

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
CSE 208 (Data Structures and Algorithms II Sessional)  
January 2023

**Hashing Online (A2)**  
**Duration: 35 minutes**

**Specification:**

You need to implement rehashing for your chaining-based hash table. The rehashing criteria will be the **maximum chain length**.

At the start of the program, take the initial size of the hash table,  $N$ , and the maximum allowed chain length,  $C$  as inputs.

After every 100 insertions into your table, calculate the maximum chain length. Whenever the maximum chain length of your hash table exceeds  $C$ , rehash to a new table with approximately twice the size.

Also, after every 100 deletions from your table, check whether the maximum chain length has fallen below  $0.8 \times C$ . If so, rehash to a new table with approximately half the size. But do not rehash if the new table size would fall below the initial size,  $N$ .

Every time a rehash is triggered in your program, you need to report the average probe count, load factor, and maximum chain length of your table just before and immediately after the rehash. To calculate the average probe count, you may search for 10% of the elements randomly.

To test your program, you may start inserting key-value pairs into your hash table till a rehash is initiated. After that keep deleting items until another rehash is triggered.