Internet Activity

Websites & Requests (10 requests per site)

1. google (static requests): give out topics and let them choose an article
    a. cool ideas in CS
        i. how to count in binary
        ii. 3D Printing
        iii. FIRST Lego League
        iv. spaceX
        v. P vs NP
        vi. halting problem
        vii. gladwell
        viii. imaginary numbers
        ix. quantum
        x. siri
    b. video games
        i. minecraft in education
        ii. Tampon Run
        iii. portal
        iv. games in education
        v. duolingo
    c. webcomics
        i. garfield minus garfield
        ii. xkcd
        iii. smbc
        iv. the oatmeal
    d. CS jobs
        i. pixar
        ii. etsy
        iii. game tester
        iv. 3d prostetic limbs
2. wikipedia.com (static requests)
    a. Ada Lovelace
    b. Grace Hopper
    c. Linux
    d. PageRank
    e. speech recognition
    f. Esperanto
    g. google cars
    h. logic
    i. google glass
    j. IP addresses
3. twitter.com (internal state)
    a. tweet something with hashtag #TIL (today I learned)
    b. tweet something with hashtag #WhyDontTheyMakeThat

    c. retweet or respond to another tweet
    d. most popular hashtags
    e. link to an article
4. facebook (state for each user)
    a. Make a facebook profile
    b. Write on a friend's wall
    c. Check your wall for new content
    d. Post an article
5. gmail (communication protocols)
    a. send an email to a friend in the class
    b. send an email to one of your counselors
    c. send an email containing an article attached
6. content aggregator? digg? stumbleupon?
7. torrenting physical objects with wait times
8. amazon
    a. names vs penn id
    b. buying candyP

9. maps.google.com
    a. Directions from .. to ..
10. tumblr.com
11. instagram.com
12. ask.com/stack overflow

# Total Students	# Websites	# Users	Requests per user	Requests per Site	Total Requests
20	4?	16	3	9	45
25	5?	20	3	9.5	57
30	6?	24	3	10	69

Progressions

1. Users: fill your requests.
    a. Brainstorm: How do you know where the websites go?
    b. Brainstorm: How do you make sure that every user gets their request filled?
2. Try out the proposed changes & relate to the real world. Discussion:
    a. Discussion: What if there were thousands of websites, instead of <10?
        i. lookup name in a DNS server (phone numbers)
        ii. organize IP addresses according to location
    b. Discussion: Each website should fulfill requests in the order they come in
        i. queues---FIFO

    c. Brainstorm: How to make it go fast?
        i. fulfill multiple requests at once?
    d. Brainstorm: What if the websites are on the opposite side of the world?
        i. Two options:
            1. all users on one side of the room, use runners (ISPs) to send messages back and forth to websites
            2. users and websites spread out across the room, each person can take 3 steps to pass messages across the room.
        ii. In both cases: communication protocols are important
            1. plan out a sample message on the board
            2. need to identify users in addition to
3. Use communication protocols to write down requests
4. Wrap up with discussion of real world

How does the internet work?

Intro (10 minutes) The internet is made up of individual websites and individual users, all communicating with each other. Each website is hosted on a computer just like yours, and connects to the internet in the same way. You can even host your own website from your computer!

- wikipedia: user sends a request to the website, website sends back information
- twitter: post a message for everyone to see
- email: find a person and deliver a message

This activity will test how YOU would organize the internet so that everybody is able to communicate. Some of you will run the websites, the rest will be users who have to fulfill specific requests.

Plan (10 minutes) Split into groups of ~5. Hand out packets for each website, including sample requests. Each group plans how they will organize their site (5 minutes). Separate out users and hand out requests.

First Run (10 minutes) Go!

Discussion (20 minutes) For users: how many people fulfilled all 3 requests? Was it fair? Was it hard to find the websites? What if there were thousands of websites, instead of 5-7? What if the websites were on the other side of the world?

- To traverse long distances, the internet sends *packets* of information, instead of travelling there yourself. How would you organize a packet?
- Assign a messenger or “router” from each group to connect one side of the room with the other. Only messengers are allowed to cross to the other side of the room.

Second Run (10 minutes) Go!

Discussion (20 minutes) What was the hardest part of being a user? (Getting your requests handled the way you wanted, and waiting.) What was the hardest part of being a website? (Fulfilling the requests.) What was the hardest part of being a router? (Finding the people you were supposed to deliver to.)

The internet uses a DNS (domain name system) to find out where a website is(eg in California or in China). It consists of a list of names with locations (IP addresses). (Write lists on the board, corresponding to the numbers above every table.) What about for people? Packets should be labeled with your IP address.

Each website dictates the structure of the packets they need. Break into groups and write your packet info on the board. You may want to have “available orders” sheets (What do you want?)

Third Run (10 minutes) Go!

Wrap Up (10 minutes)

Being Google

Possible Requests

- Search for articles in one of the following topics:
    - Computer Science Research
    - Gaming
    - How To
    - Computer Science Jobs
    - Webcomics
- Select an article from the search results and take it with them

Being Twitter

Possible Requests

- Post a tweet using a template
- Read all the available tweets
- Retweet someone else's tweet

Template

Being Facebook

Possible Requests

- Create a profile (fill in your info in the square)
- View a profile
- Post on someone's wall

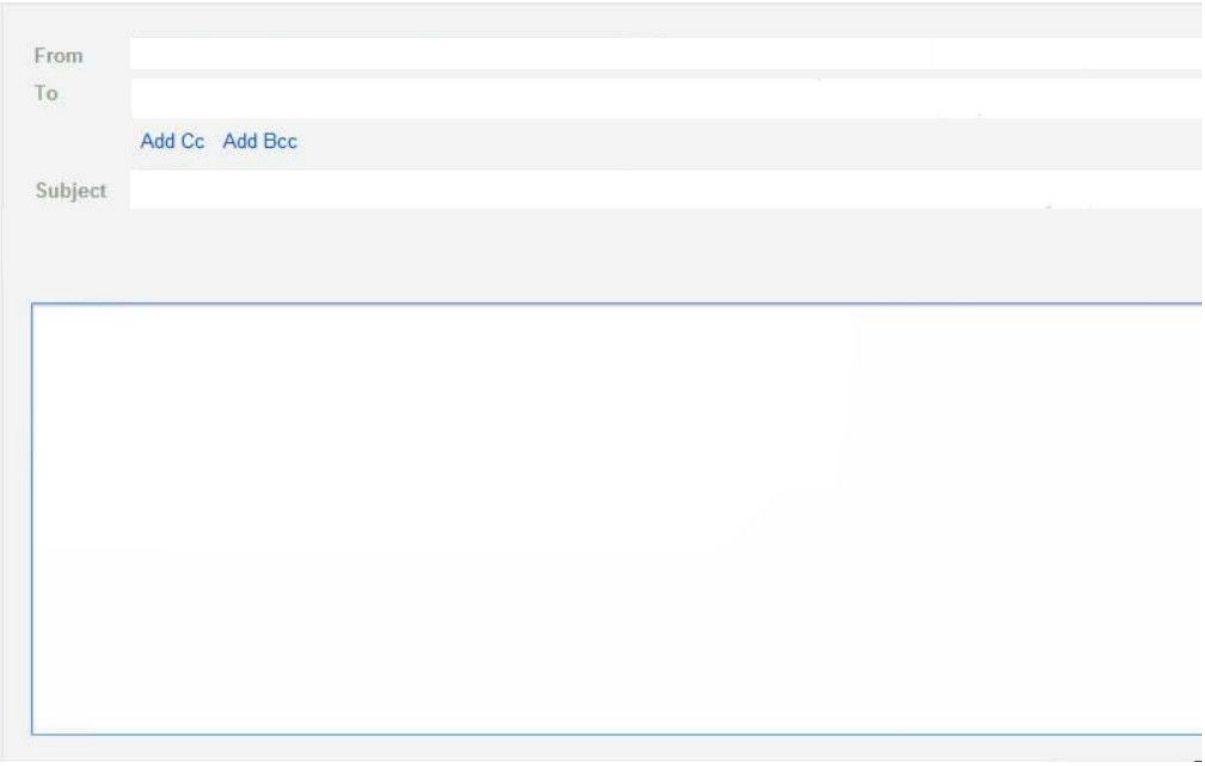
Template

Being Gmail

Possible Requests

- Send an email
- Reply to an email

Template



Being Amazon

Possible Requests

- Buy something
- Return something
- Browse

Inventory

Item	**Amount**
number puzzles	6
disguises	4
necklaces	5
dinosaur toys	6