# A Template for Embedding Responsible CS into Programming Assignments

Students who are regularly asked to consider social and ethical implications as part of the software development process are more likely to learn that questions and discussions around the impact of the software are a necessary part of creating software and software systems that take into account the rights and responsibilities of all stakeholders.

This template leverages the ACM Committee on Professional Ethics Proactive CARE process in a straightforward way. It gives students the opportunity to learn and practice ethical reflection, to practice discourse in a low-stakes environment surrounding potentially difficult topics, and to write about their own perspectives on the impacts of the software that they write.

This template consists of four components:

1. This guide
2. ACM’s Proactive CARE for Computing Professionals
3. A rubric for evaluating student progress at the introductory level
4. A rubric for evaluating student progress at the advanced level

Next, we describe one possible way of using this template. In this application, the program is a group project.

CONSIDER and ANALYZE: As a program is being assigned, students are given an additional requirement to spend fifteen minutes individually reflecting on the questions in the CONSIDER and ANALYZE sections of Proactive CARE. Students who have experience in reflective practices and software development ought to be required to identify alternative solutions suggested by the CONSIDER questions. This part would normally be done outside of class. It ought to be turned in and graded, but evaluation ought to focus more on whether the student completed the assignment, rather than gave deep analysis, especially for students who are at the introductory level in considering responsible computing.

REVIEW and EVALUATE: Shortly after the CONSIDER and ANALYZE assignment is due, each group is obligated, either in class or outside of class, to spend time completing discussion of the REVIEW and EVALUATE questions of Proactive CARE. The assignment is to develop a group write-up of 500-1000 words that identifies which alternative solution that is preferable to implement, identifies at least one trade-off between it a different alternative, identifies at least one potential secondary effect of the chosen alternative, and how (in a production environment) they would monitor that their solution in order to know at some point in the future whether they had made a good choice. The REVIEW and EVALUATE is evaluated more closely against the appropriate rubric. Note that chosen rubric should be relative to the amount of experience students have in ethical reflection, not the amount of experience students have in software development. It may be that because of the nature of your program of study, upper-division students are being introduced to reflective practices in their capstone course.