Socket. io server javascript client

In the last few years, a new type of communication began to appear on the web and in mobile applications, called websockets. This protocol has been long awaited and was finally standardized by the IETF in 2011, paveing the way for widespread use. This new protocol opens up a much faster and more efficient line of communication for customers. Like HTTP, websockets run on top of a TCP connection, but they're much faster because we don't have to open a new connection every time we want to send a message since the connection is kept alive for as long as the server or client wants. Even better, since the connection never dies, we finally have full-duplex communication available to us, which means we can push data to customers instead of having to wait for them to request data from the server. This allows data to be communicated back and again, ideal for things like real-time chat apps or even games. How do websockets work? At its core, a websocket is just a TCP connection that allows full-sided communication, meaning either side of the connection can send other data even at the same time. To establish this connection, the protocol actually starts as a normal HTTP request, but is then 'upgraded' using the HTTP title that requires an upgrade, as follows: GET /ws/chat HTTP/1.1 Host: chat.example.com Upgrade: websocket Connection: Upgrade Sec-WebSocket-Key: q1PZLMeDL4EwLkw4GGhADm== Sec-WebSocket-Protocol: chat, Superchat Sec-WebSocket-Version: 15 Source: The server will then resend an http 101 Transfer response protocol, acknowledging that the connection will be upgraded. Once this connection has been made, it switches to a two-way binary protocol, at which point the application data can be sent. All the protocols have to do to keep the connection open is to send some ping/pong packages, which tells the other side that they are still there. To close the connection, a simple closed connection package is sent. Some Websocket Examples Among the many different websocket libraries for Node.js available to us, I chose to use socket.io throughout this article because it seems to be the most popular and is, in my opinion, the easiest to use. Although each library has its own API, they also have many similarities as they are all built on the same protocol, so hopefully you will be able to translate the code below to any library you want to use. For HTTP servers, I will use Express, which is the most popular Node server available. Keep in mind that you can also simply use a simple http module if you don't need all the features of Express. Although, since most apps will use Express, that's also what we'll use. Note: Throughout these examples, I removed most boilerplate code, so some of these codes won't work. In most cases, you can refer to the first example to get the code Set up a connection to connect set between client and server, the server must do two things: Hook to http server to process websocket connection Serving socket.io.js client library as a static resource In the code below, you can see item (1) made on the 3rd line. Item (2) is made for you (by default) by socket.io library and is served on the /socket.io/socket.io.js. By default, all websocket connections and resources are served in the socket.io/. Server var application = require('express')(); var server = require('http'). Server(application); var io = require('socket.io')(server); app.get('/', function(req, res) { res.sendFile(__dirname + '/index.html'); server.listen(8080); Customers also need to do two things: Download the library from the .connect() call server to the server address and the WebSocket Client path If you navigate your browser to and check the HTTP requests behind the scenes using <script src=/socket.io/socket.io.js></script> <script> var socket = io.connect('/'); </script> using browser development tools, you'll be able to see the handshake being made, including GET requests and responses to the http 101 conversion protocol results. Send data from the server to the okay client, now into some more interesting parts. In this example, we'll show you the most common way to send data from the server to the client. In this case, we will send a message to a channel that can be subscribed and received by the customer. So for example, the client might be listening on a 'notification' channel, which will contain notifications about events across the system, such as when a user joins a chat room. On this server is done by waiting for the new connection to be established, then by calling the socket.emit() method to send messages to all connected clients. Io.on server('connection', function(socket) { socket.emit('announcements', { message: 'A new user has joined!' }); }); Guest <script src=/socket.io/socket.io.js></script> <script> var socket = io.connect('/'); socket.on('announcements', function(data) { console.log('Got announcement:', data.message); }); </script> goods that send data from customers to servers But what do we do when we want to send data differently, from client to server? It is very similar to the last example, using both socket.emit() and socket.on() methods. Io.on('connection', function(socket) { socket.on('event', function(data) { console.log ('A client sent us this dumb message:', data.message); }); Guest <script src=/socket.io/socket.io.js></script> <script> var socket = io.connect('/'); socket.emit('event', { message: 'Hey, I have an important message!' }); </script> user counting row connect This is a nice example to learn as it shows a few socket.io features (like disconnect events), it's easy implemented, and it is applied to many web applications. We'll use connections and disconnect events to count the number of active events on our website, and we will update all users in the current number. Server var numClients = 0; io.on('connection', function(socket) { numClients++; io.emit('stats', { numClients: numClients }); console.log('Connected clients:', numClients); socket.on('disconnect', function() { numClients---; io.emit('stats', { numClients:numClients }); console.log('Connected clients:', numClients); }); Customers A much simpler way to track the number of users <script src=/socket.io/socket.io.js></script> <script> var socket = io.connect('/'); socket.on('stats', function(data) { console.log('Connected clients:', data.numClients); </script> on the server will only use this: var numClients = io.sockets.clients().length; But there seem to be some issues around this, so you may have to keep track of the number of customers. Room and name space Most likely as your app grows in complexity, you'll need more customization with your web bag, like sending messages to a specific user or a set of users. Or maybe you want to split strict logic between different parts of the application. This is where the rooms and name space come to play. Note: These features are not part of the websocket protocol, but are added on top of the socket.io. By default, socket.io the original name space (/) to send and receive data. According to the programmable, you can access this name space through io.sockets, although many of its methods have shortcuts on io. So these two calls are equivalent: io.sockets.emit('stats', { data: 'some data' }); io.emit('statistics', { data: 'some data' }); To create your own name space, all you have to do is the following: var iosa = io.of('/stackabuse'); iosa.on('connection', function(socket){ console.log ('Connected to Stack Abuse namespace'); }); iosa.emit('stats', { data: 'some data' }); Additionally, customers must explicitly connect to your name space: Now any data sent in the name space <script src=/socket.io/socket.io.js></script> <script> var socket = io('/stackabuse'); </script> this will be separate from the default space/name, regardless of which channel is used. Going even further, in each name space, you can join and leave the 'room'. These rooms offer another segregated layer on the name space, and since customers can only be added to a room on the server side, they also provide additional security. So if you want to make sure that users don't snoop on certain data, you can use a room to hide that data. To be added to a room, you must .join() it: io.on('connection', function(socket){ socket.join('private-message-room'); }); Then you can send a message to everyone in a certain room: io.to ('private-message-room').emit ('some events'); And finally, call .leave() to stop receiving messages sue from a room: socket.leave ('private-message-room'); Conclusion This is just a library that implements websockets protocols, and there are many more out there, all of which have their own unique features and strengths. I recommend trying some others node-websockets) so you get a feel for what's out there. In just a few lines you can create some pretty powerful apps, so I'm curious to see what you can think of! Do you have some interesting ideas or have created some apps using websockets? Let us know in the comments! Comments!

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