Pair Programming Guidelines
(adopted from Christine Alvarado's and Sorin Lerner's CSE 8A)

When working on the programming assignments, you are strongly encouraged to use Pair Programming, where two people work on and submit a single program. In pair programming, two programmers work on the same programming assignment. One student is the "driver," who controls the keyboard and mouse. The other is the "navigator," who observes, asks questions, suggests solutions, and thinks about slightly longer-term strategies. The two programmers switch roles about every 20 minutes. Working in pairs should make you much better at programming than working alone would. The resulting work of pair programming nearly always outshines that of the solitary programmer, with pairs producing better code in less time.

"[Pair programming] makes learning programming faster and more fun. I have had previous experience working both alone and with partners. I definitely agree that working with partners is more profitable." – CS student

However, the most important rule of pair programming is that you must work together on the same part of the assignment at the same time. Splitting up the work during the lab is considered cheating.

You will choose your own partner. Your partner should come from the same lab section you are in. You can find a partner by posting on the discussion board (Edstem) if you are having trouble.

You may need to arrange times to meet outside of class. We expect you will need around 1-2 hours each week to work with your partner. We expect everyone to be flexible and professional in arranging those times as necessary; if your schedule is highly constrained, explore possible meeting times with your prospective partner before you commit to the partnership.

Pair Programming and Academic Integrity (aka "The Rules")

- You must always be virtually or physically located with your partner when developing code. You may not do any coding, including documentation, without your partner present.
- You may not use or even look at any code you have previously developed without your partner. This means, if you choose to split with a partner, you must both start over from scratch with your new partner. Completely throw your old code away.
- You and your partner must both be active contributors to the code. This means, you must both be engaged in the development (talking, typing, suggesting, etc) and you must switch roles regularly.
- You may not split the code and develop it separately. You must collaboratively develop a single solution.

Choosing a partner

You should try to pick a partner whose experience and skill level with programming is similar to your own. This may not always be possible and it is sometimes hard to compare skill levels, but students tell us (and other data support) that pairs are most productive when the partners start at about the same level.

Still, people often pair up with another whose skills are different. This happens more often than not, as no two people have an identical skill set. The differences may be great or small, but this is exactly like most real-world working situations. Part of accomplishing a task is to get the most out of each member and make each member stronger and more productive on subsequent tasks.

Students bring different strengths to the process, regardless of how much experience they have had with programming. Both experienced and inexperienced students will need to draw on their reasoning and problem solving skills. A more experienced partner may sometimes feel frustrated or slowed down by a less experienced partner, but the experienced partner still benefits from the teamwork in many ways. The less experienced partner's requests for clarification often uncover flaws in an approach or solution; the exercise of providing a clear explanation solidifies and deepens the explainer's own understanding and the teamwork and communication skills they gain have great value in both the academic realm and the job market.

*"My partner had never coded anything before so I was able to teach him
a little bit about how it worked. The teaching bit helped me a lot with
understanding the labs and passing the exams." – CS student*

The less experienced partner may feel that questions hold the other partner back or that there is no benefit to participating actively, but pair programming studies show that paired work is consistently better than work the stronger partner does alone. It is each partner's job to understand the whole task; that means asking questions when necessary and answering them when possible.

Dealing with Differences

If you believe your partner is not participating appropriately in pair programming (e.g., they do not keep in touch, do not come prepared to work on the assignment, or do not seem to be engaged in the process) please first address your concerns to your partner, and try to agree on what should be done to make the pair programming experience work well for both of you. If that approach is not successful, explain the issues to your teaching assistant or the instructor, who will work with you and your partner to improve the situation.

If your partner drops the course or otherwise stops participating, you should MUTUALLY AGREE TO SPLIT FOR THE REST OF THE ASSIGNMENT and you must EACH START OVER FROM SCRATCH. You should never simply abandon your partner without an agreement from

your partner that this is the best course of action. If you are having trouble, please see the course instructor ASAP.

How Pair Programming Affects Your Grade

You and your partner will receive the same score on your code.

When in Doubt, Seek Clarification

Pair programming is shown to help, not hinder, your successful completion of the introductory course. It is important that you understand the processes and expectations up front so you can gain the most benefit. If you are unsure of any of the aspects of pair programming and how it is implemented in the course, see your instructor right away.