

Group Exercise #3

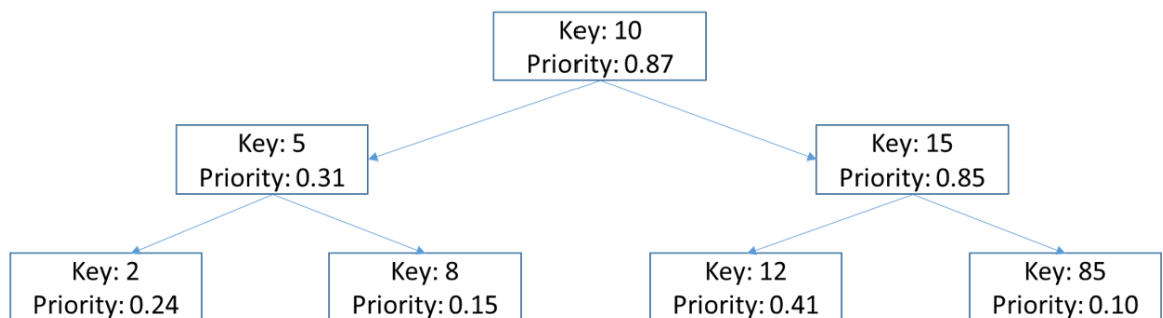
Due 11:59PM, Monday March 22

Instructions:

- 1) Find which group you are in from the following list (it is re-randomized since the last group).
 - a. Group 1 - Garrett, Cale, ANDY
 - b. Group 2 – Jonathan, David S, Jonah
 - c. Group 3 - Alejandra, Keith, Megan
 - d. Group 4 – Hayden, Alora, David M
 - e. Group 5 – Oksana, Jacobo, Tuva
 - f. Group 6 – Talha, Liam, Eddie
 - g. Group 7 – Kyleigh, Kevin, Nemed
 - h. Group 8 – Marshall, Nicole, Malachi,
 - i. Group 9 – Aiden, Luke
- 2) Go to the discord server, introduce yourself in the channel for your group, and work out among your group who will work on which questions. Note that all channels are public.
- 3) Before the deadline discuss answers for each question in the group until there is consensus.
- 4) Create a PDF or Word Document with written/typed answers (you do not need to make a video unless you want to) and upload to your channel.

Questions

1. Treaps



- a. Given the treap above, insert a new node with key 4 and randomly generated priority 0.62. Show each rotation that is made on the way to the final treap.
- b. Given the treap above, without the insert, delete the node with key 5 priority 0.31 and perform the necessary rotations to fix the treap. Show each rotation that is made on the way to the final treap.

2. Tries

- a. Go to <https://people.ok.ubc.ca/ylucet/DS/Trie.html> which is a website that interactively builds an uncompressed trie. Create a trie with these words:

abbey, abbot, aback, ugh

Give a screenshot of the final trie. Perform a lookup of “aba”. Is this considered to be a word in the tree?

- b. Go to <https://people.ok.ubc.ca/ylucet/DS/CompressedTrie.html> which is a website that interactively builds a compressed trie. Create a trie with the same words as in part a.

Given a screenshot of the final trie. Comment on how the compressed trie saves space and potentially has a faster lookup time compared to the uncompressed trie.