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Client-Server Board Application Using Java Stream Socket API -- CSBP

Status of This Memo

This document describes the specifications and implementation of a Client-Server application using the Java API.

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Abstract

The Client-Server Board Protocol (CSBP) lies in the software-application level of the internet protocol stack. The application functions by having a single server process running which facilitates many client processes. This communication is accomplished through the use of stream sockets.

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1 Introduction

1.1 Purpose

The Client-Server Board Protocol (CSBP) is an application level protocol that creates a virtual representation of a bulletin board for clients to post notes to. We were assigned the task of creating the CSBP protocol in the course CP372 Computer Networks.

1.2 Terminology

- Board - A bulletin board object that is created when the server process begins to run. The board has a height, a width, and a set of colours that the notes can be associated with it.
- Client - The process that connects the user to the server process.
- Note - A posted note object that the client can post the the board. The note has a colour, height and width, X and Y coordinates on the board, and the content of the note associated with it.e.
- Pin - A pin object that pins notes to the board so that when the clear method is ran the pinned notes stay on the board.
- Server - The process generates the board object to facilitate clients.
- Socket - The object that can connect a client process to a server process.

1.3 Overall Operation

The CSBP protocol is a request/response and a send/store information protocol. For the request/response aspect, the GUI will be used to request notes to be retrieved from the board based on colour, content, and/or coordinates. The server process will then find the notes that meets the requested parameters and responds by outputting those notes.
For the send and store aspect, the GUI will be used to send information such as notes or pins to the board. The board will then store all the information of these notes and pins so they can be easily accessed.

2 GUI

2.1 Connect Interface

Located in the top left corner of the GUI that contains an IP address and Port Number text field where the user inputs the respective information. The user then clicks the connect button to connect the Client to the Server. Once the user is done they click the disconnect button to disconnect from the server.

2.2 Pin Interface
Located in the top right of the GUI that contains a X and Y coordinate text fields where the user inputs the respective information of where they want to place the Pin and does so by pressing the Pin button. To unpin a placed Pin the user repeats the same process but presses the unpin button instead.

2.3 Post Interface
Located in the centre of the GUI here the user inputs the post content, the X and Y coordinate of the bottom left corner of the note, the width and height of the note, and the note colour. Once these text fields are filled the user then presses the Post button.

2.4 Get Information Interface
Located at the bottom of the GUI here the user can request note based on the colour, coordinates and content in each respective text field. To enter in a coordinate the user must first enter the X coordinate followed by a space then the Y coordinate. Three buttons lie underneath these text fields: show all pinned notes, get the information based on text field input and to clear all unpinned notes off the board.

3 Method Definitions

3.1 CONNECT/DISCONNECT
The CONNECT method connects the client process to the server process. The DISCONNECT method removes the given client from the server and stops that client process. There can be more than one client process running at once. The server must be running before any client attempts to connect for proper use.

3.2 POST
The POST method puts a note onto the board containing the inputted information as described in section 2.4.

3.3 GET
The GET method returns the user requested information as described in section 2.4.

3.4 PIN/UNPIN
The PIN method puts a pinand the UNPIN method removes in the desired location as described in section 2.2.

3.5 CLEAR
The CLEAR method removes all notes from the board that are not pinned.

4 Security Considerations

4.1 Server Security

When the server is shut down all information will be lost. Nothing is saved locally.

4.2 Client Security

No information is lost when the client disconnects as it stays on the server until it stops running.