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

January 2010

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 straightforward. 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.

   - Try solving for small numbers first (how does the algorithm work for n=1? n=2?). This is particularly helpful when trying to follow an algorithm/ devise a counter example.

   - Which techniques taught in class are applicable to the problem at hand? Which fail, and for what reason?

   - Reduce the problem to a problem taught in class. Can the problem be represented as a graph? Try more general (and less general) cases, e.g. restricting yourself to 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 first.

4. Only after giving the problem a serious amount of thinking, you may turn to outside sources, collaboration (see below), or come to the TAs for guidance.

5. Write down the solution **by yourselves**. You might want to re-read the question at that stage.

You are strongly encouraged to *type* your solutions. Be warned – we will *not* spend any time deciphering your handwriting! As not all TAs are native English speakers, expect handwriting and cursive writing to be an issue. Be clever and avoid it in advance – Type!

Collaborations and Outside Sources   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. search engines) is also permitted. Make sure to state clearly in the solution whom you have collaborated with or which outside source you have used. We stress that collaboration doesn't mean dividing the questions between you. You should all work on all questions.

Cheating   Cheating will not be tolerated under any circumstances! You are allowed to come for each other for help, in order to gain a better understanding of the problem. However, you are not allowed to copy a solution from any outside source; each solution should be written *individually*, in your own words. Solutions which do not allow us to assess *your* level of understanding will receive no points. Also, make sure that no one is copying from you, as we have no way of knowing who wrote the original solution; in this case, both students will be accused of cheating. [1]

Extensions and Late Policy   We have adopted the following lateness policy in order to allow us to post solutions soon after the due date.

- 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.

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[1]Note: if you inform us that your solution is copied, you will get no points, but you no disciplinary steps will be taken against you.