Collaboration Formulas
For COP 3402 (Systems Software)

Sunday, October 6, 2024

Adjustments to group collaboration for grading has two parts.

1. Submission of a collaboration plan shortly after a homework is sent out.
2. Submission of a signed collaboration certificate that is agreed to be all group members when submitting a homework.

Definitions

For a group with *N* members, the *fair share* of work would be 1/*N* for each person in the group. Thus, in a group of 3 people, this would be about 33% of the work, and in a group of 4 people it would be about 25% of the work.

We use a *fudge factor* of 10% (i.e., 0.1), so there are no bonuses or penalties for work 10% above or below the fair share.

Collaboration Plan

Each group would submit a collaboration plan, agreed to by all group members, within 6 days after an assignment is given to the class. This should detail:

- what roles each person will play in the group for that assignment,
- what tasks each person will be responsible for in that assignment,
- how much credit, in terms of shares of work, each person will receive for completing those tasks. None of these shares of work may differ from the fair share of work by more than 10%.

The course will provide a form for submitting a collaboration plan.

Certification

Along with any artifacts that would be handed in with the assignment, each group will be required to submit a certificate that all group members agree to, describing:

- what each person did, and
- what share of the work that represents.

This certificate must be agreed to and signed by all group members. We will provide a form for this.

If a group cannot all agree on such a certificate, they must all meet with the course instructor to explain why they could not agree. If some group members do not or cannot attend such a meeting, then they will have decisions made without them by the course instructor.

Grade Discounts

If the share of the work agreed upon in the certificate differs from the fair share by more than the fudge factor, then group members will have their grades adjusted according to the following formula.

Let R be the reported share of the work for a group member in a group of N people. We assume that the fudge factor is F, which we take as 10% (i.e., 0.1) in the examples below.

If R < (1/N – (F*1/N)), then let U be (1/N – F*1/N)-R, and this person's grade is discounted by 0.8*U. For example, if this is a group of 4 people, and R is 10%, note that 0.1 < (1/4 – 0.1*1/N), so U would be (0.25-0.1*0.25)-0.1, which is 0.125. So, in this example, the discount would be 0.8*0.125 = 0.1, i.e., 10%. That is this student would lose 10% of their grade; that is, if the group work was graded at 100 points, this person would only receive 90 points (i.e., 100*(1-0.1), which is 100*0.9).

Note that the grade cannot drop below 0, although it can equal 0 if R is 0.

Summary

To summarize, for a group of N people, with fudge factor F, the grade awarded, for an assignment worth P points, which the work was graded at G points (we assume that G is no greater than P), for a person whose work share is certified as R, is:

If R < (1/N-(F*1/N)), then G*((1/N-(F*1/N))-R).

Otherwise, the grade is G.

For example, for a group of 3 people, if all reported shares are between 0.23 and 0.43, then all group members would receive the same grade. Similarly for a group of 4 people, if all reported shares are between 0.15 and 0.35, then all group members would receive the same grade.