INFORMATION RETRIEVAL – SHORT EXERCISES V – COLLABORATIVE FILTERING AND ADWORDS

I. Given the below user-item rating matrix, predict rating of user U7 for item I4:

	I1	**I2**	I3	**I4**
U1	5	**4**	4	**4**
U2	5	**3**	7	**3**
U3	4	**3**	2	**3**
U4	6	**4**	5	**4**
U5	3	**4**	2	**4**
U6	4	**3**	5	**3**
U7	4	**3**	5	**?**

sim(U7,U·)
0.0
1.0
-0.5
0.5
-1.0
1.0

a) Employ user-based CF with k=2 and either simple average or weighted average?

Answer: U7(I4) =

b) Employ user-based CF with k=2 and modify U7's average rating by the weighted modification of its nearest neighbors averages:

Answer: U7(I4) =

c) Which item should be analyzed to predict the rating when using item-based CF with k=1? What would be the predicted rating?

Answer: item - and prediction –

II. Four advertisers A, B, C, and D with a daily budget of $2 bid for the following keywords ($1 each): A: w, x; B: x, z; C: x, y; D: y, z. Use a simplified version of BALANCE to select the ads for the following query stream (in the case of a tie use the following order for breaking it A > B > C > D):

query stream	x	y	w	z	z	w	y	x
BALANCE	A	C	A	**?**	**?**	**?**	**?**	**?**