

# Web Sockets

This project creates a real-time auction system using HTML, JavaScript, and Node.js with WebSocket communication. The HTML file sets up a simple interface where users can view the current highest bid and place their bids. When a bid is placed, the JavaScript code sends the bid amount to the WebSocket server. The Node.js server, implemented with the WebSocket module, handles incoming connections and bid updates. It broadcasts the highest bid and bidder information to all connected clients, ensuring real-time updates for all participants.

## App.js

```
const WebSocket = require('ws');

const wss = new WebSocket.Server({ port: 3000 });

let highestBid = 0;
let highestBidder = null;

wss.on('connection', function connection(ws) {
  console.log('A new client connected');

  // Send initial highest bid to client
  ws.send(JSON.stringify({ highestBid, highestBidder }));

  ws.on('message', function incoming(message) {
    const data = JSON.parse(message);
    if (data.type === 'bid' && data.bid > highestBid) {
      highestBid = data.bid;
      highestBidder = data.bidder;
      // Broadcast updated highest bid to all connected clients
      wss.clients.forEach(function each(client) {
        if (client.readyState === WebSocket.OPEN) {
          client.send(JSON.stringify({ highestBid, highestBidder }));
        }
      });
    }
  });
});
```

```
ws.on('close', function() {
  console.log('Client disconnected');
});
});
```

## Index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Real-Time Auction</title>
</head>
<body>
  <h1>Real-Time Auction</h1>
  <p>Current Highest Bid: $<span id="currentBid">0</span></p>
  <label for="bidAmount">Your Bid: $</label>
  <input type="number" id="bidAmount">
  <button onclick="placeBid()">Place Bid</button>

  <script>
    const ws = new WebSocket('ws://localhost:3000');
    const currentBidElement = document.getElementById('currentBid');
    const highestBidderElement = document.getElementById('highestBidder');
    const bidAmountInput = document.getElementById('bidAmount');

    ws.onopen = function() {
      console.log('Connected to WebSocket server');
    };

    ws.onmessage = function(event) {
      const data = JSON.parse(event.data);
      currentBidElement.textContent = data.highestBid;
      highestBidderElement.textContent = data.highestBidder || 'None';
    };

    ws.onclose = function() {
      console.log('Connection to WebSocket server closed');
    };

    function placeBid() {
      const bidAmount = parseInt(bidAmountInput.value);
```

```
    if (!isNaN(bidAmount) && bidAmount >
parseInt(currentBidElement.textContent)) {
        const bidData = { type: 'bid', bid: bidAmount };
        ws.send(JSON.stringify(bidData));
        bidAmountInput.value = '';
    } else {
        alert('Your bid must be higher than the current highest bid.');
```

```
    }
}
</script>
```

```
</body>
```

```
</html>
```

```
"dependencies": {
  "ws": "^8.16.0"
}
```



