CMU 15-451 (Algorithms), Fall 2010
Homework Policy

Homework's Purpose Algorithms is a pivotal course in computer science undergrad studies. The course's goal is to give you the basic principles in analyzing and designing of algorithms. It is not an easy course (not that other courses taught in CMU are easy!). It will require a significant amount of work on your part to follow what is taught in class. This is why we give weekly homework assignments. They are designed to give you a better *understanding* of the material taught in class. We stress that the homework is meant for *you*. We devote a fairly large amount of time for designing, writing, grading and explaining the homework, so that *you* can test *yourselves* and see how well you understand and implement the course's material.

Types of Homework Each week you'll get a new assignment, alternating between mini-homeworks and regular assignments. Minis are fairly straight-forward. They should not pose much of a problem if you listen in class. Regular HW are somewhat more tricky. We want you to sit and thoroughly think the problems and the principles shown in class. As mentioned, we expect you to show us *understanding* of the material by *implementing* it. Note: even though the regular HW aren't trivial, that is not say they are particularly hard.

Solving the Homework Ideally, this is how you should approach the homework.

1. Read the material taught in class, and make sure you understand *all* the definitions, algorithms, theorems and proofs.
2. Read the homework. Carefully.
3. Spend at least *one hour* thinking about each problem *by yourselves*. This is the vital part of understanding the course's material. You will get stuck, that's ok. When you do, here are some suggestions to help you get past it.
    - Come up with a dummy example, over a small number of item, and try to solve it. This is particularly helpful when you're trying to follow an algorithm, or when devising a counter example.
    - Which algorithms / techniques / heuristics taught in class are applicable to the problem at hand? When do they fail and for what reason?
    - Reduce the problem to a problem taught in class. Can the problem be represented as a graph? a network? maybe to a less general instance of the problem itself (a graph with negative weight to a graph with unique, non-negative weights)?

- The notion of sub-problem (divide-and-conquer, dynamic programming, induction) is a recurring theme in this class. Try to identify and solve the sub-problems of the problem at hand.

4. Only after you gave the problem a serious amount of thinking, try to collaborate (see below), find outside sources or come to the TAs for guidance.

5. Write down the solution, **by yourselves**. Re-read what you've wrote. Make sure the solution is exact, and answers specifically what you've been asked about. It should be clear, but it need not necessarily be long.

Collaborations and Outside Sources We are aware that the homework is (at least in part) tricky. Therefore, once you've given a problem a fair amount of thinking and still haven't found the solution, you are encouraged to discuss it among yourselves, or come to us. Looking for outside sources (I.e. Googling for papers) is also permitted, though we make sure in advance that the particular questions you ought to solve aren't taken from a paper. However, make sure to state clearly in the solution whom you have collaborated with or which outside source did you use.

Cheating Cheating will not be tolerated under any circumstance! Contrary to the popular belief, there is a very clear line between collaborating and cheating. You are allowed to come for each other for help, in order to gain a better *understanding* of the problem. However, you're not allowed to mindlessly copy a solution from your friends! Each solution handed should be written *individually*, phrased in your own words, and should show us that you understand both the problem and the solution. A word-for-word copy, either from your friend or from a book or a paper, gives us no indication as to your level of understanding. Therefore, such a solution entitles you to a 0 grade, nothing more. Also, make sure that no one is copying *from you*, as we have no way of knowing who wrote the original solution. Two (or more) copies of the same solution will grant both student 0, and both will be accused of cheating.

We stress that collaboration doesn't mean dividing the homework so that each party does his/her question and ignores the rest. You should all work on all questions. On a similar note, sickness or a busy week are not an excuse for cheating. We will try to be considerate and grant extensions (given justified reasons), so come to us in advance in you're expecting a particularly busy week.

If you do choose to cheat, and you do not inform us "this solution is copied from ...", disciplinary steps will be taken against you.[1] There will be no exceptions and no "second tries"!

Turning in the Solutions You are **required** to *type* your solutions to written homework. Be warned – we will *not* spend any time on deciphering your handwriting! You may hand draw pictures and diagrams when appropriate. We would highly recommend learning and using LaTeX, and have provide you with a homework template for your convenience.

You **must** print out the solution to each homework problem individually as you will be placing each homework problem in a separate box. This is so that the TA's can divide and grade the homework problems more easily.

[1]Note: if you do inform us that you've cheated, you will still get a 0 grade, but you no disciplinary steps will be taken against you.

Extensions and Late Policy We have adopted the following lateness policy in order to allow us to post solutions soon after the due date. Homeworks are due at the **begining** of class. Homeworks turned in after that are considered 1 day late.

- Later in the same day: 10% off
- 1-2 days (up to 48 hours) late: 25% off
- More than 48 hours late: 75% off (at this point solutions will be posted and you may look at them, though anything handed in should be put into your own words)

We will try to be considerate and grant extensions (with justified reasons), so come to us in advance in you're expecting a particularly busy week.