CS21: INTRODUCTION TO COMPUTER SCIENCE

Prof. Mathieson
Fall 2018
Swarthmore College
Welcome to CS21!

TODO:

• **Registered**: sit at a computer and sign the attendance sheet by the end of class

• **Waitlist**: find a seat not at a computer and sign the waitlist sheet from Lauri

• **Everyone**: pick up Handout 1
Outline Sept 3:

- Staff introductions
- Algorithm example / what is CS?
- Log in to lab machines & Lab 0 info

Wednesday:

- Student introductions
- Syllabus highlights
- Areas of computer science
- Begin: Python programming language

Notes: this course has NO prerequisites. If you have extensive CS experience let me know.
Why should I take CS21?
Why should I take CS21?

Computer Science is about computers
Why should I take CS21?

“Computer Science is about computers. When human beings acquired language, we learned not just how to listen but how to speak. When we gained literacy, we learned not just how to read but how to write. And as we move into an increasingly digital reality, we must learn not just how to use programs but how to make them.”

-Douglas Rushkoff
Staff Introductions
Course Staff

• Instructors
  • Section 1, Lab C&D: Aline Normoyle
  • Section 2&3, Lab A: Sara Mathieson
  • Lab B: Scout Sinclair

• Academic Support Coordinator
  • Lauri Courtenay

• Ninjas for Sections 2 & 3
  • Kendre Thomas (Section 2)
  • Rohan Hejmadi (Section 2)
  • Ayaka Yorihiro (Section 3)
  • Maleyah Peterson (Section 3)

• Graders
  • TBA

Lauri will introduce the ninja program
Algorithm example
Example of an algorithm: nonograms

Handout example

Image credit: www.nonograms.org
Handout example

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Handout example

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Image credit: www.nonograms.org
Handout example

We are certain these are filled in

Image credit: www.nonograms.org
With a partner...

- **Mini-bio** (name, year, where from, summer, major...) remember this for Wed - you’ll introduce your partner then!

- Start the handout questions (more important to get to **question 4** than finish the puzzle)

- For question 4, you can **discuss ideas** instead of writing down everything if you’re short on time
Example Algorithm for row checking

• Start at the beginning of the row
Example Algorithm for row checking

- Start at the beginning of the row
- Move to the right as long as the boxes are E’s
Example Algorithm for row checking

• Start at the beginning of the row
• Move to the right as long as the boxes are E’s
• When we find an F, start counting how many consecutive F’s there are

Modified from notes by Jeff Knerr
Example Algorithm for row checking

• Start at the beginning of the row
• Move to the right as long as the boxes are E’s
• When we find an F, start counting how many consecutive F’s there are
• Once we get to another E, store or save how many consecutive F’s we saw

Modified from notes by Jeff Knerr
Example Algorithm for row checking

• Start at the beginning of the row
• Move to the right as long as the boxes are E’s
• When we find an F, start counting how many consecutive F’s there are
• Once we get to another E, store or save how many consecutive F’s we saw
• Keep repeated the above 3 steps building up a list of counts of consecutive F’s

Modified from notes by Jeff Knerr
Example Algorithm for row checking

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- Move to the right as long as the boxes are E’s
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- Keep repeated the above 3 steps building up a list of counts of consecutive F’s
- When we reach the end of the row and have a list of counts, compare it with the row numbers

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Example Algorithm for row checking

- Start at the beginning of the row
- Move to the right as long as the boxes are E’s
- When we find an F, start counting how many consecutive F’s there are
- Once we get to another E, store or save how many consecutive F’s we saw
- Keep repeated the above 3 steps building up a list of counts of consecutive F’s
- When we reach the end of the row and have a list of counts, compare it with the row numbers
- If the lists of numbers are the same, the solution is valid
- If not, the solution is invalid

Modified from notes by Jeff Knerr
In these algorithms, can you find…

• Input/output
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- **Input/output**
  - **Input:** target row numbers, candidate solution
  - **Output:** yes/no
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- **Branching**
In these algorithms, can you find…

- **Input/output**
  - **Input**: target row numbers, candidate solution
  - **Output**: yes/no

- **Branching**
  - Operation changes based on $E$ vs. $F$
In these algorithms, can you find…

• **Input/output**
  • Input: target row numbers, candidate solution
  • Output: yes/no

• **Branching**
  • Operation changes based on E vs. F

• **Looping**
In these algorithms, can you find…

- **Input/output**
  - Input: target row numbers, candidate solution
  - Output: yes/no

- **Branching**
  - Operation changes based on $E$ vs. $F$

- **Looping**
  - Repeated the steps to count each block of $F$'s
In these algorithms, can you find…

• **Input/output**
  - Input: target row numbers, candidate solution
  - Output: yes/no

• **Branching**
  - Operation changes based on E vs. F

• **Looping**
  - Repeated the steps to count each block of F’s

• **Data structures**
In these algorithms, can you find…

- **Input/output**
  - Input: target row numbers, candidate solution
  - Output: yes/no

- **Branching**
  - Operation changes based on \( E \) vs. \( F \)

- **Looping**
  - Repeated the steps to count each block of \( F \)’s

- **Data structures**
  - Way to store the input as well as the counts
Log in to lab machines
Steps for lab machines today

• Find your account sheet with username and password
• Click on the terminal icon
• Change your password by typing “passwd”

```
cilantro[~]$
cilantro[~]$ passwd
Enter login(LDAP) password:
New CompSci password:
Retype new CompSci password:
LDAP password information changed for smathieson
passwd: password updated successfully

cilantro[~]$```

• Bookmark course webpage (click on the star in Firefox)

• Sign and return user agreement by the end of class
Lab 0 Notes

- **Lab attendance is mandatory!** Lab 0 is Tuesday (tomorrow) and Wednesday, due Saturday Sept 8

- As part of Lab 0, make sure to visit my office (249) by Friday at 5pm

65/102 students have already posted on Piazza, thank you!
Syllabus highlights
Syllabus highlights and notes

- Notes will be posted after class on the webpage
Syllabus highlights and notes

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• Textbook – free and online 😊
Syllabus highlights and notes

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• Labs are (almost always) due Saturdays before midnight
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• Extensions
  • Everyone gets 2 “late days” to be used for any reason
  • Known conflicts: must be arranged now
  • Emergencies: must talk to your class dean
How to indicate you’re using a late day

QUESTIONS-00.txt

CS 21 Lab 0

Name:

Approximately how many hours did you take to complete this lab? Provide your answer as a single integer on the line below.

How difficult did you find this lab? (1–5, with 5 being very difficult and 1 being very easy)

Describe the biggest challenge you faced on this lab.

Number of Late Days Using for this lab: 0, 1, or 2
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• Email – allow 24 hours for a response (more over the weekend)
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Piazza should be used for all content/logistics questions
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• Piazza should be used for all content/logistics questions

• Office hours: 3-5pm on Fridays in 249 (often moved to lab)
# Class Deans contact info

<table>
<thead>
<tr>
<th>Class</th>
<th>Dean</th>
<th>To Schedule an Appointment with Your Dean</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-Year</td>
<td>Dean Karen Henry</td>
<td>Betsy Durning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>610-690-5744</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="mailto:edurnin1@swarthmore.edu">edurnin1@swarthmore.edu</a></td>
</tr>
<tr>
<td>Sophomore</td>
<td>Dean Thomas Alexander III</td>
<td>Stephanie Holznagel</td>
</tr>
<tr>
<td></td>
<td>(Interim)</td>
<td>(assists with schedule only)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>610-690-3999</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="mailto:sholzna1@swarthmore.edu">sholzna1@swarthmore.edu</a></td>
</tr>
<tr>
<td>Junior</td>
<td>Dean Dion Lewis</td>
<td>Bonnie Lytle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>610-328-8456</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="mailto:dlytle1@swarthmore.edu">dlytle1@swarthmore.edu</a></td>
</tr>
<tr>
<td>Senior</td>
<td>Dean Michelle D. Ray</td>
<td>Stephanie Holznagel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>610-690-3999</td>
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<tr>
<td></td>
<td></td>
<td><a href="mailto:sholzna1@swarthmore.edu">sholzna1@swarthmore.edu</a></td>
</tr>
</tbody>
</table>
Registering with Student Disability Services

1. Schedule a meeting with a Student Disability Services staff member to discuss your request(s). Any student is welcome to contact either Monica or Jenna, or email studentdisabilityservices@swarthmore.edu.

2. If you are a student and your last name starts with letters A through K, please contact Monica. Monica can be reached by emailing mvance1@swarthmore.edu, or calling 610-328-7358. If you are a student and your last name starts with letters L through Z, please contact Jenna. Jenna can be reached by emailing jrose2@swarthmore.edu, or calling 610-690-5538.

3. If you have never requested accommodations from Student Disability Services previously, please fill out a student accommodation request. This can be done by logging into mySwarthmore and completing the Accommodation form located under the Personal Information menu.

4. Meet with Student Disability Services staff for an intake meeting or phone conversation. At this meeting, you will discuss your experiences and how they are impacted by your condition. You may also discuss potential accommodations you may find helpful. The accommodations process is designed to be collaborative. Student Disability Services will ask you some questions regarding your experiences to better understand and support your request for accommodations.

5. Have a licensed professional fill out the Disability Verification Form. Submit the completed form to the office. Other formal documentation will be accepted as well.

6. Student Disability Services will review your request in a timely fashion and notify you when a decision has been made regarding your accommodations request.

If you have questions or concerns, please reach out to Director Monica Vance (610-328-7358) or Assistant Director Jenna Rose (610-690-5538) or see the Appeals Process.