

# MapReduce for k-means

5 试题

1  
point

1.

Suppose we are operating on a 1D vector. Which of the following operation is **not** data parallel over the vector elements?

- ☐ Add a constant to every element.
- ☐ Multiply the vector by a constant.
- ☐ Increment the vector by another vector of the same dimension.
- ☒ Compute the average of the elements.
- ☐ Compute the sign of each element.

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2.

(True/False) A single mapper call can emit multiple (key,value) pairs.

- ☒ True
- ☐ False

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3.

(True/False) More than one reducer can emit (key,value) pairs with the same key simultaneously.

☐ True

☒ False

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4.

(True/False) Suppose we are running k-means using MapReduce. Some mappers may be launched for a new k-means iteration even if some reducers from the previous iteration are still running.

☐ True

☒ False

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1  
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5.

Consider the following list of binary operations. Which can be used for the reduce step of MapReduce? Choose all that apply.

Hints: The reduce step requires a binary operator that satisfied **both** of the following conditions.

- Commutative:  $OP(x_1, x_2) = OP(x_2, x_1)$
- Associative:  $OP(OP(x_1, x_2), x_3) = OP(x_1, OP(x_2, x_3))$

☒ OP1( $x_1, x_2$ ) =  $\max(x_1, x_2)$

☒ OP2( $x_1, x_2$ ) =  $x_1 + x_2 - 2$

☐ OP3( $x_1, x_2$ ) =  $3x_1 + 2x_2$

☐ OP4( $x_1, x_2$ ) =  $x_1^2 + x_2$

☐ OP5( $x_1, x_2$ ) =  $(x_1 + x_2)/2$



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