

Birzeit University
Department of Electrical and Computer Engineering
Faculty of Engineering and Technology
ENCS 539: Information Retrieval and Web Search, Quizz , December 30, 2016

Student Name: _____ Student Number: _____

- 1- We have 4 advertisers bidding for one word and each has a known Click Through Rate (CTR) as in the table. Find the amount paid by each advertiser per click using Google Second Price Auction method.

Advertiser	Bid (\$)	CTR	Bid*CTR	Rank	Amount charged
A	6.00	0.02	0.12	4	Min
B	5.00	0.03	0.15	3	4.01
C	4.00	0.05	0.20	2	3.01
D	3.00	0.08	0.24	1	2.51

- 2- Given the following three documents defined over shingles S1, S2, S3, S4. Compute the similarity between the documents using sketch of size 3 and permutations as detailed below. 1 means the document has the shingle and 0 means it doesn't. So, for example, D1={ S2,S3}. You can use the table below if helpful.

Doc↓	S1	S2	S3	S4	Permutations
D1	0 1	1 2	1 3	0 4	k(x)= x
D2	1 2	0 3	0 0	1 1	h(x)= (x +1)mod 4
D3	1 0	1 3	1 2	0 1	G(x)= (3x +1)mod 4

Perm	value↓	D1 Slot	D2 Slot	D3 Slot
K h g			∞	∞
			∞	∞
			∞	∞
K h g	1	-	∞	1
	2	-	∞	2
	0	-	∞	0
K h g	2	2	2	-
	3	3	3	-
	3	3	3	-
K h g	3	3	2	-
	0	0	0	-
	2	2	2	-
k h g	4	-	2	4
	1	-	0	1
	1	-	2	1

Sim(D1,D2)=0 –nothing in common-, Sim(D1,D3)=1/3-h in common-, Sim(D2,D3)=2/3 –k and g in common, Last line