

COMP9313 2021t3 Assignment (5 marks)

Question 1. DGIM (2.5 pts)

Suppose we are maintaining a count of 1s using the DGIM method. We represent a bucket by (i, t) , where i is the number of 1s in the bucket and t is the bucket timestamp (time of the most recent 1).

Consider that the current time is 200, window size is 60, and the current list of buckets is: $(16, 148)$ $(8, 162)$ $(8, 177)$ $(4, 183)$ $(2, 192)$ $(1, 197)$ $(1, 200)$. At the next ten clocks, 201 through 210, the stream has 0101010101. What will the sequence of buckets be at the end of these ten inputs?

Question 2. Recommender Systems (2.5 pts)

Consider three users u_1 , u_2 , and u_3 , and four movies m_1 , m_2 , m_3 , and m_4 . The users rated the movies using a 4-point scale: -1: bad, 1: fair, 2: good, and 3: great. A rating of 0 means that the user did not rate the movie. The three users' ratings for the four movies are: $u_1 = (3, 0, 0, -1)$, $u_2 = (2, -1, 0, 3)$, $u_3 = (3, 0, 3, 1)$

a (1 pt). Which user has more similar taste to u_1 based on cosine similarity, u_2 or u_3 ? Show detailed calculation process.

b (1.5 pts). User u_1 has not yet watched movies m_2 and m_3 . Which movie(s) are you going to recommend to user u_1 , based on the user-based collaborative filtering approach? Justify your answer.

Submission:

Deadline: Friday 26th November 11:59:59 PM

Please provide your solutions to these questions in a pdf file named as "zID_answers.pdf".

If you submit your assignment more than once, the last submission will replace the previous one. To prove successful submission, please take a screenshot as assignment submission instructions show and keep it by yourself. If you have any problems in submissions, please email to yu.hao@unsw.edu.au.

Late submission penalty

You will receive zero marks for this assignment.

Plagiarism:

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Relevant scholarship authorities will be informed if students holding scholarships are involved in an incident of plagiarism or other misconduct.

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