This is an open book exam. You may consult any published source (any quotes or paraphrasing must be properly cited, of course). You must complete the exam on your own, however. No one may assist you with your answers. The Exam is due by 5pm on Tuesday June 10th either in my mailbox on the 2nd floor of HPC or at Gleacher (in faculty lounge on 4th floor or program office on 3rd floor). You may also fax it to 773-702-0458 but this is the main GSB fax machine and it closes at 5pm. It is your responsibility to make sure that it is received in time (and "the fax number was busy" is not an acceptable excuse). In extreme circumstances, you can email to the TA pioneer@uchicago.edu.

THE FIRST PAGE OF YOUR EXAM ANSWERS SHOULD BE A PAGE AFFIRMING THAT YOU DID NOT VIOLATE THE HONOR CODE.

1. (10 points) Consider incumbent monopolists of the local loop in a world where there are two markets, San Francisco and Chicago. The marginal costs of the bottleneck and non-bottleneck are listed below in each market along with the final price.

   | San Francisco | Chicago |
   | Bottleneck    | Non-Bottleneck |
   | MC=11         | MC=4           | MC=8         | MC=6           |
   | Final Consumer Price = 20 |               | Final Consumer Price = 21 |

   A. What would be the ECPR price of access to the bottleneck in each market?
   B. With no fixed costs, what would be the TELRIC price for access in each market?

2. (30 points) You have heard that Microsoft is trying to buy Yahoo. Google has objected. Give a DOJ-style analysis of whether a MS-Yahoo merger should be approved. Google has a market share of about 65% of individual searches and suppose that MS and Yahoo have shares of about 20% and 15%.

3. (40 points) Apple's iPhone may, according to the attached article I, pose net neutrality and antitrust concerns. Does it make sense for Apple to insist on full control of the applications? Should they be forced to open up their system to the firefox browser or other software applications?

4. (40 points) See the second article attached from this past week about a dispute between Google and Facebook where Facebook is shutting Google off their site. A) Do you think Google is directly infringing on Facebook's copyrights by redistributing the information? B) What impact would forbidding Facebook from blocking Google have on the market? C) Is there reason to believe Facebook is facebook is acting in an anti-competitive manner? (30 points)

5. (40 points) Apple's iPhone has signed exclusive contracts in Europe with a single phone provider (like they did with AT&T in the U.S.). European authorities have challenged this behavior as being anti-competitive and harming consumers with illegal tying of two products. Do you think Apple's behavior is anti-competitive?
6. (30 points) Digital film delivery directly into movie theaters, thereby saving all the substantial costs of producing and transporting copies of movies to the theaters and the potential difficulties that can arise from poorly trained theater projectionists are gone. The problem is that the technology is expensive and this is a low margin business with lots of players. Knowing what you know about the video industry, what important factors will determine the spread of this new technology.

ARTICLE I

iPhone rules pose Net neutrality, antitrust concerns

Apple's recent announcement of the iPhone application software development kit is drawing criticism from Net neutrality activists. While the company has previously angered many for its practice of bricking unlocked phones, it is now being accused of anticompetitive behavior. Could Apple take Comcast's place as the poster child for the Save The Internet movement? Furthermore, by blocking competing Web browser Firefox, could Apple draw Microsoft-like antitrust lawsuits?

Control

Thursday, Apple released its eagerly awaited iPhone software development kit. Putting an end to hopes of user choice, Apple has declared that the only way for users to install applications will be through its App Store via the iPhone or iTunes. If the company doesn't like an application, it will be removed from the store, with no other way for a user to install it. In a Q and A session with reporters, CEO Steve Jobs was asked if voice applications such as Skype will be permitted. Jobs replied by saying that VoIP (voice over Internet Protocol) will be allowed when the iPhone is using a WiFi connection, but forbidden over AT&T's cellular data network. How this will be enforced remains unclear. At the very least, Apple can blacklist from iTunes any application that doesn't play nice over AT&T's network.

In addition to the anti-VoIP rules, Apple seems to have also set its sights on the Firefox Web browser. Deep in the legal agreement for developers, Apple states:

"No interpreted code may be downloaded and used in an Application except for code that is interpreted and run by Apple's Published APIs and builtin interpreter(s)...An Application may not itself install or launch other executable code by any means, including without limitation through the use of a plug-in architecture, calling other frameworks, other APIs or otherwise."

As a member of the Firefox development team has already noted, this is a big deal. Both the Firefox and Opera Web browsers, which compete with Apple's pre-installed Safari browser, are forbidden as they support hundreds of user-created add-ons. Furthermore, the Web browsers support Javascript, which is a key component of most Web 2.0 content. Javascript is an interpreted programming language, and thus forbidden as per Apple's terms of service. Also banned from the iPhone: programming languages Ruby, Python, Perl, and Java. Quake, the video game engine ported to practically every platform (including Google's Android), as well as Microsoft's Word, Excel, and .NET are also persona non grata. Sun announced last week that it is readying a version of Java for the iPhone. Once the restrictive iPhone license was pointed out, Eric Klein, the vice president of Java marketing at Sun, backpedaled somewhat on his own personal blog, writing that "I'll leave
those (legal) questions to another forum, but we really do want to deliver a JVM if at all possible." This alone should make for an interesting fight, as Sun is no stranger to filing antitrust complaints.

Net neutrality complaints

Apple's blocking of Skype and other voice applications raises the same Net neutrality issues as Comcast's blocking of BitTorrent. Critics have argued that Comcast does this because the P2P video apps compete with the cable giant's own video programming. Apple is now engaging in a similar practice, blocking any VoIP application that competes with the voice services offered by AT&T--the company with which Apple signed an exclusive five-year contract. The company will be unable to borrow Comcast's line, and claim that the restriction is "reasonable network management." After all, watching a couple YouTube videos eats up far more data than a VoIP call.

This is not the first time that a company has attempted to block VoIP traffic to protect its own business model. Madison River Communications, a North Carolina ISP was fined and forced to change its behavior by the FCC when it started blocking VoIP providers like Vonage in 2005.

Paging Congressman Markey

Apple's sexy iPhone has attracted the attention of those in power before. Congressman Ed Markey (D-Mass.) held up an iPhone during a congressional hearing last year, before he sharply criticized the practice of locking such devices to a specific carrier's network.

Just a couple weeks ago, Markey introduced the Wireless Consumer Protection and Community Broadband Empowerment Act of 2008, which would require wireless carriers to sell unlocked phones without contracts for reasonable prices. In introducing the bill, Markey clearly had the iPhone in mind.

Markey's other well-publicized cause is Net neutrality. The congressman spoke at the Comcast/BitTorrent FCC hearing just a couple weeks ago. He has previously held hearings on the subject, and introduced legislation in February to stop ISP data favoritism. With Apple's recent adoption of Comcast-style filtering, Markey can combine two of his passions: wireless phones rules and Net neutrality regulation.

Antitrust

Microsoft's bundling of Internet Explorer back in the late '90s led to major antitrust lawsuits brought by Department of Justice and 20 different states. While consumers were free to install Netscape and other competing browsers, it was the preferential treatment of its own browser that lead to legal problems for Microsoft. Apple is now engaged in an even more egregious practice. It bundles the Safari browser with its iPhone, it makes it impossible for consumers to remove the browser, and the company now forbids competing companies from making their browsers available to the millions of iPhone users. Firefox has over 40 percent market share in some European countries, but it forbidden from making a version for the iPhone platform.

If Apple doesn't rapidly backtrack on its anti-Firefox and VoIP rules, I predict that it will soon be looking at investigations from multiple government agencies, both here in the U.S. and EU. The FCC and Congress will most likely look into the Net neutrality complaints, while the European antitrust regulators will probably take a keen interest in the Firefox issues. This would, of course, not be the first time that the Europeans have
investigated Apple's iTunes store for dirty tricks.

ARTICLE II
Google, Facebook in stalemate over social data
May 24, 7:55 AM EDT

By ANICK JESDANUN NEW YORK (AP) -- Google Inc.'s online communities have little traction in the United States, but the search leader continues to seek a spot in the social-networking hierarchy. First, it must contend with Facebook, the No. 2 online hangout behind MySpace. Days after Google unveiled Friend Connect, which lets the sites of musicians, political campaigns and others incorporate profile data from several social networks, Facebook began to block the program.

Although Google was taking advantage of the same tools that Facebook made available free to other outside developers, Facebook said Google was violating Facebook's restrictions on data sharing. The two sides remain in a stalemate. Google, whose Orkut social network has tens of millions of users in Brazil, tried to reach further into social networking with the November unveiling of a consortium called OpenSocial, which lets developers write applications for use on multiple social networks. News Corp.'s MySpace has joined, but Facebook hasn't.

This month, Google unveiled Friend Connect, which promises to pool profile data from Facebook, Google Talk, Orkut, LinkedIn, Plaxo and hi5, though not MySpace. The profile information gets incorporated into other sites - a political campaign, for instance, can build communities of supporters by tapping existing networks - with Google serving as the intermediary.

Facebook quickly objected, citing privacy concerns. Normally dealing with other companies one on one, Facebook can block a service it feels violates its rules. With Google as the intermediary, Facebook lost that leverage, so it decided to block Friend Connect entirely. In a blog posting, Facebook developer Charlie Cheever said Google's Friend Connect "redistributes user information from Facebook to other developers without users' knowledge, which doesn't respect the privacy standards our users have come to expect."

Google responded, acknowledging it passes along data. But it said sharing is limited to links for profile photos of users and friends who have expressly consented to sharing with that particular site. The user's name and numeric ID on Facebook are replaced with Google's own identifiers, Google said in a company blog post.

Google also said it purges Facebook data from its systems every 30 minutes, more frequently than the 24 hours required by Facebook. Facebook has run into privacy challenges before, most recently when it unveiled a marketing tool called "Beacon" that tracked purchases Facebook members made on other Web sites and sent alerts to their Facebook friends about the transactions.

But Rachel Happe, research manager at IDC, said the dispute is ultimately about control rather than privacy. She said Google's Friend Connect "starts to eat into other people's value proposition, which is why you saw Facebook object to it."