Senior React + Node.js Coding Challenges (with Solutions)

1. React: Implement a custom hook useFetch(url) to fetch data from an API.

```
import { useState, useEffect } from 'react';

function useFetch(url) {
  const [data, setData] = useState(null);
  const [loading, setLoading] = useState(true);
  const [error, setError] = useState(null);

  useEffect(() => {
    fetch(url)
      .then(res => res.json())
      .then(data => { setData(data); setLoading(false); })
      .catch(err => { setError(err); setLoading(false); });
  }, [url]);

  return { data, loading, error };
}
```

2. React: Create a component that renders a list of items with search filtering.

```
function SearchList({ items }) {
  const [query, setQuery] = useState('');
  const filtered = items.filter(i => i.toLowerCase().includes(query.toLow
erCase()));

  return (

       setQuery(e.target.value)} placeholder='Search...'/>

        {filtered.map((item, i) => {item})}


  );
}
```

3. Node.js: Create a simple REST API with Express for CRUD operations on users.

```
const express = require('express');
const app = express();
app.use(express.json());

let users = [];
```

```
app.get('/users', (req, res) => res.json(users));
app.post('/users', (req, res) => { users.push(req.body); res.status(201).
json(req.body); });
app.put('/users/:id', (req, res) => { users[req.params.id] = req.body; re
s.json(req.body); });
app.delete('/users/:id', (req, res) => { users.splice(req.params.id, 1);
res.sendStatus(204); });

app.listen(3000, () => console.log('Server running on port 3000'));
```

4. Node.js: Implement a middleware for logging request method and URL.

```
function logger(req, res, next) {
  console.log(`${req.method} ${req.url}`);
  next();
}

app.use(logger);
```

5. System Design: Build a real-time chat app with Node.js and Socket.IO.

```
const io = require('socket.io')(3000);

io.on('connection', socket => {
  console.log('User connected');
  socket.on('chatMessage', msg => {
    io.emit('chatMessage', msg);
  });
  socket.on('disconnect', () => console.log('User disconnected'));
});
```