Assignment 2

Advanced Algorithms and Datastructures

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1 Bottom-k sampling

1.1 Exercise 2

1.2 Exercise 3(a)

We would store the buttom-k samples in a minimum heap structure H, sorted by their hashing value. This way we can insert new entries in $O(\lg\ n)$, and retrieve the $S_h^k(H)$ lowest hash values in $O(k\ \lg\ n)$ where n is the total number of input values.

1.3 Exercise 3(b)

As written above we would be able to process/insert the next key in $O(\lg\ n)$ time.

1.4 Exercise 4

1.5 Exercise 4(a)

1.6 Exercise 4(b)

1.7 Exercise 4(c)

References