CS422 HW6

SHIQI LIU

1.1 Chapter 9 Problems: 9.2.1,9.2.3,9.3.1,9.4.1

9.2.1

a)

A screenshot of a cell phone

Description automatically generated

b)

A screenshot of a cell phone

Description automatically generated

c)

A screenshot of a cell phone

Description automatically generated

d)

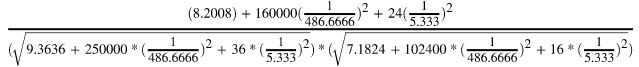
Scale factor for processor speed = 1/2.88

Scale factor for disk size = 1/486.6666

Scale factor for memory size = 1/5.333

A screenshot of a cell phone

Description automatically generatedCosineDistance (A,B) = 1 –

 =1 –

=0.99

Angle between A & B = 6.01

A close up of a logo

Description automatically generatedCosineDistance (B,C) = 1 –

= 1 -0.9824

Angle between B & C = 10.76

CosineDistance (A,C) = .93244

Angle between A & C = 21.18

9.2.3

a)

Avg Ratings = (4 + 2 + 5)/3 = 11/3

Normalized Rating:

A: 4-11/3 = 1/3

B: 2-11/3 = -5/3

C: 5-11/3 = 4/3

b)

A picture containing table, knife

Description automatically generated

The user profile for the user, with components for processor speed, disk size, and main memory size, is [2.8866, 486.667, 5.3333].

9.3.1

a)

A: {1,1,0,1,1,0,1,1}, B: {0,1,1,1,1,1,1,0}, C: {1,0,0,1,1,0,1,1,1}

A screenshot of a cell phone

Description automatically generated

b)

A screenshot of a cell phone

Description automatically generated

c)

A: {1,1,0,1,0,0,1,0}, B: {0,1,1,1,0,0,0,0}, C: {0,0,0,1,0,1,1,1}

A screenshot of a cell phone

Description automatically generated

d)

A screenshot of a cell phone

Description automatically generated

e)

Avg for A: 4+5+5+1+3+2 = 20/6 = 3.33

Avg for B: 14/6 = 2.33

Avg for C: 18/6 = 3

A: {0.67, 1.67, 1.67, -2.33, -0.33, -1.33}, B: {0.67, 1.67, 0.67, -1.33, -0.33, -1.33}, C: {-1, -2, 0, 1, 2, 0}A screenshot of a cell phone

Description automatically generated

9.4.1

a)

The contribution to the sum of squares from the third row is

(x-1)^2 + (x-2)^2 + x^2 + (x-3)^2

Minimum value of this expression

2 \* ( (x-1) + (x-2) + x + (x-3) ) = 0

X = 1.5

Therefore,

=

b)

Start with the U and V

The contribution to the sum of squares from the forth column is

(y-3)^2 + (y-3)^2 + y^2 + (y-2)^2 + (y-3)^2

2 ( (y-3) + (y-3) + y + (y-2) + (y-3) ) = 0

y = 2.2

Therefore,

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