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Algorithms Theory and Practice
CS 320, Fall 2017

Goals of this Class
Continue learning and practicing principles for organizing your thinking when solving programming problems.

Learn to establish that an algorithm is correct and to analyze its time bounds.

Become familiar with fundamental algorithms and algorithmic approaches and know when they are applicable, and when they are not.

General Information
Class Website: www.cs.colostate.edu/~cs320
news 1st stop guides submissions/grades
contacts logistics

Course Expectations
We don’t expect heroics – we do expect you to meet the challenges of this class.

Come prepared; unannounced quizzes and worksheets will be common.

Focus on the class during class – no cell phones or playing games.

You are juniors and seniors – we expect you to take the leadership in your learning.
Course Realities

When issues come up:

Take advantage of Piazza – chances are good someone else has run into your problem.

Talk with the teaching team: we can help you figure out how to solve the problem – we cannot do it for you.

See any of us during office hours, or email cs320@cs.colostate.edu to set a time to meet.

Help us help you

End of class micro-surveys:
problem areas for the majority of the class will be discussed in the next class.

Topics in Algorithms

evaluating correctness and time bounds
divide & conquer
dynamic programming
greedy techniques
graphs

Our Approach

Formulate problem.
Design algorithm.
Prove correctness.
Analyze complexity.
Implement.
Image Credits

algorithm: https://blog.medicalalgorithm.com/medical-algorithm-definition/
chronicKid:
https://www.google.com/search?q=images+for+chronic+kidney+failure&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjg_r2Q6aLVAhWs54MKHd9iC6AQ_AUICigB&biw=1135&bih=773
sharkGoldfish:
https://www.google.com/search?q=images+for+expectations&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjg_r2Q6aLVAhWs54MKHd9iC6AQ_AUICigB&biw=1135&bih=773
reality:
jumpingGoldfish:
randomForests:
http://www.adel.ac/research/
chalkformulation:
https://www.fxfctutor.com/math-tutoring-online/math-tutoring-for-kids

DijAlgoProof:
3lineComplex:
impl:
http://opendatastructures.org/versions/edition-0.1d/ods-cpp/