Project Software Engineering

2.1

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Contents

Chapter 1

projectSoftwareEngineering

Project Software Engineering / Bachelor 1 Informatica / Andrei Bondarenko & Igor Schittekat

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 3

Class Index

3.1 Class List

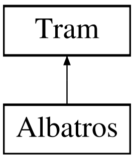
Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 4

Class Documentation

4.1 Albatros Class Reference

Inheritance diagram for Albatros:



Public Member Functions

- Albatros ()
- Albatros (const int lijnNr, const int voertuigNr, const int zitplaatsen, const std::string &beginStation, const int snelheid)
- bool stoptInStation (MetroNet &metronet, std::string station) const

Additional Inherited Members

4.1.1 Constructor & Destructor Documentation

4.1.1.1 Albatros() [1/2]

```
Albatros::Albatros ( )
```

ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.1.1.2 Albatros() [2/2]

```
Albatros::Albatros (
            const int lijnNr,
            const int voertuigNr,
            const int zitplaatsen,
            const std::string & beginStation,
            const int snelheid )
```

REQUIRE(beginStation != "", "newBeginStation must not be empty");
REQUIRE(lijnNr >= 0 , "lijnNr must be bigger or equal to zero");
REQUIRE(voertuigNr >= 0 , "voertuigNr must be bigger or equal to zero");
REQUIRE(zitplaatsen >= 0 , "zitplaatsen must be bigger or equal to zero");
REQUIRE(snelheid >= 0 , "snelheid must be bigger or equal to zero");
ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.1.2 Member Function Documentation

4.1.2.1 stoptInStation()

```
bool Albatros::stoptInStation (
            MetroNet & metronet,
            std::string station ) const  [virtual]
```

REQUIRE(properlyInitialized(), "Albatros wasn't initialized when calling stoptInStation");
REQUIRE(metronet.properlyInitialized(), "MetroNet wasn't initialized when calling stoptInStation");
REQUIRE(station != "", "station must not be empty");

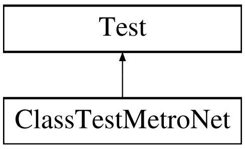
Reimplemented from Tram.

The documentation for this class was generated from the following files:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Albatros.h
- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Albatros.cpp

4.2 ClassTestMetroNet Class Reference

Inheritance diagram for ClassTestMetroNet:



Protected Attributes

- MetroNet **metronet**

Friends

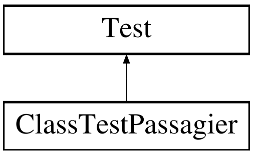
- class **MetroNet**

The documentation for this class was generated from the following file:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/ClassTestsMetroNet.cpp

4.3 ClassTestPassagier Class Reference

Inheritance diagram for ClassTestPassagier:



Protected Attributes

- Passagier **passagier**

Friends

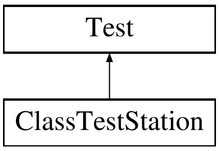
- class **MetroNet**

The documentation for this class was generated from the following file:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/ClassTestsPassagier.cpp

4.4 ClassTestStation Class Reference

Inheritance diagram for ClassTestStation:



Protected Attributes

- Station **station**
- Halte **halte**
- MetroStation **metroStation**
- MetroNet **metronet**

Friends

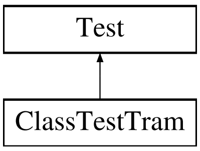
- class **MetroNet**

The documentation for this class was generated from the following file:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/ClassTestsStation.cpp

4.5 ClassTestTram Class Reference

Inheritance diagram for ClassTestTram:



Protected Attributes

- Tram **tram**
- PCC **pcc**
- Albatros **albatros**
- MetroNet **net**

Friends

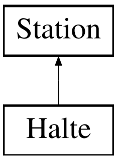
- class **MetroNet**

The documentation for this class was generated from the following file:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/ClassTestsTram.cpp

4.6 Halte Class Reference

Inheritance diagram for Halte:



Public Member Functions

- Halte ()
- Halte (const std::string &naam)
- bool albatrosCanStop () const

Additional Inherited Members

4.6.1 Constructor & Destructor Documentation

4.6.1.1 Halte() [1/2]

```
Halte::Halte ( )
```

ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.6.1.2 Halte() [2/2]

```
Halte::Halte (
          const std::string & naam )
```

REQUIRE(naam != "", "naam must not be empty");
ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.6.2 Member Function Documentation

4.6.2.1 albatrosCanStop()

```
bool Halte::albatrosCanStop ( ) const  [virtual]
```

REQUIRE(properlyInitialized(), "Halte wasn't initialized when calling albatrosCanStop");

Reimplemented from Station.

The documentation for this class was generated from the following files:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Halte.h
- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Halte.cpp

4.7 MetroNet Class Reference

Public Member Functions

- MetroNet ()
- bool **properlyInitialized** () const
- bool isConsistent ()
- Station ∗ getStation (std::string naam)
- Tram ∗ getTram (int voertuigNr)
- Passagier ∗ getPassagier (std::string naam)
- void addStation (Station ∗newStation)
- void addTram (Tram ∗newTram)
- void addPassagier (Passagier ∗newPassagier)
- void moveAlleTrams (std::ostream &output)
- void moveAllePassengers (std::ostream &output)
- void runSimulation (std::ostream &output, const bool live=false)
- void writeToOutputStream (std::ostream &output)
- void drawToOutputStream (std::ostream &output)
- void **writeToASCII** ()

4.7.1 Constructor & Destructor Documentation

4.7.1.1 MetroNet()

```
MetroNet::MetroNet ( )
```

ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.7.2 Member Function Documentation

4.7.2.1 addPassagier()

```
void MetroNet::addPassagier (
             Passagier ∗ newPassagier )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling addPassagier");
REQUIRE(getPassagier(newPassagier->getNaam()) == nullptr, "This MetroNet allready contains a passenger with this name");
ENSURE(getPassagier(newPassagier->getNaam) == newPassagier, "addPassagier post condition failure");

4.7.2.2 addStation()

```
void MetroNet::addStation (
             Station * newStation )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling addStation");
REQUIRE(getStation(newStation->getNaam()) == nullptr, "This MetroNet already contains a station with this name");
ENSURE(getStation(newStation->getNaam()) == newStation, "addStation post condition failure");

4.7.2.3 addTram()

```
void MetroNet::addTram (
             Tram * newTram )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling addTram");
REQUIRE(getTram(newTram->voertuigNr()) == nullptr, "This MetroNet already contains a Tram with this voertuigNr");
REQUIRE(getStation(newTram->getBeginStation())->isTramInStation(newTram->getLijnNr()) == false, "BeginStation of newTram isn't empty");
ENSURE(getTram(newTram->voertuigNr()) == newTram, "addTram post condition failure");
ENSURE(getStation(newTram->getBeginStation())->isTramInStation(), "addTram post condition failure");

4.7.2.4 drawToOutputStream()

```
void MetroNet::drawToOutputStream (
             std::ostream & output )
```

REQUIRE(isConsistent(), "MetroNet is not consistent");

4.7.2.5 getPassagier()

```
Passagier * MetroNet::getPassagier (
             std::string naam )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling getPassagier");
REQUIRE(naam != "", "naam must not be empty");

4.7.2.6 getStation()

```
Station * MetroNet::getStation (
             std::string naam )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling getAlleStations");
REQUIRE(naam != "", "naam must not be empty");

4.7.2.7 getTram()

```
Tram * MetroNet::getTram (
             int voertuigNr )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling getAlleTrams"); REQUIRE(voertuigNr >= 0, "voertuigNr must be greater or equal to zero");

4.7.2.8 isConsistent()

```
bool MetroNet::isConsistent ( )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling isConsistent");

4.7.2.9 moveAllePassengers()

```
void MetroNet::moveAllePassengers (
             std::ostream & output )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling moveAllePassengers");

4.7.2.10 moveAlleTrams()

```
void MetroNet::moveAlleTrams (
             std::ostream & output )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling moveAlleTrams"); ENSURE(isConsistent(), "moveAlleTrams made MetroNet inconsistent");

4.7.2.11 runSimulation()

```
void MetroNet::runSimulation (
             std::ostream & output,
             const bool live = false )
```

REQUIRE(properlyInitialized(), "MetroNet wasn't initialized when calling runSimulation"); ENSURE(isConsistent(), "runSimulation made MetroNet inconsistent");

4.7.2.12 writeToOutputStream()

```
void MetroNet::writeToOutputStream (
             std::ostream & output )
```

REQUIRE(isConsistent(), "MetroNet is not consistent");

The documentation for this class was generated from the following files:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/MetroNet.h
- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/MetroNet.cpp

4.8 MetroNetImporter Class Reference

Static Public Member Functions

- static SuccessEnum importMetroNet (const char ∗inputfilename, std::ostream &errStream, MetroNet &metronet)
- static SuccessEnum importPassengers (const char ∗inputfilename, std::ostream &errStream, MetroNet &metronet)

4.8.1 Member Function Documentation

4.8.1.1 importMetroNet()

```
SuccessEnum MetroNetImporter::importMetroNet (
             const char ∗ inputfilename,
             std::ostream & errStream,
             MetroNet & metronet ) [static]
```

REQUIRE(metronet.properlyInitialized(), "metronet wasn't initialized when passed to MetroNetImporter::importMetroNet");
ENSURE(metronet.isConsistent(), "MetroNet is not consistent");

4.8.1.2 importPassengers()

```
SuccessEnum MetroNetImporter::importPassengers (
             const char ∗ inputfilename,
             std::ostream & errStream,
             MetroNet & metronet ) [static]
```

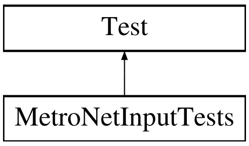
REQUIRE(metronet.properlyInitialized(), "metronet wasn't initialized when passed to MetroNetImporter::importPassengers");
ENSURE(metronet.isConsistent(), "MetroNet is not consistent");

The documentation for this class was generated from the following files:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/MetroNetImporter.h
- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/MetroNetImporter.cpp

4.9 MetroNetInputTests Class Reference

Inheritance diagram for MetroNetInputTests:



Protected Member Functions

- virtual void **SetUp** ()

Protected Attributes

- MetroNet ∗ **metronet** = new MetroNet()

Friends

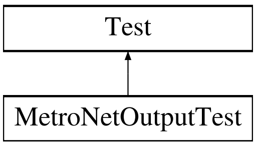
- class **MetroNet**

The documentation for this class was generated from the following file:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/MetroNetInputTests.cpp

4.10 MetroNetOutputTest Class Reference

Inheritance diagram for MetroNetOutputTest:



Protected Member Functions

- virtual void **SetUp** ()

Protected Attributes

- MetroNet ∗ **metronet** = new MetroNet()

Friends

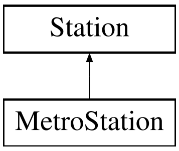
- class **MetroNet**

The documentation for this class was generated from the following file:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/MetroNetOutputTests.cpp

4.11 MetroStation Class Reference

Inheritance diagram for MetroStation:



Public Member Functions

- MetroStation ()
- MetroStation (const std::string &naam)
- bool albatrosCanStop () const

Additional Inherited Members

4.11.1 Constructor & Destructor Documentation

4.11.1.1 MetroStation() [1/2]

```
MetroStation::MetroStation ( )
```

ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.11.1.2 MetroStation() [2/2]

```
MetroStation::MetroStation (
            const std::string & naam )
```

REQUIRE(naam != "", "naam must not be empty");
ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.11.2 Member Function Documentation

4.11.2.1 albatrosCanStop()

```
bool MetroStation::albatrosCanStop ( ) const  [virtual]
```

REQUIRE(properlyInitialized(), "MetroStation wasn't initialized when calling albatrosCanStop");

Reimplemented from Station.

The documentation for this class was generated from the following files:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/MetroStation.h
- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/MetroStation.cpp

4.12 Passagier Class Reference

Public Member Functions

- Passagier ()
- Passagier (std::string naam, std::string beginStation, std::string eindStation, int hoeveelheid)
- bool **properlyInitialized** () const
- std::string getNaam () const
- std::string getBeginStation () const
- std::string getEindStation () const
- int getHoeveelheid () const
- bool isAangekomen () const
- void setNaam (const std::string &newNaam)
- void setBeginStation (const std::string &newBeginStation)
- void setEindStation (const std::string &newEindStation)
- void setHoeveelheid (const int newHoeveelheid)
- void moveToBeginStation (MetroNet &metronet) const
- void markAangekomen ()

4.12.1 Constructor & Destructor Documentation

4.12.1.1 Passagier() [1/2]

```
Passagier::Passagier ( )
```

ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.12.1.2 Passagier() [2/2]

```
Passagier::Passagier (
            std::string naam,
            std::string beginStation,
            std::string eindStation,
            int hoeveelheid )
```

REQUIRE(naam != "", "naam must not be empty");
REQUIRE(beginStation != "", "beginStation must not be empty");
REQUIRE(eindStation != "", "eindStation must not be empty");
REQUIRE(hoeveelheid >= 0 , "hoeveelheid must be bigger or equal to zero");
ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.12.2 Member Function Documentation

4.12.2.1 getBeginStation()

```
std::string Passagier::getBeginStation ( ) const
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling getBeginStation");

4.12.2.2 getEindStation()

```
std::string Passagier::getEindStation ( ) const
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling getEindStation");

4.12.2.3 getHoeveelheid()

```
int Passagier::getHoeveelheid ( ) const
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling getHoeveelheid");

4.12.2.4 getNaam()

```
std::string Passagier::getNaam ( ) const
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling getNaam");

4.12.2.5 isAangekomen()

```
bool Passagier::isAangekomen ( ) const
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling isAangekomen");

4.12.2.6 markAangekomen()

```
void Passagier::markAangekomen ( )
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling markAangekomen");
ENSURE(isAangekomen() == true, "markAangekomen post condition failure");

4.12.2.7 moveToBeginStation()

```
void Passagier::moveToBeginStation (
            MetroNet & metronet ) const
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling moveToBeginStation");
REQUIRE(metronet->properlyInitialized(), "MetroNet wasn't initialized when calling Passagier::moveToBeginStation");
ENSURE(station->isInStation(naam), "moveToBeginStation post condition failure");
ENSURE(metronet->isConsistent(), "Passagier::moveToBeginStation made MetroNet inconsistent");

4.12.2.8 setBeginStation()

```
void Passagier::setBeginStation (
            const std::string & newBeginStation )
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling setBeginStation");
REQUIRE(newBeginStation != "" , "newBeginStation must not be empty");
ENSURE(getBeginStation() == newBeginStation, "setBeginStation post condition failure");

4.12.2.9 setEindStation()

```
void Passagier::setEindStation (
            const std::string & newEindStation )
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling setEindStation");
REQUIRE(newEindStation != "" , "newEindStation must not be empty");
ENSURE(getEindStation() == newEindStation, "setEindStation post condition failure");

4.12.2.10 setHoeveelheid()

```
void Passagier::setHoeveelheid (
             const int newHoeveelheid )
```

REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling setHoeveelheid");
REQUIRE(newHoeveelheid >= 0 , "newHoeveelheid must be bigger or equal to zero");
ENSURE(getHoeveelheid() == newHoeveelheid, "setHoeveelheid post condition failure");

4.12.2.11 setNaam()

```
void Passagier::setNaam (
             const std::string & newNaam )
```

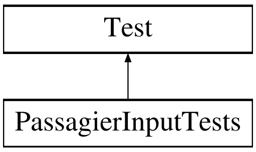
REQUIRE(properlyInitialized(), "Passagier wasn't initialized when calling setNaam");
REQUIRE(newNaam != "" , "newNaam must not be empty");
ENSURE(getNaam() == newNaam, "setNaam post condition failure");

The documentation for this class was generated from the following files:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Passagier.h
- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Passagier.cpp

4.13 PassagierInputTests Class Reference

Inheritance diagram for PassagierInputTests:



Protected Member Functions

- virtual void **SetUp** ()

Protected Attributes

- MetroNet ∗ **metronet** = new MetroNet()

Friends

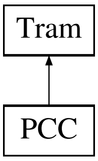
- class **MetroNet**

The documentation for this class was generated from the following file:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/PassagierInputTests.cpp

4.14 PCC Class Reference

Inheritance diagram for PCC:



Public Member Functions

- PCC ()
- PCC (const int lijnNr, const int voertuigNr, const int zitplaatsen, const std::string &beginStation, const int snelheid)
- bool stoptInStation (MetroNet &metronet, std::string station) const

Additional Inherited Members

4.14.1 Constructor & Destructor Documentation

4.14.1.1 PCC() [1/2]

```
PCC::PCC ( )
```

ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.14.1.2 PCC() [2/2]

```
PCC::PCC (
            const int lijnNr,
            const int voertuigNr,
            const int zitplaatsen,
            const std::string & beginStation,
            const int snelheid )
```

REQUIRE(beginStation != "", "newBeginStation must not be empty");
REQUIRE(lijnNr >= 0 , "lijnNr must be bigger or equal to zero");
REQUIRE(voertuigNr >= 0 , "voertuigNr must be bigger or equal to zero");
REQUIRE(zitplaatsen >= 0 , "zitplaatsen must be bigger or equal to zero");
REQUIRE(snelheid >= 0 , "snelheid must be bigger or equal to zero");
ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.14.2 Member Function Documentation

4.14.2.1 stoptInStation()

```
bool PCC::stoptInStation (
            MetroNet & metronet,
            std::string station ) const  [virtual]
```

REQUIRE(properlyInitialized(), "PCC wasn't initialized when calling afstappenInHalte");
REQUIRE(metronet.properlyInitialized(), "MetroNet wasn't initialized when calling afstappenInHalte");
REQUIRE(station != "", "station must not be empty");

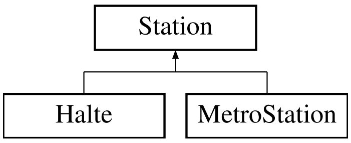
Reimplemented from Tram.

The documentation for this class was generated from the following files:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/PCC.h
- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/PCC.cpp

4.15 Station Class Reference

Inheritance diagram for Station:



Public Member Functions

- bool **properlyInitialized** () const
- std::string getNaam () const
- std::string getVorige (const int &spoor) const
- std::string getVolgende (const int &spoor) const
- std::set< int > getSporen () const
- bool isTramInStation (const int &spoor) const
- int getTramInStation (const int spoor) const
- void setNaam (const std::string &newNaam)
- void addVorige (const int &spoor, const std::string &newVorige)
- void addVolgende (const int &spoor, const std::string &newVolgende)
- bool setTramInStation (const int &spoor, const int voertuigNr, const bool &newTramInStation)
- bool isInStation (std::string passagier)
- void addPassagier (std::string passagier)
- void removePassagier (std::string passagier)
- void movePassagiers (MetroNet &metronet, std::ostream &output)
- virtual bool albatrosCanStop () const

Protected Member Functions

- Station ()
- Station (const std::string &naam)

Protected Attributes

- Station ∗ **initCheck**
- std::string **naam**
- std::map< int, std::string > **vorige**
- std::map< int, std::string > **volgende**
- std::map< std::pair< int, int >, bool > **tramInStation**
- std::set< std::string > **passagiers**

Friends

- class **ClassTestStation**

4.15.1 Constructor & Destructor Documentation

4.15.1.1 Station() [1/2]

```
Station::Station ( )  [protected]
```

ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.15.1.2 Station() [2/2]

```
Station::Station (
              const std::string & naam )  [protected]
```

REQUIRE(naam != "", "naam must not be empty");
ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.15.2 Member Function Documentation

4.15.2.1 addPassagier()

```
void Station::addPassagier (
             std::string passagier )
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling addPassagier");
REQUIRE(passagier != "", "passagier must not be empty");
REQUIRE(isInStation(passagier) == false, "passenger allready in isInStation");
ENSURE(isInStation(passagier) == true, "addPassagier post condition failure");

4.15.2.2 addVolgende()

```
void Station::addVolgende (
             const int & spoor,
             const std::string & newVolgende )
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling setVolgende");
REQUIRE(newVolgende != "", "newVolgende must not be empty");
REQUIRE(spoor >= 0, "spoor must be bigger or equal to zero");
ENSURE(getVolgende() == newVolgende, "setVolgende post condition failure");

4.15.2.3 addVorige()

```
void Station::addVorige (
             const int & spoor,
             const std::string & newVorige )
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling setVorige");
REQUIRE(newVorige != "", "newVorige must not be empty");
REQUIRE(spoor >= 0, "spoor must be bigger or equal to zero");
ENSURE(getVorige() == newVorige, "setVorige post condition failure");

4.15.2.4 albatrosCanStop()

```
bool Station::albatrosCanStop ( ) const  [virtual]
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling albatrosCanStop");

Reimplemented in Halte, and MetroStation.

4.15.2.5 getNaam()

```
std::string Station::getNaam ( ) const
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling getNaam");

4.15.2.6 getSporen()

```
std::set< int > Station::getSporen ( ) const
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling getSporen");

4.15.2.7 getTramInStation()

```
int Station::getTramInStation (
             const int spoor ) const
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling getTramInStation");
REQUIRE(spoor >= 0, "spoor must be bigger or equal to zero");
REQUIRE(isTramInStation(spoor), "no tram in station when calling getTramInStation");

4.15.2.8 getVolgende()

```
std::string Station::getVolgende (
             const int & spoor ) const
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling getVolgende");
REQUIRE(spoor >= 0, "parameter spoor must be >= 0, when passed to getVolgende");

4.15.2.9 getVorige()

```
std::string Station::getVorige (
             const int & spoor ) const
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling getVorige");
REQUIRE(spoor >= 0, "parameter spoor must be >= 0, when passed to getVorige");

4.15.2.10 isInStation()

```
bool Station::isInStation (
             std::string passagier )
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling isInStation");
REQUIRE(passagier != "", "passagier must not be empty");

4.15.2.11 isTramInStation()

```
bool Station::isTramInStation (
             const int & spoor ) const
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling isTramInStation");
REQUIRE(spoor >= 0, "parameter spoor must be >= 0, when passed to isTramInStation");

4.15.2.12 movePassagiers()

```
void Station::movePassagiers (
            MetroNet & metronet,
            std::ostream & output )
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling movePassagiers");
REQUIRE(metronet.properlyInitialized(), "MetroNet wasn't initialized when calling movePassagiers");
ENSURE(metronet.isConsistent(), "movePassagiers made MetroNet inconsistent");

4.15.2.13 removePassagier()

```
void Station::removePassagier (
            std::string passagier )
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling removePassagier");
REQUIRE(passagier != "", "passagier must not be empty");
REQUIRE(isInStation(passagier) == true, "passenger not in isInStation");
ENSURE(isInStation(passagier) == false, "removePassagier post condition failure");

4.15.2.14 setNaam()

```
void Station::setNaam (
            const std::string & newNaam )
```

REQUIRE(properlyInitialized(), "Station wasn't initialized when calling setNaam");
REQUIRE(newNaam != "", "newNaam must not be empty");
ENSURE(getNaam() == newNaam, "setNaam post condition failure");

4.15.2.15 setTramInStation()

```
bool Station::setTramInStation (
            const int & spoor,
            const int voertuigNr,
            const bool & newTramInStation )
```

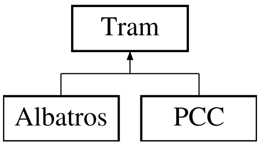
REQUIRE(properlyInitialized(), "Station wasn't initialized when calling setTramInStation");
REQUIRE(spoor >= 0, "spoor must be bigger or equal to zero");
REQUIRE(voertuigNr >= 0, "voertuigNr must be bigger or equal to zero");
ENSURE(isTramInStation(spoor) != newTramInStation, "setTramInStation post condition failure"); // false
ENSURE(isTramInStation(spoor) == newTramInStation, "setTramInStation post condition failure"); // true

The documentation for this class was generated from the following files:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Station.h
- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Station.cpp

4.16 Tram Class Reference

Inheritance diagram for Tram:



Public Member Functions

- bool **properlyInitialized** () const
- int getLijnNr () const
- int getZitplaatsen () const
- std::string getBeginStation () const
- std::string getCurrentStation () const
- int getSnelheid () const
- int getAantalPassagiers () const
- int getVoertuigNr () const
- int getOmzet () const
- bool isInTram (std::string passagier) const
- void setLijnNr (const int newLijnNr)
- void setZitplaatsen (const int newZitplaatsen)
- void setBeginStation (const std::string &newBeginStation)
- void setCurrentStation (const std::string &newCurrentStation)
- void setSnelheid (const int newSnelheid)
- void setAantalPassagiers (const int newAantalPassagiers)
- void setVoertuigNr (const int newVoertuigNr)
- void setOmzet (const int newOmzet)
- void addPassagier (std::string passagier, int aantal)
- void removePassagier (std::string passagier)
- std::set< std::string > afstappenInHalte (MetroNet &metronet, std::string station)
- void moveTram (MetroNet &metronet, std::ostream &output)
- virtual bool stoptInStation (MetroNet &metronet, std::string station) const

Protected Member Functions

- Tram ()
- Tram (const int lijnNr, const int voertuigNr, const int zitplaatsen, const std::string &beginStation, const int snelheid)

Protected Attributes

- Tram ∗ **initCheck**
- int **lijnNr**
- int **voertuigNr**
- int **zitplaatsen**
- int **snelheid**
- std::string **beginStation**
- std::string **currentStation**
- std::set< std::string > **passagiers**
- int **aantalPassagiers** = 0
- int **omzet** = 0
- const int **ticketPrijs** = 2

Friends

- class **ClassTestTram**

4.16.1 Constructor & Destructor Documentation

4.16.1.1 Tram() [1/2]

```
Tram::Tram ( )  [protected]
```

ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.16.1.2 Tram() [2/2]

```
Tram::Tram (
             const int lijnNr,
             const int voertuigNr,
             const int zitplaatsen,
             const std::string & beginStation,
             const int snelheid )  [protected]
```

REQUIRE(beginStation != "", "newBeginStation must not be empty");
REQUIRE(lijnNr >= 0 , "lijnNr must be bigger or equal to zero");
REQUIRE(newVoertuigNr >= 0 , "newVoertuigNr must be bigger or equal to zero");
REQUIRE(zitplaatsen >= 0 , "zitplaatsen must be bigger or equal to zero");
REQUIRE(snelheid >= 0 , "snelheid must be bigger or equal to zero");
ENSURE(properlyInitialized(), "constructor must end in properlyInitialized state");

4.16.2 Member Function Documentation

4.16.2.1 addPassagier()

```
void Tram::addPassagier (
             std::string passagier,
             int aantal )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling addPassagier");
REQUIRE(passagier != "", "passagier must not be empty");
REQUIRE(aantal >= 0, "aantal must be bigger or equal to zero");
REQUIRE(isInTram(passagier) == false, "passenger allready in Tram");
ENSURE(isInTram(passagier) == true, "addPassagier post condition failure");

4.16.2.2 afstappenInHalte()

```
std::set< std::string > Tram::afstappenInHalte (
            MetroNet & metronet,
            std::string station )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling afstappenInHalte");
REQUIRE(metronet.properlyInitialized(), "MetroNet wasn't initialized when calling afstappenInHalte");
REQUIRE(station != "", "station must not be empty");

4.16.2.3 getAantalPassagiers()

```
int Tram::getAantalPassagiers ( ) const
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling getAantalPassagiers");

4.16.2.4 getBeginStation()

```
std::string Tram::getBeginStation ( ) const
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling getBeginStation");

4.16.2.5 getCurrentStation()

```
std::string Tram::getCurrentStation ( ) const
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling getCurrentStation");

4.16.2.6 getLijnNr()

```
int Tram::getLijnNr ( ) const
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling getLijnNr");

4.16.2.7 getOmzet()

```
int Tram::getOmzet ( ) const
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling getOmzet");

4.16.2.8 getSnelheid()

```
int Tram::getSnelheid ( ) const
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling getSnelheid");

4.16.2.9 getVoertuigNr()

```
int Tram::getVoertuigNr ( ) const
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling getVoertuigNr");

4.16.2.10 getZitplaatsen()

```
int Tram::getZitplaatsen ( ) const
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling getZitplaatsen");

4.16.2.11 isInTram()

```
bool Tram::isInTram (
             std::string passagier ) const
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling isInTram");
REQUIRE(passagier != "", "passagier must not be empty");

4.16.2.12 moveTram()

```
void Tram::moveTram (
             MetroNet & metronet,
             std::ostream & output )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling moveTram");
REQUIRE(metronet.properlyInitialized(), "MetroNet wasn't initialized when calling moveTram");
ENSURE(moved || attemptedToMove, "moveTram post condition failure");
ENSURE(metronet.isConsistent(), "moveTram made MetroNet inconsistent");

4.16.2.13 removePassagier()

```
void Tram::removePassagier (
             std::string passagier )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling removePassagier");
REQUIRE(passagier != "", "passagier must not be empty");
REQUIRE(isInTram(passagier) == true, "passenger not in Tram");
ENSURE(isInTram(passagier) == false, "removePassagier post condition failure");

4.16.2.14 setAantalPassagiers()

```
void Tram::setAantalPassagiers (
            const int newAantalPassagiers )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling setAantalPassagiers");
REQUIRE(newAantalPassagiers >= 0 , "newAantalPassagiers must be bigger or equal to zero");
ENSURE(getAantalPassagiers() == newAantalPassagiers, "setAantalPassagiers post condition failure");

4.16.2.15 setBeginStation()

```
void Tram::setBeginStation (
            const std::string & newBeginStation )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling setBeginStation");
REQUIRE(newBeginStation != "", "newBeginStation must not be empty");
ENSURE(getBeginStation() == newBeginStation, "setBeginStation post condition failure");

4.16.2.16 setCurrentStation()

```
void Tram::setCurrentStation (
            const std::string & newCurrentStation )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling setCurrentStation");
REQUIRE(newCurrentStation != "", "newCurrentStation must not be empty");
ENSURE(getCurrentStation() == newCurrentStation, "setCurrentStation post condition failure");

4.16.2.17 setLijnNr()

```
void Tram::setLijnNr (
            const int newLijnNr )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling setLijnNr");
REQUIRE(newLijnNr >= 0 , "newLijnNr must be bigger or equal to zero");
ENSURE(getLijnNr() == newLijnNr, "setLijnNr post condition failure");

4.16.2.18 setOmzet()

```
void Tram::setOmzet (
            const int newOmzet )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling setOmzet");
REQUIRE(newOmzet >= 0 , "newOmzet must be bigger or equal to zero");
ENSURE(getOmzet() == newOmzet, "setOmzet post condition failure");

4.16.2.19 setSnelheid()

```
void Tram::setSnelheid (
             const int newSnelheid )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling setSnelheid");
REQUIRE(newSnelheid >= 0 , "newSnelheid must be bigger or equal to zero");
ENSURE(getSnelheid() == newSnelheid, "setSnelheid post condition failure");

4.16.2.20 setVoertuigNr()

```
void Tram::setVoertuigNr (
             const int newVoertuigNr )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling setVoertuigNr");
REQUIRE(newVoertuigNr >= 0 , "newVoertuigNr must be bigger or equal to zero");
ENSURE(getVoertuigNr() == newVoertuigNr, "setVoertuigNr post condition failure");

4.16.2.21 setZitplaatsen()

```
void Tram::setZitplaatsen (
             const int newZitplaatsen )
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling setZitplaatsen");
REQUIRE(newZitplaatsen >= 0 , "newZitplaatsen must be bigger or equal to zero");
ENSURE(getZitplaatsen() == newZitplaatsen, "setZitplaatsen post condition failure");

4.16.2.22 stoptInStation()

```
bool Tram::stoptInStation (
             MetroNet & metronet,
             std::string station ) const  [virtual]
```

REQUIRE(properlyInitialized(), "Tram wasn't initialized when calling afstappenInHalte");
REQUIRE(metronet.properlyInitialized(), "MetroNet wasn't initialized when calling afstappenInHalte");
REQUIRE(station != "", "station must not be empty");

Reimplemented in Albatros, and PCC.

The documentation for this class was generated from the following files:

- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Tram.h
- /Users/Andrei/Uni/SoftwareEngineering/projectSoftwareEngineering/Tram.cpp

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