Lab 8: Bloom Filter

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Introduction

This lab is designed to give you practice working with Bloom filter. This is an individual assignment; you may not share code with other students.

Specification

Overview

Your task is to implement Bloom filter. You need to determine the number of hash functions k (we use one hash function with different seeds to simulate different hash functions) and the size of bit array **m**, which make the probability of false positives less than **0.0005**. 2^{20} random strings will be added to your Bloom filter during the testing.

Your Job

You need to complete the following methods in the BloomFilter class:

add method: to add anelement to the Bloomfilter.

query method: to query whether the Bloomfilter contains theelement.

hash method: to hash a string to a integer.

Testing the False Positives of Your Bloom Filter

The TestBloomFilter class tests your BloomFilter class. If you have successfully implemented the BloomFilter class and chosen appropriate k and m, this class will run without errors.

Submission

Deadline: **In class (100) or 7 Dec 2020 23:59 (60)**. Any uploads after 7 Dec 2020 23:59 will get **ZERO** point.

Create a zip file named **StudentID-StudentName-Lab08.zip** that contains your code project and upload your zip file to **https://wss.pet/s/433dnztotrc**. Enter **StudentName** in the *Your Name* field.