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1 import io.opentelemetry.api.GlobalOpenTelemetry;
2 import io.opentelemetry.api.trace.Span;
3 import io.opentelemetry.api.trace.Tracer;
4 import io.opentelemetry.api.trace.TracerProvider;
5 import io.opentelemetry.context.Scope;
6
7 import java.io.*;
8 import java.net.ServerSocket;
9 import java.net.Socket;
10 import java.nio.charset.StandardCharsets;
11 import java.util.zip.CRC32;
12 import java.util.zip.Checksum;
13 import java.util.zip.GZIPInputStream;
14
15 public class server {
16     public static void main(String[] args) {
17         System.setProperty("otel.tracer.provider", "
io.opentelemetry.api.trace.propagation.
B3Propagator$Factory");
18
19         try {
20             // Create a server socket listening on
port 8080
21             ServerSocket serverSocket = new
ServerSocket(8080);
22             System.out.println("Server is listening
on port 8080...");
23
24             while (true) {
25                 // Wait for a client to connect
26                 Socket clientSocket = serverSocket.
accept();
27                 System.out.println("Client connected
.");
28
29                 // Start a new span for the server
operation
30                 TracerProvider tracerProvider =
GlobalOpenTelemetry.getTracerProvider();
31                 Tracer tracer = tracerProvider.get("
server-tracer");
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32
33         // Manually create a span for the
server operation
34         Span span = tracer.spanBuilder("
server-operation").startSpan();
35
36         // Create a scope to manage the span'
s lifecycle
37         try (Scope scope = span.makeCurrent
            ());
38             InputStream inputStream =
clientSocket.getInputStream();
39             ObjectInputStream
objectInputStream = new ObjectInputStream(
40                 new GZIPInputStream(
inputStream))) {
41
42                 // Process the client's request
with compression and checksum verification
43                 processClientRequest(
objectInputStream);
44             } finally {
45                 // End the span when the
operation is complete
46                 span.end();
47             }
48
49             // Close the client socket
50             clientSocket.close();
51         }
52     } catch (IOException | ClassNotFoundException
e) {
53         e.printStackTrace();
54     }
55 }
56
57 private static void processClientRequest(
ObjectInputStream objectInputStream) throws
IOException, ClassNotFoundException {
58     // Read the number of files to expect
59     int numFiles = objectInputStream.readInt();

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60         System.out.println("Expecting " + numFiles
        + " files from the client.");
61
62         // Receive files from the client
63         for (int i = 0; i < numFiles; i++) {
64             // Read the compressed file content from
        the client
65             byte[] compressedContent = (byte[])
        objectInputStream.readObject();
66
67             // Read the checksum from the client
68             long receivedChecksum =
        objectInputStream.readLong();
69
70             // Decompress the content
71             String fileContent = decompress(
        compressedContent);
72
73             // Verify the checksum
74             long computedChecksum = computeChecksum(
        fileContent);
75             if (receivedChecksum == computedChecksum
        ) {
76                 System.out.println("Checksum
        verification passed for file " + (i + 1));
77             } else {
78                 System.out.println("Checksum
        verification failed for file " + (i + 1));
79             }
80         }
81     }
82
83     private static String decompress(byte[]
        compressedContent) throws IOException {
84         ByteArrayOutputStream byteArrayOutputStream
        = new ByteArrayOutputStream();
85         try (GZIPInputStream gzipInputStream = new
        GZIPInputStream(new ByteArrayInputStream(
        compressedContent))) {
86             byte[] buffer = new byte[1024];
87             int len;

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88         while ((len = gzipInputStream.read(
89             buffer)) != -1) {
90             byteArrayOutputStream.write(buffer,
91                 0, len);
92         }
93     }
94     return byteArrayOutputStream.toString(String
95         .valueOf(StandardCharsets.UTF_8));
96 }
97
98 private static long computeChecksum(String data
99     ) {
100     Checksum checksum = new CRC32();
101     checksum.update(data.getBytes(
102         StandardCharsets.UTF_8), 0, data.length());
103     return checksum.getValue();
104 }
```