

6.883, Spring 2007 Problem Set 6
Due: Thursday May 11, 2007

Working together is something that humans like to do but often needs some technological help, especially when the humans are geographically separated. Telephone are wonderful devices from exchanging of information, when two people are physically separated. Telephones call are usually a one-to-one connection. But such one-to-one links can be concatenated into an arbitrary graph structure, if the links can be built up and torn down quickly, and can support collaboration on a wider scale.

The goal of this problem set is to create an environment for collaborative story using SMS messaging. An initially empty story gets incrementally extended by one SMS message at a time (upto 160 characters). The goal is to keep the story progressing as fast as possible and have the messages travel as far as possible. The naive way is to simply pass the story around the people with each person adding a small piece. But if one person is slow (sleeping, away from phone), then progress is slow. We will borrow an idea from fault tolerant network design.

At each step, the story is extended by one person, however that person is not fully determined. Rather, at each step 5 people are randomly selected and only the first response is used to extend the story. The other 4 people are informed that they were too late.

A collaborative story could be done via a server running something like a wiki server. This is a fine way to do it, but it requires participants to continually poll the wiki. Sending an SMS message is a "push" technology that intrudes upon the participant. Sometimes this is better than having to go to a web site. You need not agree with this argument; the point of the problem set is to experiment with novel uses of SMS messages on the phone and trying out new collaboration techniques.

In order to make some sense of the story, it is best to have some context. I think that seeing the previous paragraph or two is sufficient context. So here is the idea: A participant receives three SMS messages: the first two contain contributions of the story (in compressed format), and the last one is in ASCII. The last SMS message may be sufficient to continue the story, but decompressing the first two messages should give more context. (Assuming a 50about 600 characters plus an additional 100 characters in the uncompressed message, yields about 700 characters or a paragraphs worth of text.) He or she can go to a web sever and read the entire story, or send an SMS message to the

server to ask for a particular slice of the story. Based on this information, the participant extends the story and sends a message to the server.

1 Details

On the phone, it is best to write a program that does the following: whenever an SMS message arrives, it examines the subject line. Gist, for Global Interactive Story Telling, is an identifier for the project. In addition to keyword gist, there is a number identifying the command as well as a character. Finally there is a 7 digit step or story part identifier. The first three are the story id and the later four are the part id (it begins with 0001, and increases by 1 each time the story is extended).

- "gist 0 t xxx-xxxx" contains uncompressed part of the story and indicates that you can now extend the story.
- "gist 1 c xxx-xxxx" and "gist 2 c xxx-xxxx" are the first two compressed messages.
- "gist 3 s xxx-xxxx" uncompressed (ascii) message of part of the story. This is what is given in response to a request to see earlier parts of the story.
- "gist 4 i xxx-xxxx" tells the phone that someone else already extended the story and you can forget about these messages. They can easily be removed without bothering the owner of the phone.

The participant's phone can send to the server:

- "gist 5 a xxx-xxxx" which tells the server to append this message to the end of the story (after part xxxx). If accepted, this extension will become part xxxx+1 of the story.
- "gist 6 r xxx-xxxx xxx-yyyy" This asks the server to respond, via sms, with these parts of the story (from xxxx to yyyy). If yyyy is missing, then it is the end of the story. The sms messages sent back to the phone will all be compressed.
- "gist 7 j xxx" Tells the server that you want to join in the story telling game for story xxx.

2 What you have to do

You are to write python code that will handle incoming and outgoing SMS messages as well as the user interface. When messages arrive, the interface can decide how to interrupt the owner. It can beep, or simply wait for the user to

start the application. It should decode and decompressed the messages. It can display the story contents. This is your choice.

You need not keep the phone with you all the time. In fact, your phone can be its own server and forward SMS messages to your own personal phone or connect to your own personal server and send you an email. Perhaps you might want to wait a short time to make sure that someone else has not already answered.

You must have a way to enter the next part of the story. It should be sent to my server phone (781 267-8926). During testing period, please send messages to your own phone.

Write code to act as the "server phone" as well. (I might take the best one.) The server phone will send "ignore" messages, update story part, send out messages to 5 new people. Record the time the messages arrived and the new part of the story.

We all will develop the application (you may work in teams) and test on your own. Only later will we actually try to collaborate / integrate, but not as part of this problem set.

Please make use of the Wiki!!