

# GeekHub Project

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## Chapter 1

# GeekHubProject

SpaceInvaders of the COS214 kind





## Chapter 2

# Hierarchical Index

### 2.1 Class Hierarchy

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

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## Chapter 3

# Class Index

### 3.1 Class List

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## Chapter 4

# Class Documentation

### 4.1 AbstractExpression Class Reference

Inherited by [ConstantExpression](#), and [VariableExpression](#).

#### Public Member Functions

- virtual string **evaluate** ([Context](#) &)=0
- virtual void **setOperands** ([AbstractExpression](#) \*\_op1, [AbstractExpression](#) \*\_op2=nullptr)

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

- AbstractExpression.h

### 4.2 AirconditioningDecorator Class Reference

Inherits [Decorator](#).

#### Public Member Functions

- **AirconditioningDecorator** ([Component](#) \*)
- virtual std::string **description** ()
- std::string **addedThing** ()

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

- AirconditioningDecorator.h
- AirconditioningDecorator.cpp

## 4.3 Battleship Class Reference

Inherits [Spaceship](#).

### Public Member Functions

- virtual [Iterator](#) \* `createIterator` () override

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

- Battleship.h
- Battleship.cpp

## 4.4 BattleshipsFactory Class Reference

Inherits [SpaceshipFactory](#).

### Public Member Functions

- virtual [Spaceship](#) \* `createSpaceship` () override

### 4.4.1 Member Function Documentation

#### 4.4.1.1 createSpaceship()

```
Spaceship * BattleshipsFactory::createSpaceship ( ) [override], [virtual]
```

#### Returns

[Battleship](#) concrete product

Implements [SpaceshipFactory](#).

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

- BattleshipsFactory.h
- BattleshipsFactory.cpp

## 4.5 Bridge Class Reference

Inherits [Component](#).

## Public Member Functions

- virtual std::string **description** ()

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

- Bridge.h
- Bridge.cpp

## 4.6 Captain Class Reference

Inherits [CrewMember](#).

## Public Member Functions

- **Captain** (int r)
- virtual void **attach** ([Person](#) \*) override  
*attach observer to the observers list*
- virtual void **detach** ([Person](#) \*) override  
*detach observer from the observers list*
- virtual void **notify** () override  
*Notify all the observers.*
- void **setPaxAnnouncement** (std::string s)
- void **setCrewAnnouncement** (std::string s)
- void **setGeneralAnnouncement** (std::string s)
- string **getPaxAnnouncement** ()
- string **getCrewAnnouncement** ()
- string **getGeneralAnnouncement** ()

## Public Attributes

- int **type** = -1

### 4.6.1 Member Function Documentation

#### 4.6.1.1 attach()

```
void Captain::attach (
    Person * person ) [override], [virtual]
```

attach observer to the observers list

#### Parameters

<a href="#">Person</a>	object to add to the list
------------------------	---------------------------

Reimplemented from [CrewMember](#).

#### 4.6.1.2 detach()

```
void Captain::detach (  
    Person * person ) [override], [virtual]
```

detach observer from the observers list

#### Parameters

<a href="#">Person</a>	object to remove from the list
------------------------	--------------------------------

Reimplemented from [CrewMember](#).

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

- Captain.h
- Captain.cpp

## 4.7 CaptainFactory Class Reference

Inherits [CrewFactory](#).

### Public Member Functions

- virtual [Person](#) \* [createPerson](#) () override  
*concrete factory creates [Captain](#) Objects*

#### 4.7.1 Member Function Documentation



#### 4.7.1.1 createPerson()

```
Person * CaptainFactory::createPerson ( ) [override], [virtual]
```

concrete factory creates [Captain](#) Objects

##### Returns

returns [Captain](#) Object which is a [Person](#) (ancestor class)

Reimplemented from [CrewFactory](#).

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

- [CaptainFactory.h](#)
- [CaptainFactory.cpp](#)

## 4.8 Caretaker Class Reference

### Public Member Functions

- [Memento](#) \* [getMemento](#) ()

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

- [Caretaker.h](#)
- [Caretaker.cpp](#)

## 4.9 ChiefEngineer Class Reference

Inherits [CrewMember](#).

### Public Member Functions

- [ChiefEngineer](#) (int r)

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

- [ChiefEngineer.h](#)

## 4.10 ChiefEngineerFactory Class Reference

Inherits [CrewFactory](#).

## Public Member Functions

- [Person](#) \* **createPerson** ()

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

- ChiefEngineerFactory.h
- ChiefEngineerFactory.cpp

## 4.11 Command Class Reference

Inherited by [InvadeCommand](#).

## Public Member Functions

- virtual void **invade** ()=0  
*method invoked when decision is made to invade planet, the function calls the invade method from the receiver ([Exploration](#) vessel in this case) object*

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

- Command.h

## 4.12 Commander Class Reference

Inherits [CrewMember](#).

## Public Member Functions

- **Commander** ([Command](#) \*)
- void **proceedWithInvasion** ()
- void **setCommand** ([Command](#) \*)

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

- Commander.h
- Commander.cpp

## 4.13 CommanderFactory Class Reference

Inherits [CrewFactory](#).

## Public Member Functions

- [Person](#) \* `createPerson` ()

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

- `CommanderFactory.h`
- `CommanderFactory.cpp`

## 4.14 Comms Class Reference

Inherits [CrewMember](#).

## Public Member Functions

- `Comms` (int r)

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

- `Comms.h`

## 4.15 CommsFactory Class Reference

Inherits [CrewFactory](#).

## Public Member Functions

- [Person](#) \* `createPerson` ()

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

- `CommsFactory.h`
- `CommsFactory.cpp`

## 4.16 Component Class Reference

Inherited by [Bridge](#), [Decorator](#), [SickBay](#), and [SleepingQuarters](#).

## Public Member Functions

- virtual std::string **description** ()=0

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

- Component.h

## 4.17 ConcreteMediator Class Reference

Inherits [Mediator](#).

## Public Member Functions

- virtual void **notify** ([CrewMember](#) \*) override
- virtual void **addColleague** ([CrewMember](#) \*)

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

- ConcreteMediator.h
- ConcreteMediator.cpp

## 4.18 ConstantExpression Class Reference

Inherits [AbstractExpression](#).

## Public Member Functions

- [ConstantExpression](#) (string \_exp)  
*construct the [ConstantExpression](#) object*
- virtual string **evaluate** ([Context](#) &\_ctx)  
*Evaluates and expression using the context object passed as parameter.*

### 4.18.1 Constructor & Destructor Documentation

#### 4.18.1.1 ConstantExpression()

```
ConstantExpression::ConstantExpression (
    string _exp )
```

construct the [ConstantExpression](#) object

## Parameters

<code>_exp</code>	string value to initialize word
-------------------	---------------------------------

## 4.18.2 Member Function Documentation

### 4.18.2.1 evaluate()

```
string ConstantExpression::evaluate (
    Context & _ctx ) [virtual]
```

Evaluates and expression using the context object passed as parameter.

## Parameters

<code>_ctx</code>	<a href="#">Context</a> object used to lookup key value pairs during evaluation of an expression
-------------------	--

## Returns

returns a string representation of an expression after evaluation

Implements [AbstractExpression](#).

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

- ConstantExpression.h
- ConstantExpression.cpp

## 4.19 Context Class Reference

### Public Member Functions

- string **lookup** (string \_key)
- void **assign** (string \_key, string \_value)

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

- Context.h
- Context.cpp

## 4.20 CrewFactory Class Reference

Inherits [PersonFactory](#).

Inherited by [CaptainFactory](#), [ChiefEngineerFactory](#), [CommanderFactory](#), [CommsFactory](#), [DoctorFactory](#), [EngineersFactory](#), and [PFighterFactory](#).

### Public Member Functions

- virtual [Person](#) \* **createPerson** () override

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

- CrewFactory.h
- CrewFactory.cpp

## 4.21 CrewMember Class Reference

Inherits [Person](#).

Inherited by [Captain](#), [ChiefEngineer](#), [Commander](#), [Comms](#), [Doctor](#), [Engineers](#), [Fighter](#), and [Navigator](#).

### Public Member Functions

- **CrewMember** (int r)
- virtual void **attach** ([Person](#) \*)
- virtual void **detach** ([Person](#) \*)
- virtual void **notify** ()
- virtual void **update** () override
- *Construct the [CrewMember](#) object.*
- virtual void **setCaptain** ([Person](#) \* \_captain) override
- int **getRank** ()
- void **setMediator** ([Mediator](#) \*)
- [Mediator](#) \* **getMediator** ()
- void **setReport** (string s)
- virtual void **sendReport** (string)
- string **getReport** ()
- void **acknowledge** (string s)
- void **encounterCritic** ([Critic](#) \* \_critter, [Context](#) \* \_ctx)

*[CrewMember](#) encounters a [Critic](#) and interacts with it. interaction involves calling one or all the member functions of the critter object could have done this in the main but since it is the [CrewMembers](#) interacting with the critter, the code is placed in [CrewMember](#)'s encounter function.*

### 4.21.1 Member Function Documentation

#### 4.21.1.1 encounterCritic()

```
void CrewMember::encounterCritic (
    Critter * _critter,
    Context * _ctx )
```

[CrewMember](#) encounters a [Critic](#) and interacts with it. interaction involves calling one or all the member functions of the critter object could have done this in the main but since it is the [CrewMembers](#) interacting with the critter, the code is placed in [CrewMember](#)'s encounter function.

## Parameters

<code>_critter</code>	for <a href="#">CrewMember</a> to interact with
<code>_ctx</code>	context for storing and lookup functionality

**4.21.1.2 update()**

```
void CrewMember::update ( ) [override], [virtual]
```

Construct the [CrewMember](#) object.

## Parameters

<a href="#">Captain</a>	object is passed to initialise the captain member variable
-------------------------	--

Update announcement from the captain object state

Implements [Person](#).

Reimplemented in [Fighter](#).

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

- [CrewMember.h](#)
- [CrewMember.cpp](#)

## 4.22 Critter Class Reference

### Public Member Functions

- [Critter](#) ()  
*construct critter, initialize the words array to size 3 and populate with basic phrases: no, amica and welcum set tolerance to 10. tolerance of 5 and below means the critter is irritated, tolerance above 5 means critter is not irritated*
- void [use](#) ()  
*this method decreases the tolerance of a critter by a random amount between 1 and 3*
- bool [isEnemy](#) ()  
*checks if [Critter](#) is still friendly by check it's tolerance level*
- [AbstractExpression](#) \* [interact](#) ()  
*critters respond to interaction attempts, and return a response*
- [~Critter](#) ()  
*destructor, deletes dynamically allocated memory (words member variable)*

### 4.22.1 Member Function Documentation

#### 4.22.1.1 interact()

```
AbstractExpression * Critter::interact ( )
```

critters respond to interaction attempts, and return a response

##### Returns

returns a string that Crew members then interpreter

#### 4.22.1.2 isEnemy()

```
bool Critter::isEnemy ( )
```

checks if [Critter](#) is still friendly by check it's tolerance level

##### Returns

boolean indicates if [Critter](#) is still friendly

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

- [Critter.h](#)
- [Critter.cpp](#)

## 4.23 Decorator Class Reference

Inherits [Component](#).

Inherited by [AirconditioningDecorator](#), [PremiumSoftwareDecorator](#), and [TVDecorator](#).

### Public Member Functions

- **Decorator** ([Component](#) \*)
- virtual std::string **description** ()

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

- [Decorator.h](#)
- [Decorator.cpp](#)

## 4.24 Doctor Class Reference

Inherits [CrewMember](#).



## Public Member Functions

- **Doctor** (int r)
- virtual void **sendReport** (string) override

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

- Doctor.h
- Doctor.cpp

## 4.25 DoctorFactory Class Reference

Inherits [CrewFactory](#).

## Public Member Functions

- [Person](#) \* **createPerson** ()

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

- DoctorFactory.h
- DoctorFactory.cpp

## 4.26 DoctorHandler Class Reference

Inherits [ProblemHandler](#).

## Public Member Functions

- **DoctorHandler** ([Doctor](#) \*)
- virtual void **setNextChain** ([ProblemHandler](#) \*handler) override
- virtual void **handle** (int) override

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

- DoctorHandler.h
- DoctorHandler.cpp

## 4.27 EmptyFuelState Class Reference

Inherits [State](#).

## Public Member Functions

- **EmptyFuelState** ([Spaceship](#) \*c)
- void **handle** () override
- virtual void **changeState** () override

## Additional Inherited Members

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

- EmptyFuelState.h
- EmptyFuelState.cpp

## 4.28 EngineerHandler Class Reference

Inherits [ProblemHandler](#).

## Public Member Functions

- **EngineerHandler** ([Engineers](#) \*e)
- virtual void **setNextChain** ([ProblemHandler](#) \*handler) override
- virtual void **handle** (int) override

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

- EngineerHandler.h
- EngineerHandler.cpp

## 4.29 Engineers Class Reference

Inherits [CrewMember](#).

## Public Member Functions

- **Engineers** (int r)
- virtual void **sendReport** (string) override

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

- Engineers.h
- Engineers.cpp

## 4.30 EngineersFactory Class Reference

Inherits [CrewFactory](#).

### Public Member Functions

- [Person](#) \* **createPerson** ()

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

- EngineersFactory.h
- EngineersFactory.cpp

## 4.31 Exploration Class Reference

Inherits [Spaceship](#).

### Public Member Functions

- virtual [Iterator](#) \* **createIterator** () override  
*Creates a [LogIterator](#) Object for [Exploration](#).*

### 4.31.1 Member Function Documentation

#### 4.31.1.1 createIterator()

```
Iterator * Exploration::createIterator ( ) [override], [virtual]
```

Creates a [LogIterator](#) Object for [Exploration](#).

#### Returns

returns [LogIterator](#) object

Implements [Spaceship](#).

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

- Exploration.h
- Exploration.cpp

## 4.32 ExplorationFactory Class Reference

Inherits [SpaceshipFactory](#).

### Public Member Functions

- virtual [Spaceship](#) \* [createSpaceship](#) () override

### 4.32.1 Member Function Documentation

#### 4.32.1.1 createSpaceship()

```
Spaceship * ExplorationFactory::createSpaceship ( ) [override], [virtual]
```

#### Returns

[Exploration](#) vessels concrete product

Implements [SpaceshipFactory](#).

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

- ExplorationFactory.h
- ExplorationFactory.cpp

## 4.33 Fighter Class Reference

Inherits [CrewMember](#).

### Public Member Functions

- **Fighter** (int r)
- virtual void [update](#) () override  
*Construct the [CrewMember](#) object.*
- virtual void **setCaptain** ([Person](#) \* \_captain)

### 4.33.1 Member Function Documentation

#### 4.33.1.1 update()

```
void Fighter::update ( ) [override], [virtual]
```

Construct the [CrewMember](#) object.

## Parameters

<a href="#">Captain</a>	object is passed to initialise the captain member variable
-------------------------	--

Update announcement from the captain object state

Reimplemented from [CrewMember](#).

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

- Fighter.h
- Fighter.cpp

## 4.34 FighterHandler Class Reference

Inherits [ProblemHandler](#).

### Public Member Functions

- **FighterHandler** ([Fighter](#) \*)
- virtual void **setNextChain** ([ProblemHandler](#) \*handler) override
- virtual void **handle** (int) override

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

- FighterHandler.h
- FighterHandler.cpp

## 4.35 FighterTransporter Class Reference

Inherits [Spaceship](#).

### Public Member Functions

- virtual [Iterator](#) \* **createliterator** () override

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

- FighterTransporter.h
- FighterTransporter.cpp

## 4.36 Frigates Class Reference

Inherits [Spaceship](#).

## Public Member Functions

- virtual [Iterator](#) \* **createIterator** () override

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

- Frigates.h
- Frigates.cpp

## 4.37 FrigatesFactory Class Reference

Inherits [SpaceshipFactory](#).

## Public Member Functions

- virtual [Spaceship](#) \* **createSpaceship** () override

### 4.37.1 Member Function Documentation

#### 4.37.1.1 createSpaceship()

```
Spaceship * FrigatesFactory::createSpaceship ( ) [override], [virtual]
```

#### Returns

[Frigates](#) concrete product

Implements [SpaceshipFactory](#).

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

- FrigatesFactory.h
- FrigatesFactory.cpp

## 4.38 FullFuelState Class Reference

Inherits [State](#).

## Public Member Functions

- **FullFuelState** ([Spaceship](#) \*c)
- void **handle** () override
- virtual void **changeState** () override

## Additional Inherited Members

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

- FullFuelState.h
- FullFuelState.cpp

## 4.39 InvadeCommand Class Reference

Inherits [Command](#).

### Public Member Functions

- **InvadeCommand** ([Spaceship](#) \*)
- virtual void [invade](#) ()  
*method invoked when decision is made to invade planet, the function calls the invade method from the receiver ([Exploration](#) vessel in this case) object*

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

- InvadeCommand.h
- InvadeCommand.cpp

## 4.40 Iterator Class Reference

Inherited by [LogIterator](#).

### Public Member Functions

- virtual string **first** ()=0
- virtual string **next** ()=0
- virtual bool **hasNext** ()=0
- virtual string **current** ()=0

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

- Iterator.h

## 4.41 LogIterator Class Reference

Inherits [Iterator](#).

## Public Member Functions

- **LogIterator** (vector< string > l)
- void **setLog** (vector< string > l)
- virtual string **first** () override
- virtual string **next** () override
- bool **hasNext** () override
- virtual string **current** () override

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

- LogIterator.h
- LogIterator.cpp

## 4.42 Mediator Class Reference

Inherited by [ConcreteMediator](#).

## Public Member Functions

- virtual void **notify** ([CrewMember](#) \*)=0
- virtual void **addColleague** ([CrewMember](#) \*)=0

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

- Mediator.h

## 4.43 Memento Class Reference

## Public Member Functions

- [State](#) \* **getState** ()
- void **setState** ([State](#) \*)

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

- Memento.h
- Memento.cpp

## 4.44 MidFuelState Class Reference

Inherits [State](#).



## Public Member Functions

- **MidFuelState** ([Spaceship](#) \*c)
- void **handle** () override
- virtual void **changeState** () override

## Additional Inherited Members

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

- MidFuelState.h
- MidFuelState.cpp

## 4.45 Navigator Class Reference

Inherits [CrewMember](#).

## Public Member Functions

- **Navigator** (int r)

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

- Navigator.h
- Navigator.cpp

## 4.46 NavigatorFactory Class Reference

Inherits [PersonFactory](#).

## Public Member Functions

- virtual [Person](#) \* **createPerson** () override  
*concrete factory method to create a [Navigator](#) Object*

### 4.46.1 Member Function Documentation

#### 4.46.1.1 createPerson()

```
Person * NavigatorFactory::createPerson ( ) [override], [virtual]
```

concrete factory method to create a [Navigator](#) Object

##### Returns

returns a [Navigator](#) Object which is a [Person](#) (Abstract ancestor class)

Implements [PersonFactory](#).

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

- NavigatorFactory.h
- NavigatorFactory.cpp

## 4.47 Passenger Class Reference

Inherits [Person](#).

### Public Member Functions

- virtual void [update](#) () override  
*Construct the [Passenger](#) object.*
- virtual void [setCaptain](#) ([Person](#) \*\_captain)  
*initialize the captain member variable if not initialized via constructor*

### 4.47.1 Member Function Documentation

#### 4.47.1.1 update()

```
void Passenger::update ( ) [override], [virtual]
```

Construct the [Passenger](#) object.

##### Parameters

<a href="#">Captain</a>	object is passed to initialise the captain member variable
-------------------------	--

Update announcement from the captain object state

Implements [Person](#).

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

- Passenger.h
- Passenger.cpp

## 4.48 PassengerFactory Class Reference

Inherits [PersonFactory](#).

### Public Member Functions

- [Person](#) \* [createPerson](#) ()  
*concrete factory method to create a [Passenger](#) Object*

### 4.48.1 Member Function Documentation

#### 4.48.1.1 createPerson()

```
Person * PassengerFactory::createPerson ( ) [virtual]
```

concrete factory method to create a [Passenger](#) Object

#### Returns

returns a [Passenger](#) Object which is a [Person](#) (Abstract ancestor class)

Implements [PersonFactory](#).

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

- PassengerFactory.h
- PassengerFactory.cpp

## 4.49 Person Class Reference

Inherited by [CrewMember](#), and [Passenger](#).

## Public Member Functions

- `std::string getName ()`  
*construct [Person](#) object*
- `void setName (std::string)`
- `std::string getType ()`
- `void setType (std::string)`
- `virtual void update ()=0`
- `virtual void setCaptain (Person * _cap)=0`

### 4.49.1 Member Function Documentation

#### 4.49.1.1 getName()

`std::string Person::getName ( )`

construct [Person](#) object

##### Parameters

<i>String</i>	type, <a href="#">CrewMember</a> or <a href="#">Passenger</a>
<i>String</i>	name, name of the <a href="#">Person</a>

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

- [Person.h](#)
- [Person.cpp](#)

## 4.50 PersonFactory Class Reference

Inherited by [CrewFactory](#), [NavigatorFactory](#), and [PassengerFactory](#).

## Public Member Functions

- `virtual Person * createPerson ()=0`

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

- [PersonFactory.h](#)

## 4.51 PFighterFactory Class Reference

Inherits [CrewFactory](#).

## Public Member Functions

- [Person](#) \* [createPerson](#) ()  
*concrete factory method to create a [Fighter](#) Object*

### 4.51.1 Member Function Documentation

#### 4.51.1.1 createPerson()

[Person](#) \* PFighterFactory::createPerson ( ) [virtual]

concrete factory method to create a [Fighter](#) Object

#### Returns

returns a [Fighter](#) Object which is a [Person](#) (Abstract ancestor class)

Reimplemented from [CrewFactory](#).

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

- PFighterFactory.h
- PFighterFactory.cpp

## 4.52 PremiumSoftwareDecorator Class Reference

Inherits [Decorator](#).

## Public Member Functions

- **PremiumSoftwareDecorator** ([Component](#) \*)
- virtual std::string **description** ()
- std::string **addedThing** ()

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

- PremiumSoftwareDecorator.h
- PremiumSoftwareDecorator.cpp

## 4.53 ProblemHandler Class Reference

Inherited by [DoctorHandler](#), [EngineerHandler](#), and [FighterHandler](#).

## Public Member Functions

- virtual void **setNextChain** ([ProblemHandler](#) \*handler)
- virtual void **handle** (int)=0

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

- [ProblemHandler.h](#)

## 4.54 SickBay Class Reference

Inherits [Component](#).

## Public Member Functions

- std::string **description** ()

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

- [SickBay.h](#)
- [SickBay.cpp](#)

## 4.55 SleepingQuarters Class Reference

Inherits [Component](#).

## Public Member Functions

- std::string **description** ()

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

- [SleepingQuarters.h](#)
- [SleepingQuarters.cpp](#)

## 4.56 Spaceship Class Reference

Inherited by [Battleship](#), [Exploration](#), [FighterTransporter](#), [Frigates](#), [SpaceshipTransporter](#), and [SpaceStation](#).

## Public Member Functions

- double **getDisplacement** ()
- void **setDisplacement** (double)
- double **getPower** ()
- void **setPower** (double)
- double **getThrust** ()
- void **setThrust** (double)
- double **getMaxSpeed** ()
- void **setMaxSpeed** (double)
- double **getStallSpeed** ()
- void **setStallSpeed** (double)
- double **getCrew** ()
- void **setCrew** (double)
- double **getPassengers** ()
- void **setPassengers** (double)
- virtual [Iterator](#) \* **createIterator** ()=0
- void **addLogEntry** (string log)
- void **removeLogEntry** (string log)
- void **setState** ([State](#) \*)
- [State](#) \* **getState** ()
- void **handleFuel** ()
- vector< string > **getLogs** ()
- bool **isEmpty** ()
- [Memento](#) \* **createMemento** ()
- void **setMemento** ([Memento](#) \*)
- void **executeInvasion** ()

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

- Spaceship.h
- Spaceship.cpp

## 4.57 SpaceshipCreator Class Reference

### Public Member Functions

- [Spaceship](#) \* **createSpaceship** ()

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

- SpaceshipCreator.h

## 4.58 SpaceshipFactory Class Reference

Inherited by [BattleshipsFactory](#), [ExplorationFactory](#), [FrigatesFactory](#), [SpaceStationFactory](#), [SPFighterFactory](#), and [SPTransporterFactory](#).

## Public Member Functions

- virtual [Spaceship](#) \* **createSpaceship** ()=0

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

- SpaceshipFactory.h

## 4.59 SpaceshipTransporter Class Reference

Inherits [Spaceship](#).

## Public Member Functions

- virtual [Iterator](#) \* **createIterator** () override  
*Creates a [LogIterator](#) Object for [SpaceshipTransporter](#).*

### 4.59.1 Member Function Documentation

#### 4.59.1.1 createIterator()

```
Iterator * SpaceshipTransporter::createIterator ( ) [override], [virtual]
```

Creates a [LogIterator](#) Object for [SpaceshipTransporter](#).

#### Returns

returns [LogIterator](#) object

Implements [Spaceship](#).

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

- SpaceshipTransporter.h
- SpaceshipTransporter.cpp

## 4.60 SpaceStation Class Reference

Inherits [Spaceship](#).



## Public Member Functions

- virtual [Iterator](#) \* **createIterator** ()

## Static Public Member Functions

- static [SpaceStation](#) \* **instance** ()

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

- SpaceStation.h
- SpaceStation.cpp

## 4.61 SpaceStationFactory Class Reference

Inherits [SpaceshipFactory](#).

## Public Member Functions

- virtual [Spaceship](#) \* **createSpaceship** () override  
*concrete factory method to create a [SpaceStation](#) Object*

### 4.61.1 Member Function Documentation

#### 4.61.1.1 createSpaceship()

```
Spaceship * SpaceStationFactory::createSpaceship ( ) [override], [virtual]
```

concrete factory method to create a [SpaceStation](#) Object

#### Returns

returns a [SpaceStation](#) Object which is a [Spaceship](#)

Implements [SpaceshipFactory](#).

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

- SpaceStationFactory.h
- SpaceStationFactory.cpp

## 4.62 SPFighterFactory Class Reference

Inherits [SpaceshipFactory](#).

### Public Member Functions

- virtual [Spaceship](#) \* [createSpaceship](#) ()

### 4.62.1 Member Function Documentation

#### 4.62.1.1 createSpaceship()

```
virtual Spaceship* SPFighterFactory::createSpaceship ( ) [virtual]
```

#### Returns

[Fighter](#) Transporter concrete product

Implements [SpaceshipFactory](#).

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

- SPFighterFactory.h

## 4.63 SPTransporterFactory Class Reference

Inherits [SpaceshipFactory](#).

### Public Member Functions

- virtual [Spaceship](#) \* [createSpaceship](#) () override  
*concrete factory method to create a [SpaceshipTransporter](#) Object*

### 4.63.1 Member Function Documentation

#### 4.63.1.1 createSpaceship()

```
Spaceship * SPTransporterFactory::createSpaceship ( ) [override], [virtual]
```

concrete factory method to create a [SpaceshipTransporter](#) Object

##### Returns

[Spaceship](#) Transporter concrete product  
returns a [SpaceshipTransporter](#) Object which is a [Spaceship](#)

Implements [SpaceshipFactory](#).

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

- SPTransporterFactory.h
- SPTransporterFactory.cpp

## 4.64 State Class Reference

Inherited by [EmptyFuelState](#), [FullFuelState](#), and [MidFuelState](#).

### Public Member Functions

- int **getFuelLevel** ()
- virtual void **changeState** ()=0
- virtual void **handle** ()=0

### Protected Member Functions

- **State** ([Spaceship](#) \*c)

### Protected Attributes

- int **fuelLevel** = 100
- [Spaceship](#) \* **spaceship**

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

- State.h
- State.cpp

## 4.65 TVDecorator Class Reference

Inherits [Decorator](#).

## Public Member Functions

- **TVDecorator** ([Component](#) \*)
- std::string **description** ()
- std::string **addedThing** ()

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

- TVDecorator.h
- TVDecorator.cpp

## 4.66 VariableExpression Class Reference

Inherits [AbstractExpression](#).

## Public Member Functions

- [VariableExpression](#) ([AbstractExpression](#) \*\_op1)  
*construct a Variable Expression object and initialize it's member variables*
- [VariableExpression](#) ([AbstractExpression](#) \*\_op1, [AbstractExpression](#) \*\_op2)  
*construct a Variable Expression object and initialize it's member variables*
- virtual string **evaluate** ([Context](#) &)  
*Evaualates and expression using the context object passed as parameter.*
- virtual void **setOperands** ([AbstractExpression](#) \*\_op1, [AbstractExpression](#) \*\_op2=nullptr)  
*to reuse this object, we just replace operands with new ones*

### 4.66.1 Constructor & Destructor Documentation

#### 4.66.1.1 VariableExpression() [1/2]

```
VariableExpression::VariableExpression (
    AbstractExpression * _op1 )
```

construct a Variable Expression object and initialize it's member variables

#### Parameters

<code>_op1</code>	initializes operand1
<code>_op2</code>	is set to NULL just in case we want to pass/use only a single operand - I saw tsuj gnieb yzal :-)

### 4.66.1.2 VariableExpression() [2/2]

```
VariableExpression::VariableExpression (
    AbstractExpression * _op1,
    AbstractExpression * _op2 )
```

construct a Variable Expression object and initialize it's member variables

#### Parameters

<code>_op1</code>	initializes operand1
<code>_op2</code>	initializes operand 2

## 4.66.2 Member Function Documentation

### 4.66.2.1 evaluate()

```
string VariableExpression::evaluate (
    Context & _ctx ) [virtual]
```

Evaluates and expression using the context object passed as parameter.

#### Parameters

<code>_ctx</code>	<a href="#">Context</a> object used to lookup key value pairs during evaluation of an expression
-------------------	--

#### Returns

returns a string representation of an expression after evaluation

Implements [AbstractExpression](#).

### 4.66.2.2 setOperands()

```
void VariableExpression::setOperands (
    AbstractExpression * _op1,
    AbstractExpression * _op2 = nullptr ) [virtual]
```

to reuse this object, we just replace operands with new ones

Reimplemented from [AbstractExpression](#).

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

- VariableExpression.h
- VariableExpression.cpp



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