Assignment 5

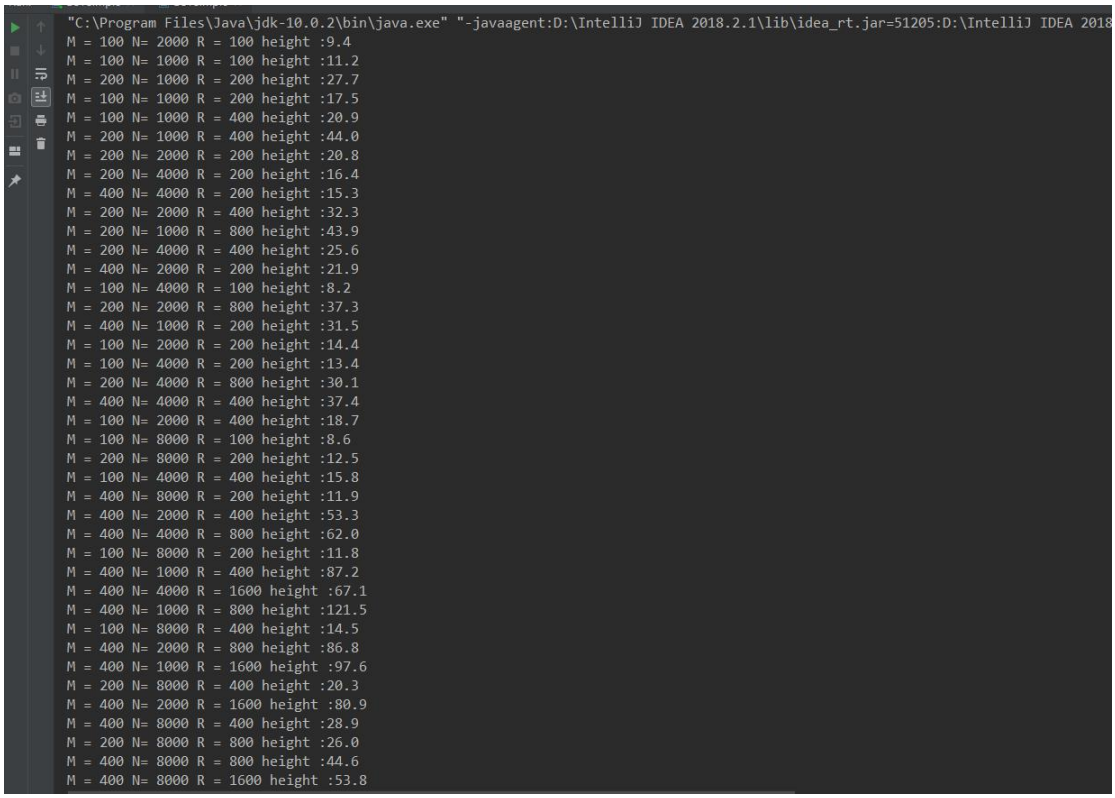
1. Result

Run BSTSimple main()

M : Doing M times put when initiating a BST ,

N : Doing N times operations of insertions and deletions

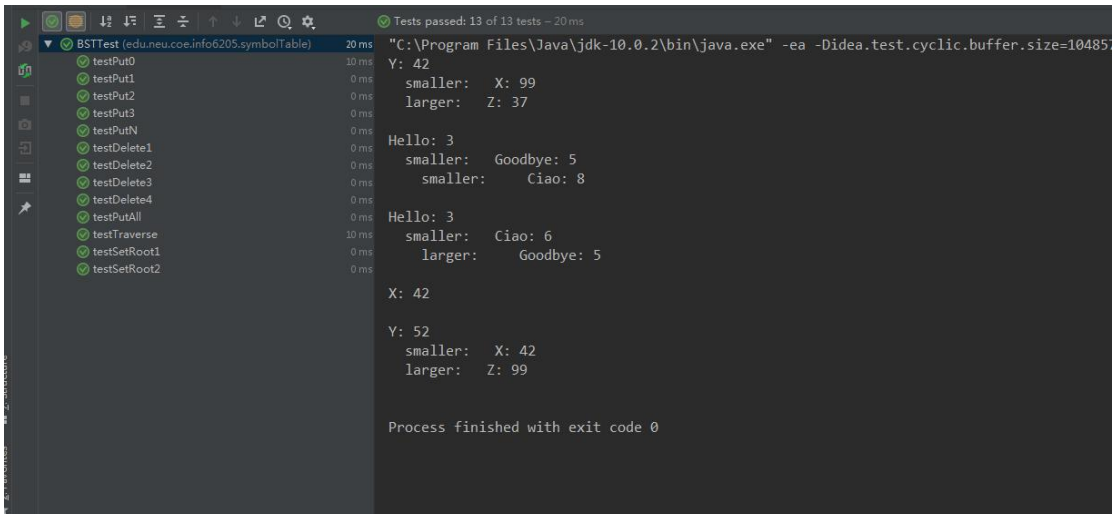
R: the range of the element in BST



M	N	R	height
100	1000	100	11.2
100	1000	200	17.5
100	1000	400	20.9
100	2000	100	9.4
100	2000	200	14.4
100	2000	400	18.7
100	4000	100	8.2
100	4000	200	13.4

100	4000	400	15.8
100	8000	100	8.6
100	8000	200	11.8
100	8000	400	14.5
200	1000	200	27.7
200	1000	400	44
200	1000	800	43.9
200	2000	200	20.8
200	2000	400	32.3
200	2000	800	37.3
200	4000	200	16.4
200	4000	400	25.6
200	4000	800	30.1
200	8000	200	12.5
200	8000	400	20.3
200	8000	800	26
400	1000	200	31.5
400	1000	400	87.2
400	1000	800	121.5
400	1000	1600	97.6
400	2000	200	21.9
400	2000	400	53.3
400	2000	800	86.8
400	2000	1600	80.9
400	4000	200	15.3
400	4000	400	37.4
400	4000	800	62
400	4000	1600	67.1
400	8000	200	11.9
400	8000	400	28.9
400	8000	800	44.6
400	8000	1600	53.8

2. Test Result



3. Conclusion

(1) The height of the BST has relations to the M and R and has no relations to the N.

(2) When M is 100 or 200 and R is 200 , the height is approximately equal to the square root of M.

(3) When M keeps the same, the height becomes larger with the larger R.

(4) When R keeps the same, the height becomes larger with the larger M.