ;
17   end
18   return M;
19 else if  $A.children \neq \emptyset \wedge B.children \neq \emptyset$  then
20   foreach  $b \in B.children$  do
21      $a \leftarrow \text{find}(a \in A.children \rightarrow a.type = b.type \wedge a.id = b.id)$ ;
22     if  $a.origin = UNKNOWN$  then  $a.origin \leftarrow A.origin$ ;
23     if  $b.origin = UNKNOWN$  then  $b.origin \leftarrow B.origin$ ;
24      $M.children \leftarrow M.children \cup \text{mergeNodes}(a, b)$ ;
25   end
26   foreach  $a \in A.children$  do
27      $b \leftarrow \text{find}(b \in B.children \rightarrow a.type = b.type \wedge a.id = b.id)$ ;
28     if  $a.origin = UNKNOWN$  then  $a.origin \leftarrow A.origin$ ;
29     if  $b = null$  then  $M.children \leftarrow M.children \cup a$ ;
30   end
31   return M;
32 end
33 return null;

```