# gRPC

## Creating .proto file

```
syntax = "proto3";
option java_package = "warehouseProto";
```

Sets the proto version to 3 (Default is 2)

Generates the Files for java in the warehouseProto package

```
service Warehouse {
  rpc getData (WarehouseRequest) returns (WarehouseData) {}
}
```

Define the name of the Service and the methods that should be implemented

```
message WarehouseRequest {
  string id = 1;
}

message Product {
  string id =  1;
  string name =  2;
  string category = 3;
  string amount = 4;
  string unit = 5;
}

message WarehouseData {
  string id =  1;
  string name =  2;
  string timestamp =  3;
  string street =  4;
  string city =  5;
```

```
  string country =  6;
  string plz =  7;
  repeated Product product_data =  8;
}
```

Define the Request with the id of the Warehouse and the WarehouseData and Product Objects

Arrays or Lists are stated as repeaded <Type>

# Creating Java Server

## Creating the Project

```
mvn -B archetype:generate -DgroupId=at.czlabinger -DartifactId=
```

This creates a new maven project

## Setting up maven

Adding dependency for some Annotations that gRPC needs

```
<dependency>
  <groupId>javax.annotation</groupId>
  <artifactId>javax.annotation-api</artifactId>
  <version>1.2</version>
</dependency>
```

Adding dependencies for gRPC

```
<!-- gRPC dependencies -->
        <dependency>
            <groupId>io.grpc</groupId>
            <artifactId>grpc-netty-shaded</artifactId>
            <version>${grpc.version}</version>
        </dependency>
```

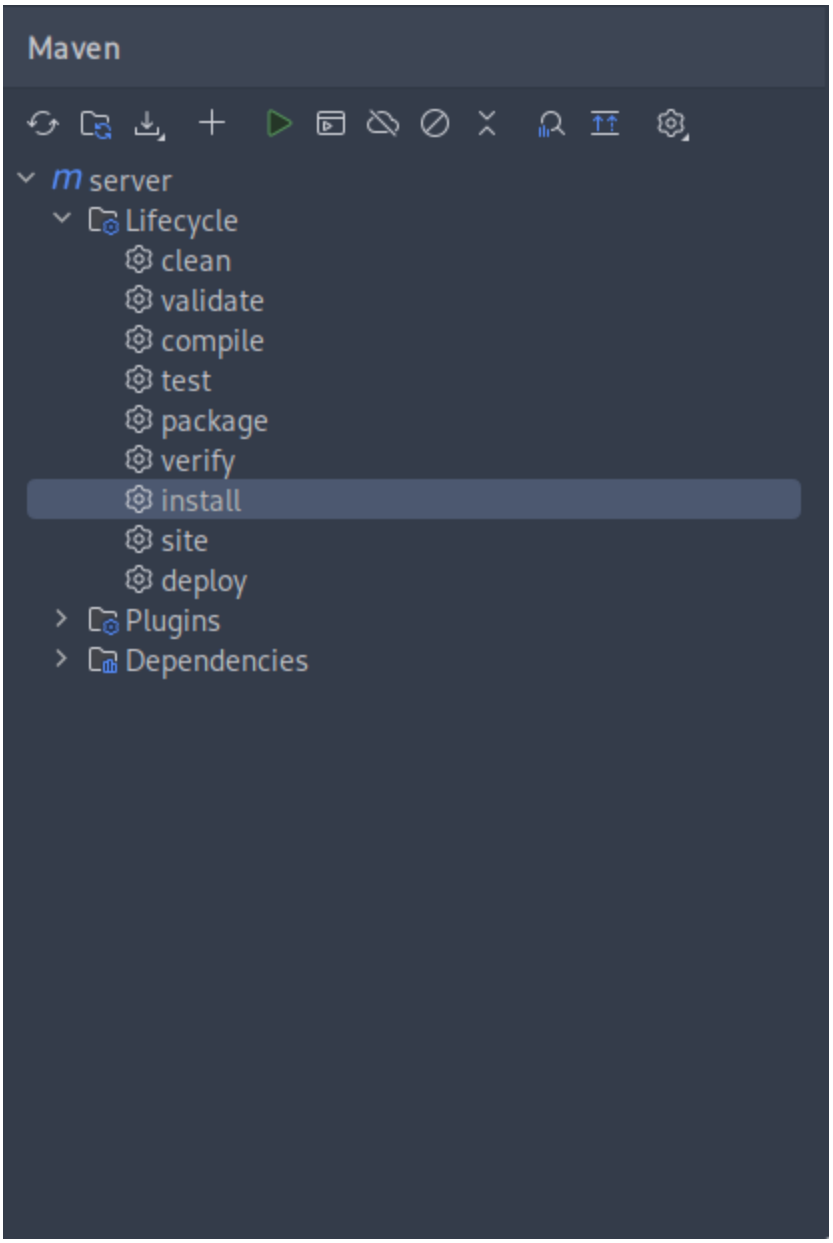
```
        <dependency>
            <groupId>io.grpc</groupId>
            <artifactId>grpc-protobuf</artifactId>
            <version>${grpc.version}</version>
        </dependency>

        <dependency>
            <groupId>io.grpc</groupId>
            <artifactId>grpc-stub</artifactId>
            <version>${grpc.version}</version>
        </dependency>
```

Adding Lifecycle for generation of sources

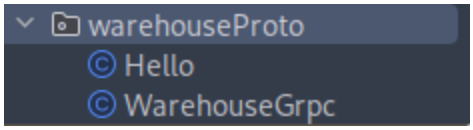
```
<!-- compile proto file into java files. -->
<plugin>
  <groupId>com.github.os72</groupId>
  <artifactId>protoc-jar-maven-plugin</artifactId>
  <version>3.6.0.1</version>
  <executions>
    <execution>
      <phase>generate-sources</phase>
      <goals>
        <goal>run</goal>
      </goals>
      <configuration>
        <includeMavenTypes>direct</includeMavenTypes>

        <inputDirectories>
          <include>/home/stoffi05/Documents/School/4xHIT/SYT/DZS
        </inputDirectories>

        <outputTargets>
          <outputTarget>
            <type>java</type>
            <outputDirectory>src/main/java</outputDirectory>
```

```
            </outputTarget>
            <outputTarget>
              <type>grpc-java</type>
              <pluginArtifact>io.grpc:protoc-gen-grpc-java:1.15.0
              <outputDirectory>src/main/java</outputDirectory>
            </outputTarget>
          </outputTargets>
        </configuration>
      </execution>
    </executions>
  </plugin>
```

Running maven install to generate the sources




Sources are now generated




## Implementing the Server

```
@Override
public void getData(Hello.WarehouseRequest request, StreamObse
    WarehouseSimulation simulation = new WarehouseSimulation(
    WarehouseData warehouseData = simulation.getData(request.g

    //Add WarehouseData
          //...

    Hello.WarehouseData serializedWarehouseData = warehouseDat

    responseObserver.onNext(serializedWarehouseData);
    responseObserver.onCompleted();
}
```

A new Warehouse gets generated and the data gets added to the response that gets send back to the client

# Creating Python client

## Setting up the sources

In the client directory run the command:

```
python -m grpc_tools.protoc -I/home/stoffi05/Documents/School/4x
```

## Implementing the Client

```
    channel = grpc.insecure_channel('localhost:8999')
    stub = hello_pb2_grpc.WarehouseStub(channel)

    # Create a HelloRequest instance and set the id field
    request = hello_pb2.WarehouseRequest(id="001")

    # Pass the request instance to the sayHello method
```

```
    response = stub.getData(request)
    print(response)
```

A connection to the server via localhost:8999 is created and a WarehouseRequest is created with id=001. Then the request gets send to the getData method of the server.

## Sources

Maven Setup: https://medium.com/@lucian.ritan/setup-and-run-a-grpc-project-eda408c8cef0