Workshop 7 – Week 8 – Worksheet 7

Question 8.1 Trace the action of bottom-up mergesort on the same keys:

2 3 97 23 15 21 4 23 29 37 5 23
For brevity, merges are done in a single step. The first list in the merge is marked in Green and the second in Red. Merged lists are marked in Blue.

2	3	97	23^1	15	21	4	23^2	29	37	5	23^3
2	3										
2	3										
		97	23^1								
		23^1	97								
				15	21						
				15	21						
						4	23^2				
						4	23^2				
								29	37		
								29	37		
										5	23^3
										5	23^3
2	3	23^1	97								
2	3	23^1	97								
				15	21	4	23^2				
				4	15	21	23^2				
								29	37	5	23^3
								5	23^3	29	37
2	3	23^1	97	4	15	21	23^2				
2	3	4	15	21	23^1	23^2	97				
								5	23^3	29	37
								5	23^3	29	37
2	3	4	15	21	23^1	23^2	97	5	23^3	29	37
2	3	4	5	15	21	23^1	23^2	23^3	29	37	97

Is mergesort stable?

Yes.