Distributed Systems

Lab 2: Introduction to Apache Avro

MOSAÏC
Modeling Of Systems And Internet Communication
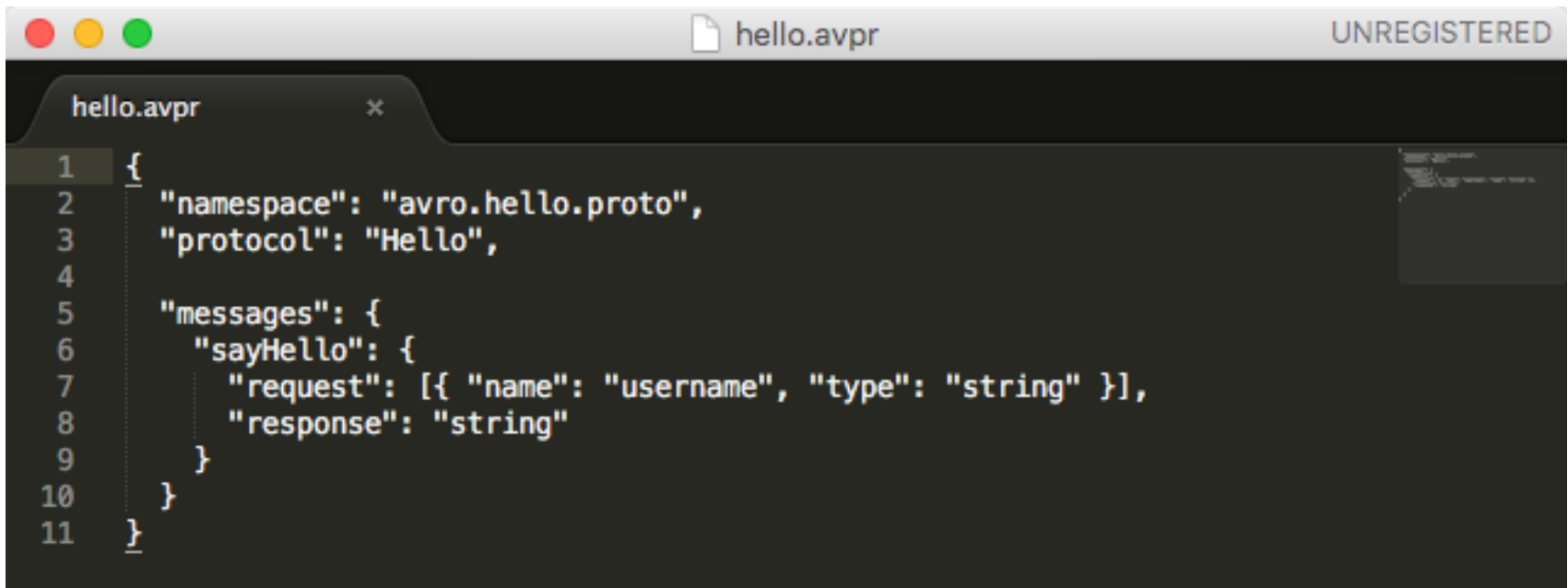University of Antwerp

Agenda

- Short introduction to Apache Avro

- Project assignment

- Some remarks after the practicum of last week

Apache Avro

- Remote procedure call and data serialization framework
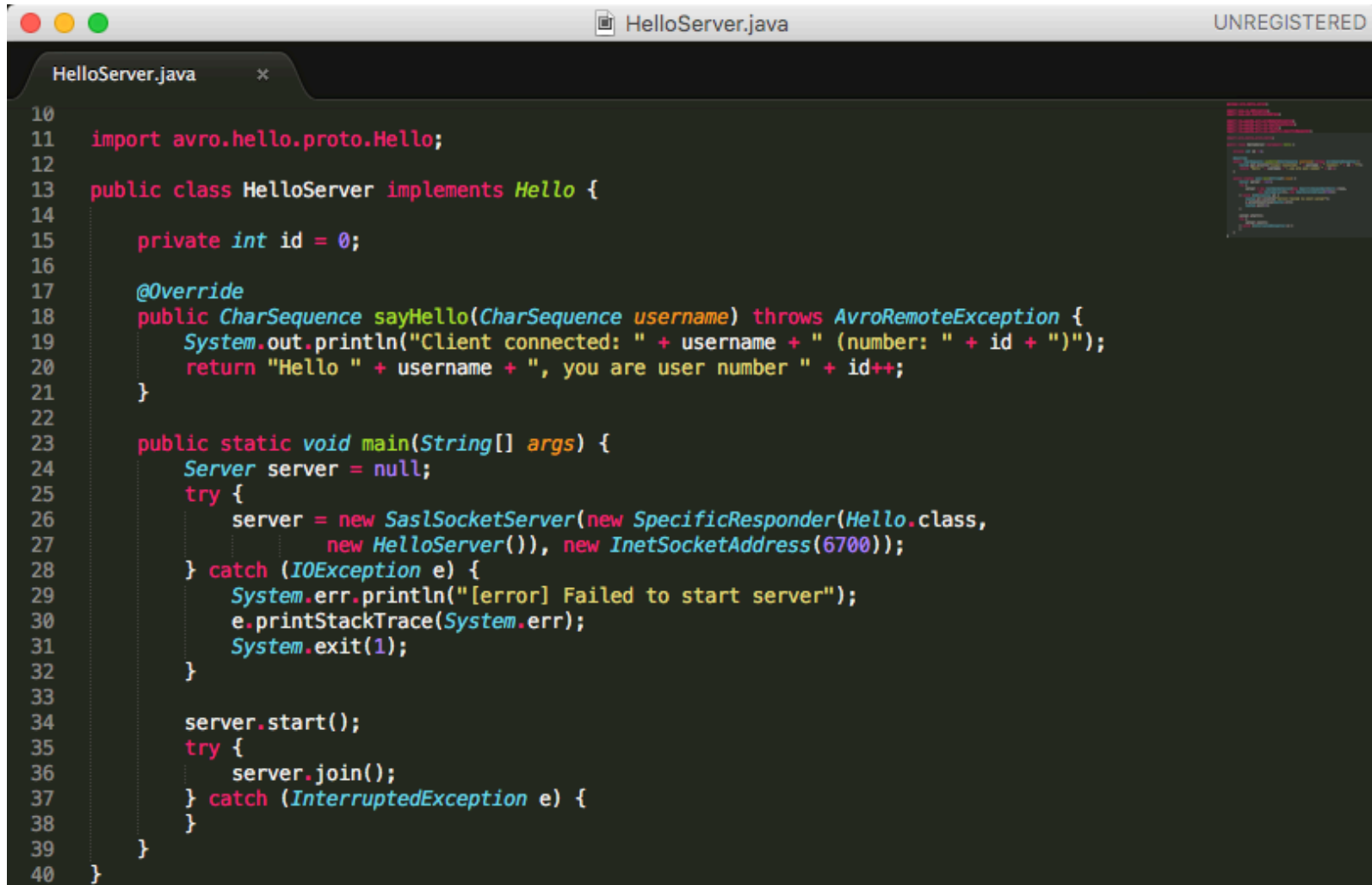
- Newer than Java RMI

- Schema based (JSON)

Schema


```
 1  {
 2    "namespace": "avro.hello.proto",
 3    "protocol": "Hello",
 4
 5    "messages": {
 6      "sayHello": {
 7        "request": [{ "name": "username", "type": "string" }],
 8        "response": "string"
 9      }
10    }
11  }
```

Server

```java
import avro.hello.proto.Hello;

public class HelloServer implements Hello {

    private int id = 0;

    @Override
    public CharSequence sayHello(CharSequence username) throws AvroRemoteException {
        System.out.println("Client connected: " + username + " (number: " + id + ")");
        return "Hello " + username + ", you are user number " + id++;
    }

    public static void main(String[] args) {
        Server server = null;
        try {
            server = new SaslSocketServer(new SpecificResponder(Hello.class,
                    new HelloServer()), new InetSocketAddress(6700));
        } catch (IOException e) {
            System.err.println("[error] Failed to start server");
            e.printStackTrace(System.err);
            System.exit(1);
        }

        server.start();
        try {
            server.join();
        } catch (InterruptedException e) {
        }
    }
}
```

Client

```java
import avro.hello.proto.Hello;

public class HelloClient {

    public static void main(String[] args) {
        try {
            Transceiver client = new SaslSocketTransceiver(new InetSocketAddress(6700));
            Hello proxy = (Hello) SpecificRequestor.getClient(Hello.class, client);
            CharSequence response = proxy.sayHello("Bob");
            System.out.println(response);
            client.close();
        } catch (IOException e) {
            System.err.println("Error connecting to server...");
            e.printStackTrace(System.err);
            System.exit(1);
        }
    }
}
```