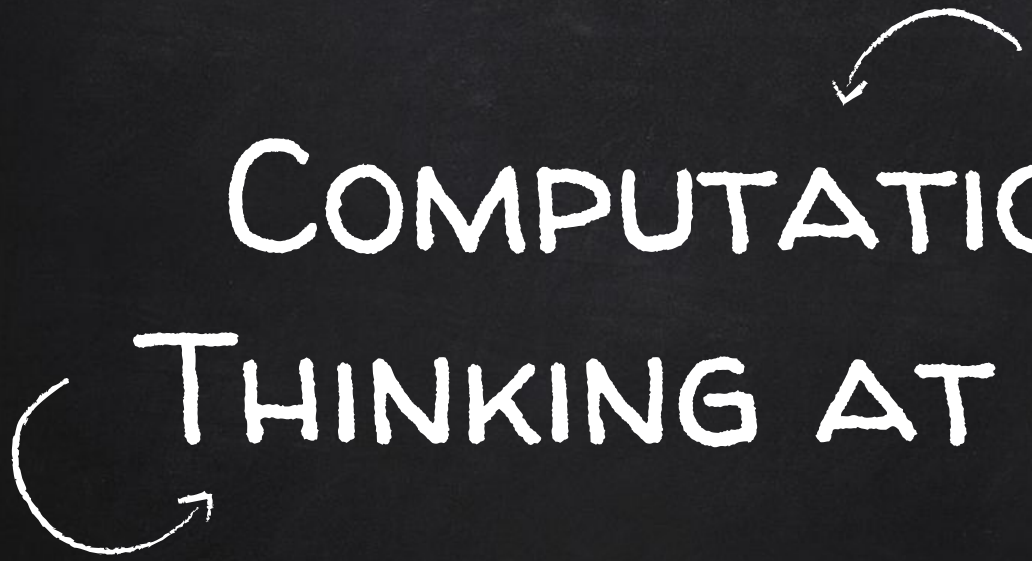
Final Review

Announcement

- Please come to office hours, if you have questions for finals!
- TAs are holding regular office hour this week from Tuesday to Friday
- T-shirt update: working on final design for department approval, will update with the latest design via course web page
- 5/2 Final Exam! Monday! 10:30 am – 12:30 pm
- http://registrar.utah.edu/academic-calendars/final-exams-spring2016.php

What we've learned



Computational Thinking at Utah

http://www.sci.utah.edu/~beiwang/teaching/cs1060.html

Selected Course Topics

- Computational thinking: a friendly introduction
- Exploring mummies at the British museum
- Who is Eugene Goostman?
- Roomba and Japan's first upcoming humanoid actress
- What makes online purchases (not) safe?
- Computing basics: a high level view
- Generating art though computing
- TSA is watching you!
- How does the world wide web work?
- The rise of Google
- What powers Instagram?
- Twitter, Twitter, Twitter
- The Social Network
- How did NetFlix Beat Blockbuster?
- What computers can not do?

What's on the Final exam

Practice Questions

1. Recursion

```
# Complete the missing code such that the output of the program is 15
# Hint: the recursive function computes 1+2+...+n for input n.

def compute_sum(n):
    if n <= 1:
        return n
    else:
        return 

print(compute_sum(5))
```

```
def compute_sum(n):
    if n <= 1:
        return n
    else:
        return n+compute_sum(n-1)

print(compute_sum(5))
```

2. Binary and Decimal

1. Convert the decimal number 234 to binary
2. Convert the binary number 11101 to decimal

Solution:

1. 11101010
2. 29

3. String manipulation

```
# The bracket operator: selects a single character from a string

movie = "Star Wars: the force awakens"

print(movie[1:4])
print(movie[:])
print(movie[1:])
print('force' in movie)
```

tar
Star Wars: the force awakens
tar Wars: the force awakens
True

4. Database and SQL

We have a student table with fields: name, homework1, homework2, etc. Complete the following SQL command such that you return the name of the students whose homework 1 grade is higher than 80.

```
SELECT name
FROM student WHERE [redacted]
```

```
SELECT name
FROM student WHERE homework1>80
```

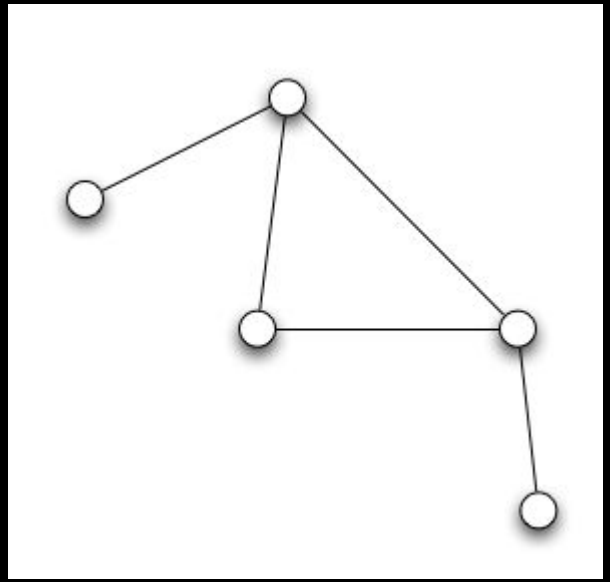
5. Sorting and Searching

Selection Sort Exercise

Unsorted List	Min	Sorted list
25, 8, 42, 16, 77	8	8
25, 42, 16, 77	16	8, 16
25, 42, 77	25	8, 16, 25
42, 77	42	8, 16, 25, 42
77	77	8, 16, 25, 42, 77
–	–	8, 16, 25, 42, 77

6. Graph Analysis

Given the following graph: can you compute the average degree of the nodes?



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7. Problem Solving

Produce a top-down solution to the problem of making pancakes.

Produce a top-down solution to the problem of making pancakes:

1. Organise Kitchen
2. Make Pancakes
    a. Sift salt and flour into bowl
    b. Break eggs into bowl
    c. Whisk
    d. Add water and milk
    e. Add butter
    f. Whisk
    g. Cook
3. Serve

8. Limit of Computing

List 3 things that are current limitations of computation.
Possibly multiple choices questions as well.

9. Python Basics: If, Loop

Write a simple piece of Python code:

- Assume the input n to the function is a positive integer
- If n is an even number, print all positive even numbers that are smaller or equal to n
- If n is an odd number, print all positive odd numbers that are smaller or equal to n

```
def print_numbers(n):
    if n%2==0:
        for x in [redacted]:
            print(x)
    else:
        for x in [redacted]:
            print(x)

print_numbers(4)
print_numbers(5)
```

```
def print_numbers(n):
    if n%2==0:
        for x in range(2, n+2, 2):
            print(x)
    else:
        for x in range(1, n+2, 2):
            print(x)

print_numbers(4)
print_numbers(5)
```

10. Multiple Choice Questions on AI, Networks,Visualization, etc.

Which of the following is NOT true regarding Turing Test

A. It tests machine intelligence
B. It tests human intelligence
C. It is developed by Alan Turing
D. It is related to the Loebner Prize

Solution: B

THANKS!

Any questions?

You can find me at
beiwang@sci.utah.edu

http://www.sci.utah.edu/~beiwang/teaching/cs1060.html

Credits

Special thanks to all the people who made and released these awesome resources for free:

- Presentation template by SlidesCarnival
- Photographs by Unsplash