# CS2110 Lecture 44 May 7, 2021

- HW 11 due Sunday, 5pm
- Scores are up to date. One DS score has been dropped. 8x scores have been distributed appropriately among other DS scores. Only HW11 is not included.
  - Depending on your other HW scores, you can get from 0-7 additional HW points based on your HW11 score
  - Course grading scales published in Apr 28 lecture slides
- Optional final exam: 3-5pm, Tuesday, May 11
  - Complete "Will you take the final exam?" ICON quiz/survey before noon Monday to let me know whether or not you will take the exam
  - Exam will be 80-90 minutes.

TODAY

- Python can answer an important question 😁…
- UI CS courses beyond this one
- The Halting Problem
- Questions about courses, careers, life?
- Information about the final exam

Scores including everything except HW11.
If you do not turn in HW11 and do not take the final, these are the grades you will receive.

2021-05-07T0015_Grades-CS_2110_0AAA_Spr21

| HW1 | HW2 | HW3 | HW4 | HW5 | HW6 | HW7 | HW8 | HW9 | HW10 | DS1 | DS2 | DS3 | DS4 | DS5 | DS6 | DS7 | DS8 | DS8x | DS9 | DS10 | DS11 | Quiz 1 | Quiz 2 | Quiz 3 | Quiz 4 | HW | DS | Quizzes | Points | % | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 15 | 20 | 20 | 20 | 60 | 30 | 75 | 165 | 100 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 14 | 20 | 20 | 19 | 57 | 30 | 73 | 160 | 97.56 | A+ |
| 6 | 5 | 4 | 5 | 6 | 6 | 6 | 6 | 6 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 14 | 20 | 20 | 18 | 55 | 30 | 72 | 157 | 95.73 | A |
| 5 | 6 | 4 | 5 | 6 | 4 | 5 | 6 | 6 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 14 | 16 | 20 | 17 | 52 | 30 | 67 | 149 | 90.85 | A |
| 5 | 5 | 4 | 4 | 5 | 6 | 5 | 5 | 4 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 14 | 20 | 15 | 48 | 30 | 52 | 130 | 79.27 | B |
| 4 | 6 | 4 | 0 | 6 | 5 | 0 | 6 | 1 | 2 | 3 | 1 | 3 | 0 | 1 | 3 | 2 | 3 | 0 | 3 | 2 | 2 | 11 | 20 | 17 | 13 | 34 | 23 | 61 | 118 | 71.95 | B- |
| 4 | 5 | 3 | 2 | 4 | 6 | 4 | 6 | 5 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 8 | 11 | 12 | 11 | 43 | 30 | 42 | 115 | 70.12 | B- |
| 4 | 6 | 2 | 2 | 3 | 2 | 6 | 2 | 4 | 5 | 3 | 3 | 3 | 3 | 3 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 14 | 13 | 9 | 13 | 36 | 30 | 49 | 115 | 70.12 | B- |
| 5 | 5 | 3 | 0 | 0 | 2 | 6 | 6 | 4 | 0 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 0 | 0 | 3 | 0 | 3 | 14 | 19 | 14 | 11 | 31 | 26 | 58 | 115 | 70.12 | B- |
| 5 | 6 | 5 | 3 | 6 | 2 | 5 | 4 | 4 | 5 | 3 | 3 | 0 | 2 | 3 | 0 | 0 | 3 | 0 | 3 | 3 | 2 | 15 | 20 | 13 | 0 | 45 | 22 | 48 | 115 | 70.12 | B- |
| 5 | 5 | 3 | 0 | 6 | 5 | 0 | 1 | 3 | 0 | 3 | 2 | 2 | 3 | 0 | 2 | 3 | 0 | 0 | 3 | 3 | 0 | 7 | 17 | 17 | 18 | 28 | 21 | 59 | 108 | 65.85 | C+ |
| 2 | 5 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 0 | 3 | 2 | 0 | 8 | 12 | 7 | 15 | 36 | 25 | 42 | 103 | 62.80 | C |
| 3 | 4 | 2 | 3 | 4 | 5 | 3 | 4 | 0 | 5 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 3 | 3 | 0 | 2 | 10 | 8 | 10 | 12 | 33 | 25 | 40 | 98 | 59.76 | C |
| 5 | 5 | 5 | 2 | 6 | 5 | 4 | 2 | 0 | 0 | 3 | 3 | 0 | 2 | 0 | 2 | 3 | 1 | 0 | 3 | 3 | 0 | 6 | 8 | 16 | 10 | 34 | 20 | 40 | 94 | 57.32 | C |
| 4 | 4 | 0 | 3 | 4 | 5 | 4 | 5 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 0 | 6 | 4 | 8 | 10 | 37 | 29 | 28 | 94 | 57.32 | C |
| 3 | 5 | 0 | 2 | 4 | 2 | 5 | 3 | 3 | 5 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 8 | 6 | 10 | 11 | 32 | 26 | 35 | 93 | 56.71 | C |
| 4 | 3 | 0 | 0 | 4 | 2 | 0 | 0 | 2 | 2 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 5 | 5 | 8 | 8 | 17 | 10 | 26 | 53 | 32.32 | F |
| 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 4 | 8 | 7 | 19 | 11.59 | F |

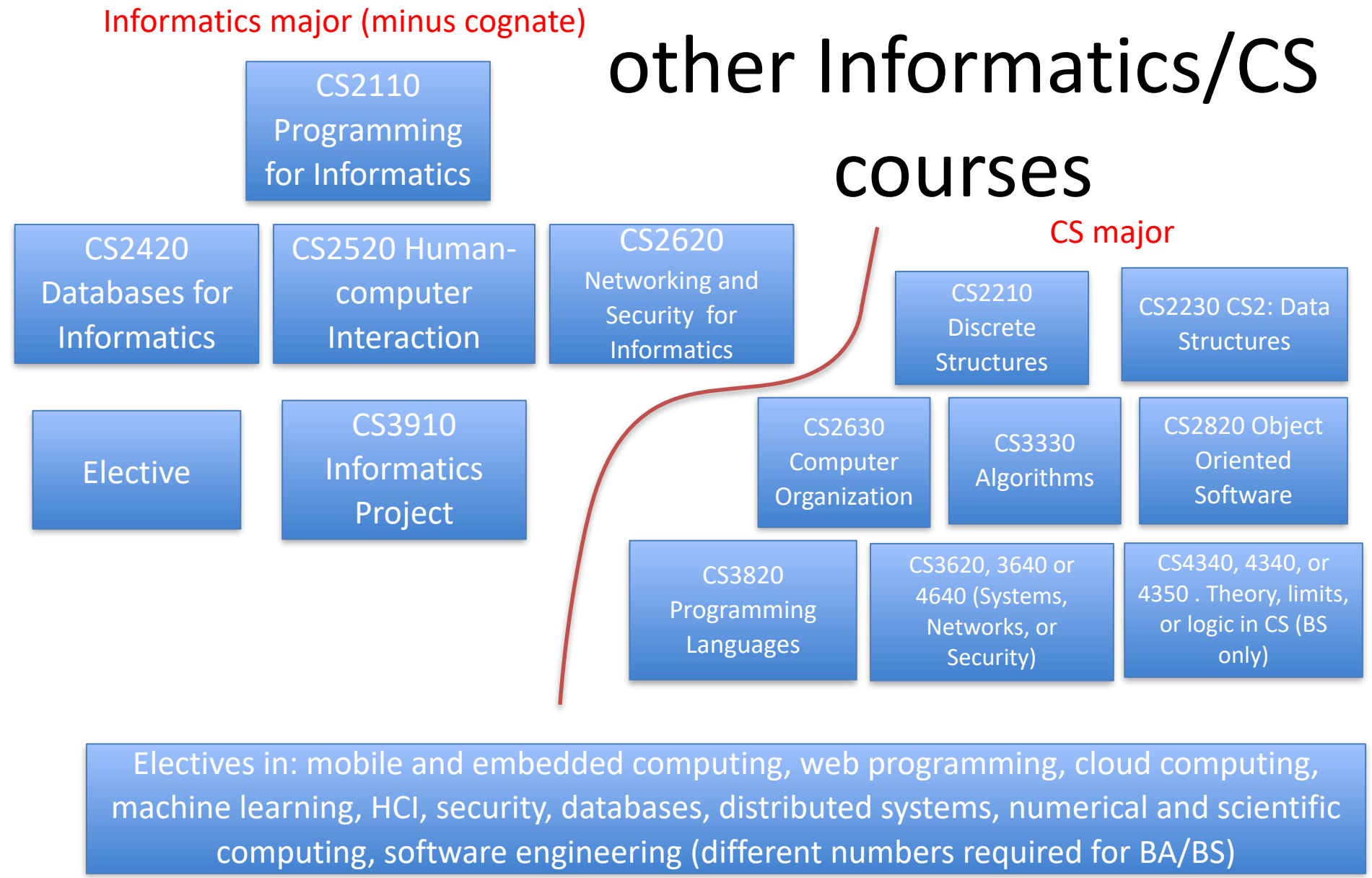
With the skills learned in this course you can now answer the age-old question:
**Which came first, the chicken or the egg?**

```
def whichCameFirst():
    chickenAndEgg = ['🥚', '🐓']
    answer = sorted(chickenAndEgg)[0]
    return answer

>> whichCameFirst()
```

??? What do you think will be printed ???

# Comments on more other Informatics/CS courses



# Separate slides for:
# The Halting Problem

# Optional final exam

**Setting**: on Zoom, 3-5 pm Tuesday, May 11
**Length:** 5 - 8 questions, 80-90 minutes

To take the exam, you must answer "yes" on the "Will you take the final exam?" assignment on ICON by noon Monday.

**Important note**: If you open/begin the exam, it WILL be graded and your course grade will be calculated based on the 200-point with-final scale.

**Main goal of exam**: to test your ability to understand, analyze, and write small programs involving lists, dictionaries, strings, loops, functions, objects/classes

Material:

- all the material of Quizzes 1 through 4
- Possibly a programming question involving GUI programming with tinter
- Possibly a question related to HW10 & 11 but not requiring knowledge of Google or Twitter APIs. E.g. DS 11 would be an appropriate question.

Types of questions

- The same as those you've seen in previous exams, plus perhaps some multiple choice/matching questions
- Analyze, understand, explain code
- Write code

Specific topics:

- Expressions, variables, assignments, and functions
- Conditional expressions - if/elif/else
- Iteration/looping - while and for
- Lists and dictionaries
- Recursion
- Basic running time complexity – Big O notation
- Defining and using classes
- Sorting, binary search
- Graph representations – adjacency lists for directed and undirected graphs
- GUI programming with tinter
- basic familiarity with (but not specific knowledge of) programming with GUI/Google maps/Twitter material. E.g. questions like DS11 that don't depend on specific API knowledge

# Have a great summer!

- I'm always available if you have questions about future courses, the major, etc.  Send me email …

***Do something GOOD with your skills – the world needs innovative and creative thinking now and in the future ☺***