1. Start with std::map.
2. Present .doc document. Talk about red black trees.
3. Show simple binary tree. Show that it can be linear.
4. Show visualization of red black tree online.
5. Show difference of simple binary tree with red-black tree. (show why it self-balances itself.)
6. Questions?
7. Go to code:
8. Show Interface of a map.
9. Show how template arguments can be adjusted for map.
10. Ask class where can we find more comparison functions (<http://en.cppreference.com/w/cpp/header/functional>)
11. Give class exercise one (counting occurrences).
12. Give class exercise two (iteration)
13. Give class exercise three (constructors)
14. std::multimap.
15. Show in code the only difference with std::map – that multiple keys are allowed.
16. std::set & std::multiset
17. Say that difference between set and map is that set holds only keys, and map holds key – value.
18. In code: Show usages of set and map.
19. std::unordered\_map
20. Present .doc document. Talk about hash table.
21. Show visualization of hash table online.
22. Go to code:
23. Present basic interface.
24. Present advanced interface.
25. std::array
26. In code: Present differences between C++11 array and C-style array.
27. std::deque
28. Present .doc document. Talk about examples of usage.
29. Go to code:
30. Present Interface.
31. std::priority\_queue
32. Show presentation in .doc document.
33. Talk about heaps.
34. Go to code:
35. Show Interface
36. Give exercise (constructing out of std::vector).
37. std::queue
38. Show pictures in .doc document.
39. Go to code:
40. Present Interface
41. Give exercise (constructors)
42. std::stack
43. Show pictures in .doc document
44. Go to code: show Interface
45. **Performance exercises:**
46. First exercise: optimize the function
47. First exercise: correct code
48. Second exercise: return biggest integer
49. Second exercise: Correct code
50. Second exercise: Correct code with dynamic input – show class how different containers can change performance.
51. Third exercise: return biggest and lowest integer