

Gparted operation merging and viewing

Issue with merging a resize/move operation on a new partition when there are intermediate operations.

(Using semi-graphical disk layout below to show what is happening. First line shows the actual layout of the disk. Following lines show the layout after applying the view of each operation. Each operation object has at least two partitions: `original_partition` and `new_partition`. Colours are used to highlight the partitions which make up an operation. Original_partition highlighted in the above line of the before disk layout and new_partition highlighted in the below line of the after disk layout).

Actual disk layout: Empty

+ Operation 1: Create PRIMARY ext2

```
1: [ UNALLOCATED ]
2: [ PRIMARY(ext2) ] [ UNALLOCATED ]
```

Actual disk layout: Empty

+ Operation 1: Create PRIMARY ext2

+ Operation 2: Create PRIMARY ext4

```
3: [ UNALLOCATED ]
4: [ PRIMARY(ext2) ] [ UNALLOCATED ]
5: [ PRIMARY(ext2) ] [ UNALLOCATED ] [ PRIMARY(ext4) ]
```

Actual disk layout: Empty

- + Operation 1: Create PRIMARY ext2
- + Operation 2: Create PRIMARY ext4
- + Operation 3: Resize/move PRIMARY(ext2)

```
6: [ UNALLOCATED ]
7: [ PRIMARY(ext2) ] [ UNALLOCATED ]
8: [ PRIMARY(ext2) ] [ UNALLOCATED ] [ PRIMARY(ext4) ]
9: [ PRIMARY(ext2) ] [ PRIMARY(ext4) ]
```

Actual disk layout: Empty

- + Operation 1: Create PRIMARY ext2 (with Resize/move merged)
- + Operation 2: Create PRIMARY ext4

```
10: [ UNALLOCATED ]
11: [ PRIMARY(ext2) ] [ UNALLOCATED ]
11': [ PRIMARY(ext2) ] [ UNALLOCATED ]
12': [ PRIMARY(ext2) ] [ UNALLOCATED ] [ PRIMARY(ext4) ]
```

New code in patch "Replace open coded merge of resize/move into create operation (#755214)" causes this situation. When trying to visually apply operation 2 it is unable to find the original_partition on line 11', because that partition was replaced by a smaller unallocated space when merging operation 3 into operation 1 and visually applying operation 1. Hence operation 2 can't be visually be applied and is not displayed in the disk graphic.

Actual disk layout: Empty

- + Operation 1: Create PRIMARY ext4
- + Operation 2: Create PRIMARY ext2 (with Resize/move merged)

```
13: [ UNALLOCATED ]
14: [ UNALLOCATED ] [ PRIMARY(ext4) ]
15: [ PRIMARY(ext2) ] [ PRIMARY(ext4) ]
```

The original code in GParted 0.23.0 and earlier open coded a merge by removing the first operation which created the initial smaller ext2 file system and replaced it with a new operation creating the larger ext2 file system.

Note:

- 1) The original_partition of the merged operation 2 on line 14 is the partition boundaries that the initial smaller ext2 file system occupied as that was what was selected in the Resize/Move dialog.
- 2) Visually applying an operation identifies the partition to update by checking for one which matches or completely contains that defined by original_partition.