OCaml-Chat Progress Report: MS1

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Vision:
In one paragraph, what is your current vision for the system you are building? How has it evolved from previous sprints?

For our final project we set out to build an instant messenger. Our vision hasn't changed much since we submitted the team charter, but we have tempered our expectations as to what is possible given the time constraints. We previously set many challenging goals for ourselves including, file sharing, text formatting, and image sharing built directly into the messenger. Completing these goals on top of building a functional messenger may be difficult, but we will still try to complete them if we have the time. Not having these additional features will not impact the core concept of our instant messenger since users will still be able to send and receive messages from multiple users through a server.

Summary of progress:
Write a one or two paragraph description of what your team accomplished during the previous sprint. What functionality did you work on? What did you show off in your demo?

At the moment, we have implemented a server that can receive connections from multiple clients. We have a simple interface for each client with a textbox for sending messages, and a screen that displays the messages sent from the server. We also have a server which displays all messages sent to it, as well as a debugging interface that send messages to the clients.

In the background, everything is done using Lwt cooperative threads. The client first opens a connection to the server, starts a thread that listens to server messages, then it enters a loop that takes in input, performs actions based on the input, and then draws the interface. Whenever a message needs to be sent, a new thread is created so that it does not interrupt how the interface is being drawn. The interface is implemented from scratch by printing directly to standard output, which includes unicode characters and ansi escape sequences. The panels are modular and can be expanded, moved or resized as required. The chat logs are implemented using a doubly linked list implemented using singly linked lists, which allows for O(1) insertions (from the head) and O(1) reads from the head, and finding the kth element is an O(k) operation. This also means that if we maintain a pointer to the middle of the linked list, finding the next or previous element is an O(1) operation. This would be useful when we implement scrolling, which would allow us to scroll to previous messages and still be able to draw them in an efficient manner.

On the server side, everything is also running through cooperative threads. The server starts a loop listening for any incoming connections, accepting any that come through and starts a new thread reads the input from the connected client.

Activity breakdown:
For each team member, give a bulleted list of the responsibilities that team member had and the activities in which they participated during the sprint.

Attilus - server implementation
Jasper - parser implementation
Colin - basic text formatting

Productivity analysis:
As an entire team, how productive were you? Did you accomplish what you planned? Were your estimates of what you could do accurate, or far off? Write a paragraph addressing those questions.

We definitely overestimated slightly the complexity of the tasks, although not too much. It simply means that some of the features would have to be changed slightly to be implemented feasibly (such as formatting or sending images/objects). We accomplished most of the things we planned, and the only thing we couldn't do was formatting, which we are going to make some changes to so we can do it (instead of making an interface to format text, it would be easier to have the user type in escape codes).

Scope grade:
Give your team a scope grade for this sprint—Satisfactory, Good, or Excellent—based on your experience of those levels of scope in the assignments thus far in this course. Write a paragraph or two providing a detailed justification of why you gave yourself that grade. Please be honest: we want you to reflect candidly on your progress. Your sprint grade is not going to be based on what you self-assign here.

We are currently at good scope based on our goals, but looking at what we have accomplished, I think we are reasonably close to being in excellent scope, given the level of complexity of our tasks (threading, ansi escape sequences, networking, etc.) and the amount of code written (we currently have 689 lines of code at the time of writing). We are close to completing formatting and are aiming to finish it before the deadline.

Goals for next sprint:
Set three goals for your next sprint, corresponding to what you believe would constitute Satisfactory, Good, and Excellent scope for that sprint. (You may omit this section in your final report.)
Satisfactory: Send messages between clients
Good: Identify users through username, timestamp, read statuses
Excellent: Keyboard shortcuts and panel to see all active users