Lecture 16

CSE 331

Oct 4, 2017

Mini Project Pitch due TODAY

Some of the chosen algorithm are now up!

You can submit mini project reports now

You can now submit your mini project reports now. It is due in a bit over 2 weeks: by **11:59pm on Wed, Oct 4**.

The mini-project page has all the details on what is needed in the report.

Some important points:

- If you do not register your group by 11:59pm on Monday, you will get an automatic 0 on the entire mini-project.
- The case-studies will be assigned in the order in which I grade your reports.
  - If while grading it turns out another group has already taken your case study I will ask you to choose another case study.
  - If you want to "book" your topic sooner, I would recommend that you submit your report as soon as it is ready and send me email saying it is ready to be graded.
  - By default I will start grading on Oct 5.
- This is a **group submission**. Please see the instructions at the end of this post.
  - Main thing: do **NOT** submit your report till your group is formed.

========== Instructions on forming the group ==========

- Under "Options" click on "Group Options"

Form your group on Autolab BEFORE submitting your pitch

Do not forget to add URL to your references

Quiz 1 on Monday

Directed Acyclic Graph (DAG)

No directed cycles
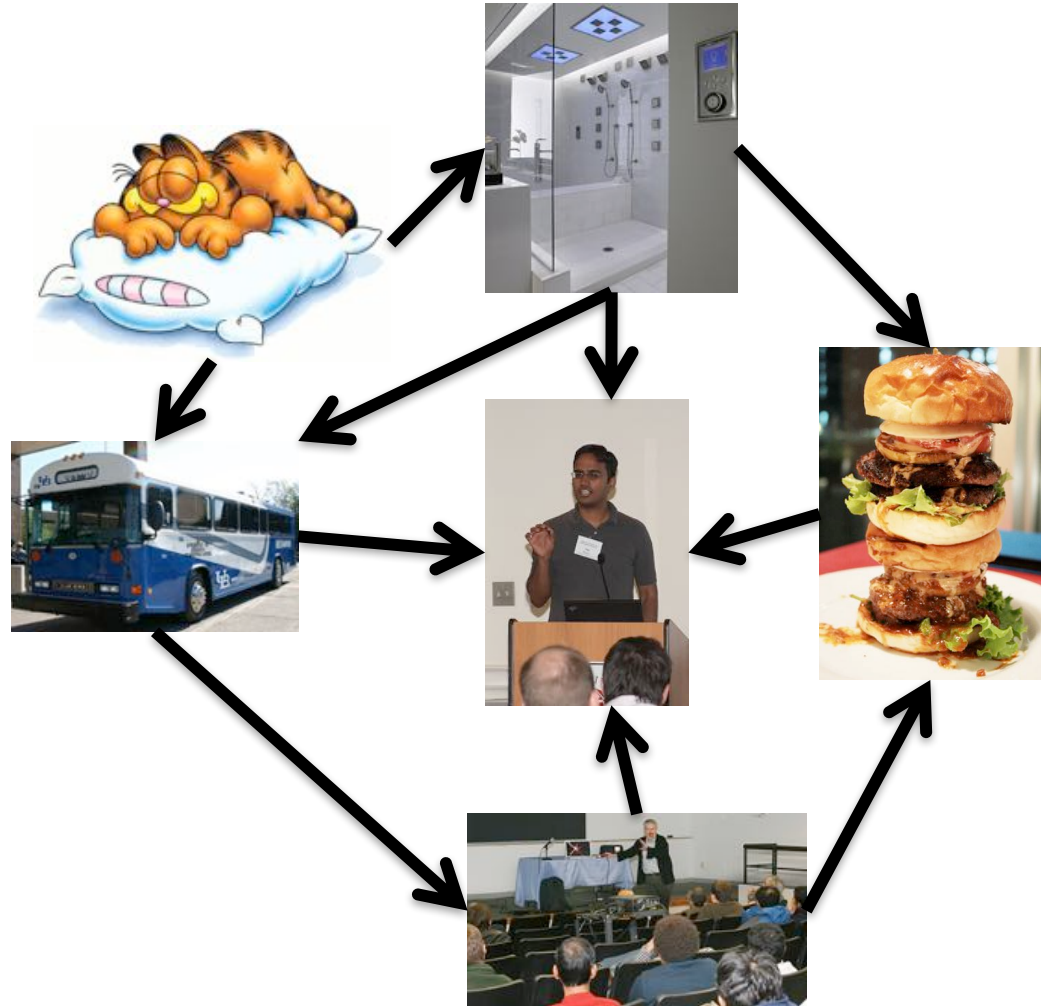
Topological Sorting of a DAG

Order the vertices so that all edges go "forward"
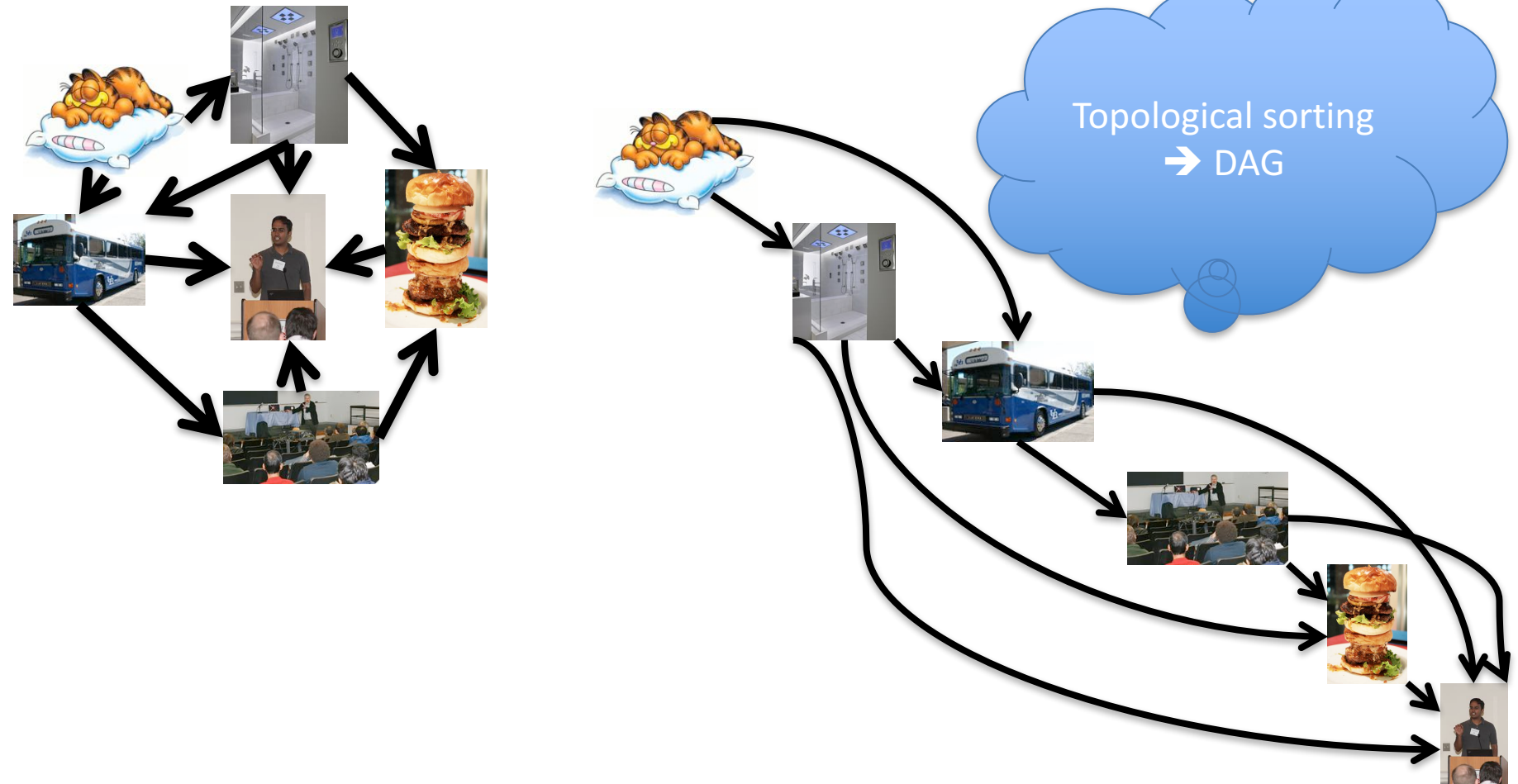
TopOrd(G=(V,E))

1. If |V| = {u}, return u
2. Let w be a node with no incoming edges
3. Let G' be G\{w}
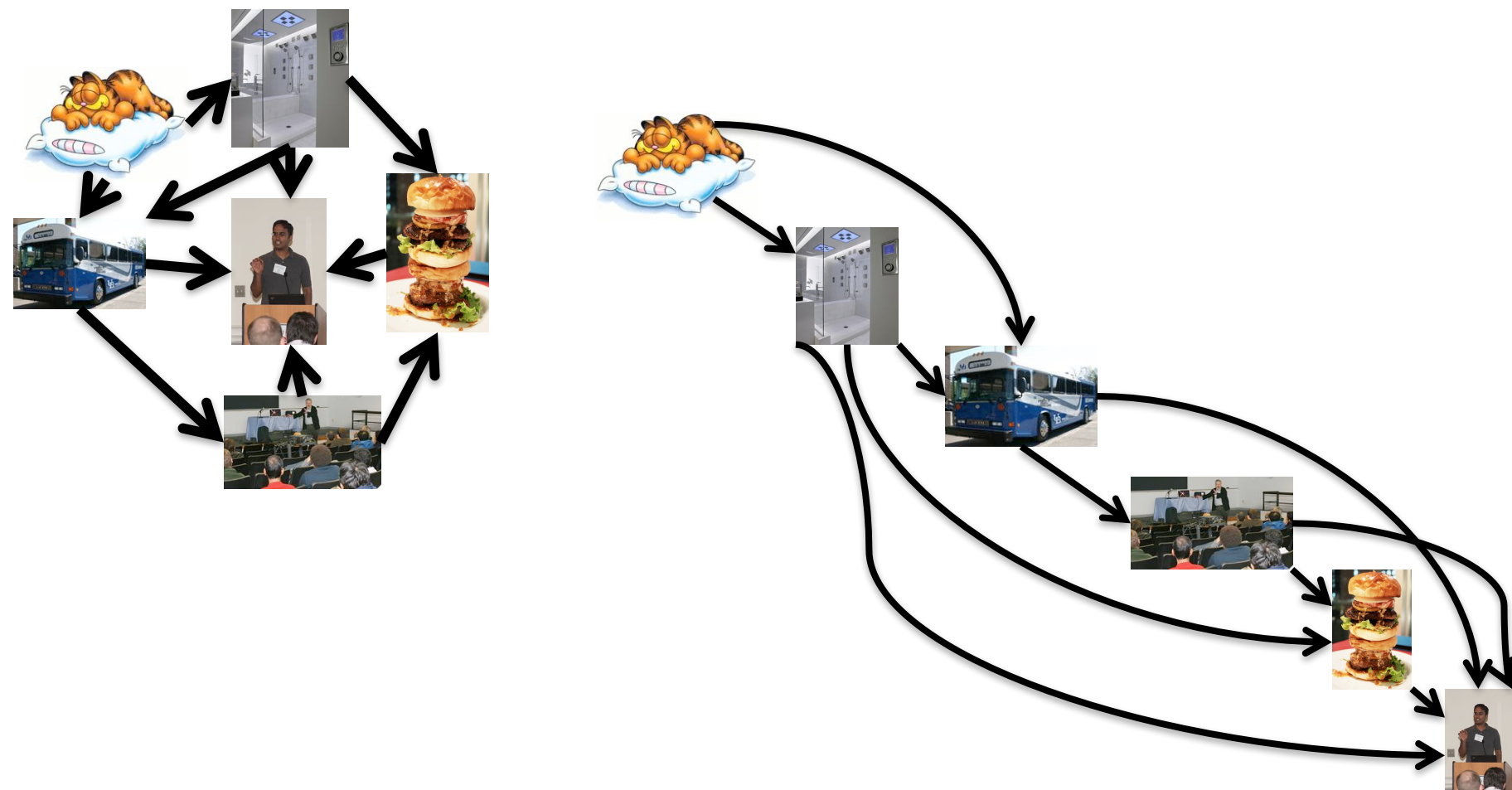4. Return w; TopOrd(G')

Run of TopOrd algorithm

Todays' agenda

Prove Lemma 3

Run time analysis of TopOrd
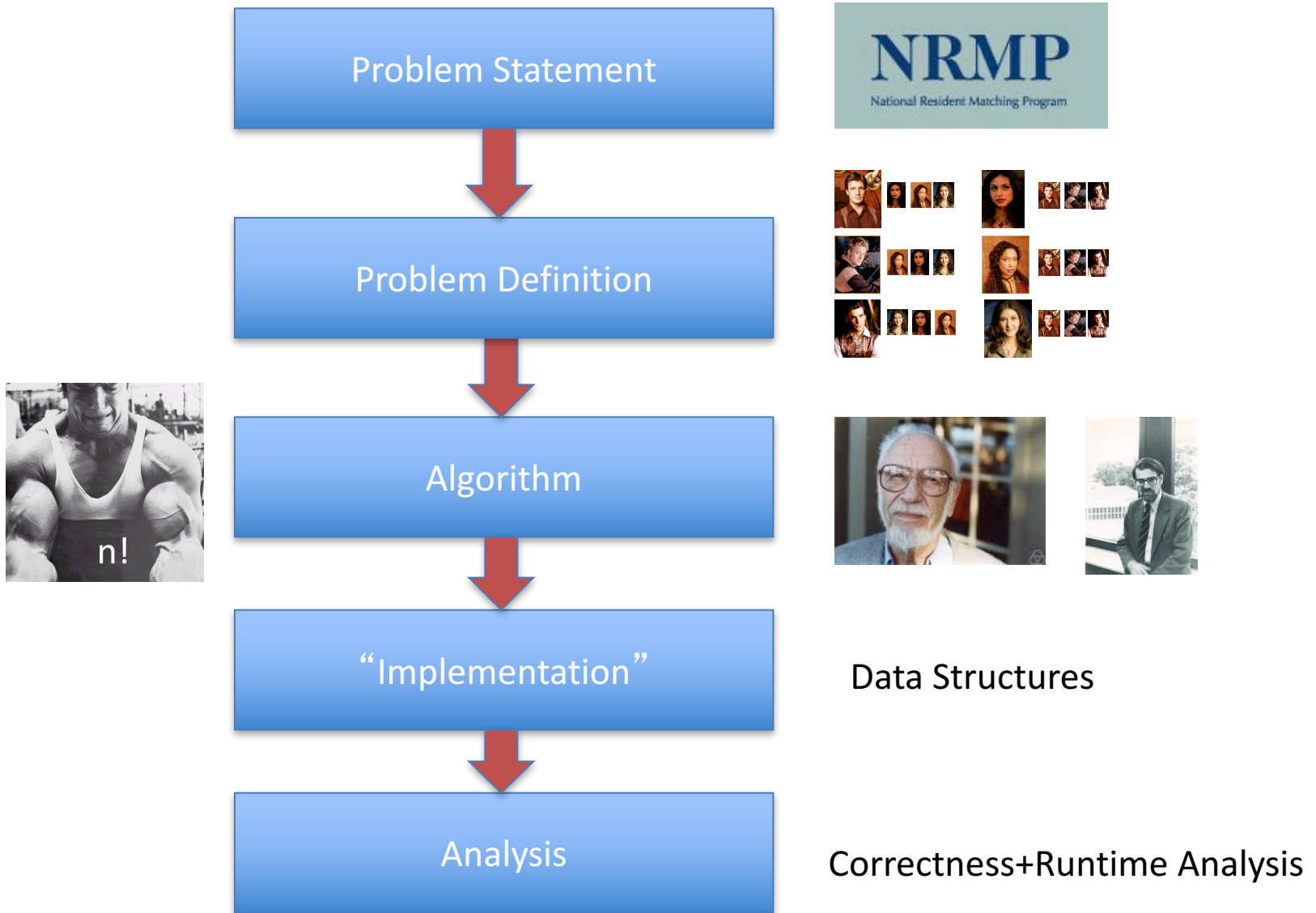
Greedy algorithms

Mid-term material

Everything we have covered so far (essentially Chaps 1-3 except Sec 1.2)

See piazza post on how to prepare for the mid-terms

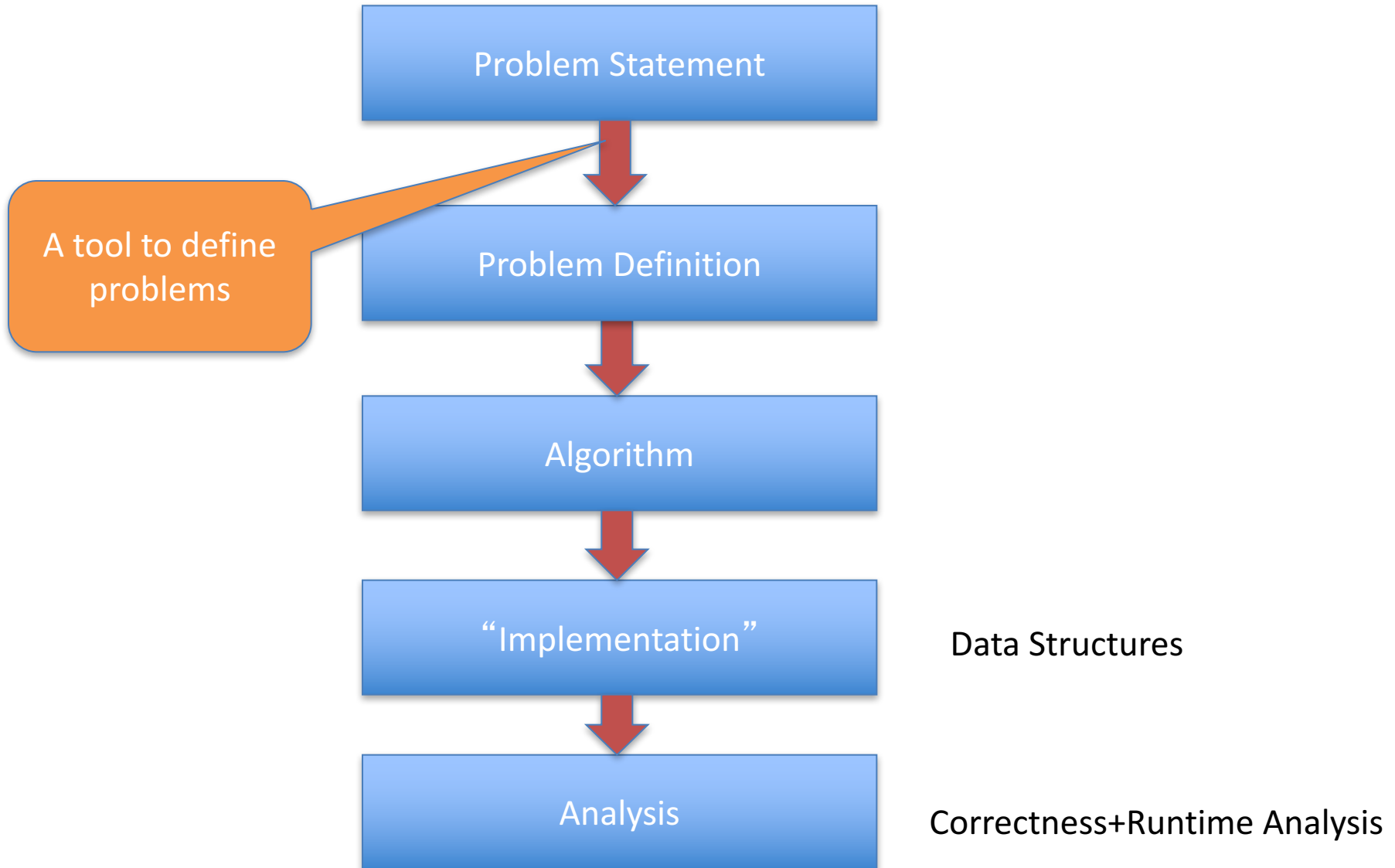# Questions?

Main Steps in Algorithm Design

Where do graphs fit in?

Rest of the course

Problem Statement

Problem Definition

Three general techniques

Algorithm

"Implementation"   Data Structures

Analysis   Correctness+Runtime Analysis
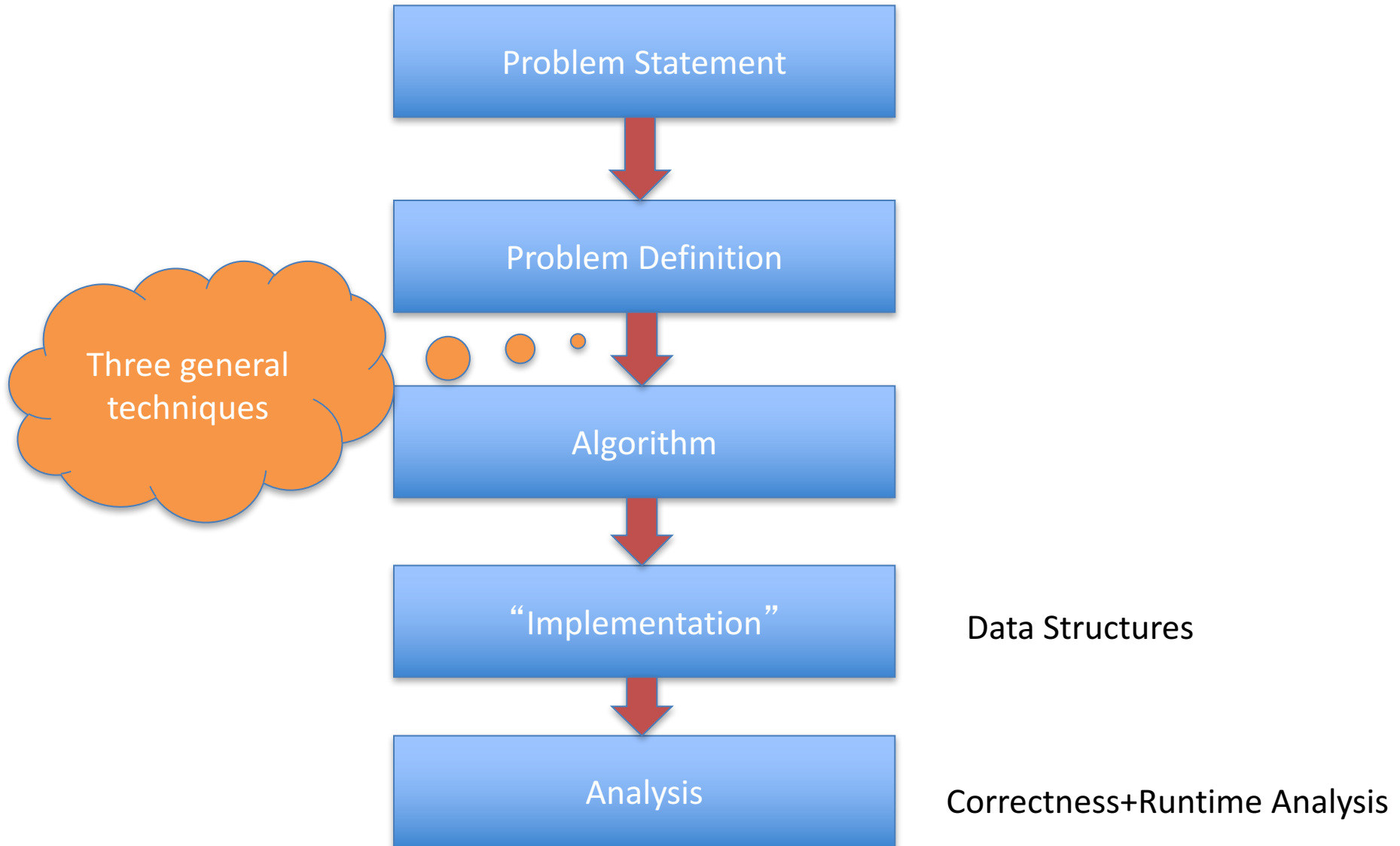
Greedy algorithms

Build the final solution piece by piece

Being short sighted on each piece

Never undo a decision

Know when you see it

End of Semester blues

Can only do one thing at any day: what is the maximum number of tasks that you can do?

Write up a term paper

Party!

Exam study | mework | 331 HW

Project

Monday | Tuesday | Wednesday | Thursday | Friday

Greedily solve your blues!

Arrange tasks in some order and iteratively pick non-overlapping tasks

Write up a term paper

Party!

Exam study

331 HW

Project

Monday   Tuesday   Wednesday   Thursday   Friday

Ordering is crucial

Another attempt

The final algorithm

Order tasks by their END time

Write up a term paper

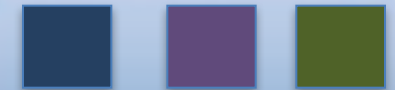Party!

Exam study

331 HW

Project

Monday | Tuesday | Wednesday | Thursday | Friday

Questions?

Rest of today's agenda

Prove the correctness of the algorithm