Prob 1

SID	SFname	SLname	SMI	Score1,...,Score5
12879	Jim	cox	4	80 90 95 100 85

One student
One record
Assume get methods for all fields.

SID	Ave.
12879	90

Output sorted by SID

Prob 2

12879←
12880←

in each reducer

It needs a reducer

```
method reduce( SID, [ave] )
    Emit(SID, ave)
```

Prob1

```
method map( ——— )
    id ← getSID()
    s1 ← getScore1()
    s2 ← getScore2()
    s3 ← getScore3()
    s4 ← getScore4()
    s5 ← getScore5()
    ave ← (s1+s2+s3+s4+s5)/5
    Emit(id, ave)
```

Prob2

```
method reduce(id, [ave])
    Emit(id, ave)
```

Prob4

```
method map(          )
    f ← getFname()
    l ← getLname()
    m ← getMI()
    Emit((l, f, m), ave)
```

Anything that needs to be sorted or grouped must be in the key

Pr. Asc

Lname

Sec.

First Desc

Ter.

MI Asc

L	F	MI	
Ada	Rose	B	90
Ada	Rose	D	95
Ada	Bob	A	78
Ada	Bob	H	89
Ada	Athena	Z	100
Cox	Rose	A	97
Cox	Bob	J	92

```
int compareTo(Object O1, Object O2)

    k = compareTo(O1.Lname, O2.Lname)
    if (k != 0) return k
    k = compareTo(O1.Fname, O2.Fname)
    if (k != 0) return -k
    return compareTo(O1.MI, O2.MI)
```