НИУ ИТМО

Факультет программной инженерии и компьютерной техники

**ЛАБОРАТОРНАЯ РАБОТА № 4**

по дисциплине

‘ПРОГРАММИРОВАНИЕ’

Вариант № 121010.5

*Выполнил:*

Студент группы P3110

Абрабоу Ахмед Елсаид А.И

*Преподаватель:*Сорокин Роман Борисович



Санкт-Петербург, 2021

***Задание:***

***Graphical user interface, text, application, email

Description automatically generated***

***Explaining program***

Laboratory work 3, description

In fact, this lab presents an object model based on this text.

Text: Needless to say, the police were now afraid to come close to the rocket, and not just shoot near it. The villagers could freely come to the astronauts and receive the seeds of giant plants from them. Now giant seeds were planted not only in the village of Neelovka, but also in the villages of Golopyatkin, Beskhlebov, Golodaevka, Neprolaznoye and many others. Znayka ordered that the lunatics were given not only the seeds they needed, but that they were supplied with devices of weightlessness, as well as anti-lunit, and that they were told how to use all this to protect themselves from the police. Soon, several workers from the Scooperfield pasta factory arrived at the cosmonauts. They said that they decided to get rid of Scooperfield's factory, and they would make pasta themselves without any owners. To carry out this plan, they need to make the factory zero gravity, because otherwise the police could interfere with them and even drive them out of the factory altogether.

The Main class contains the main logic of the program, in which the classes we need are created and methods from them are called. First, we create the Police class, which represent the "policemen" in the text, Villagers - "villagers", Astronaut - "astronauts", Znayka - a character named "Znayka", FactoryWorkers - "workers from the Scooperfield factory", Scooperfield - "Scooperfield" itself and, finally, Factory - "Scooperfield's factory". The police know how to be afraid of a rocket, approach the rocket and shoot near it (they have appropriate methods, then all actions mean methods).

Villagers have the class Seeds (seeds, inherited from Resource), WeightlessnessDevices (a device for weightlessness, inherited from Resource), Antilunite (antilunites, inherited from Resource). They are able to go to astronauts (goToAstronauts with a specific name), get weightlessness devices from them (getWeightlessnessDevicesFromAstronaut with a device object), antilunite (getAntiluniteFromAstronaut with an antilunite object) and seeds (also), get instructions (getExplainFromAstronaut), get instructions (getExplainFromAstronaut) Enum Village with village names, tellAboutPlantingSites). Residents implement the GetHelpFromAstronauts interface, which allows them to get help from astronauts.

The astronauts themselves, accordingly, have in their presence all the resources listed above (class fields), can give everything that is listed above (three methods with the first word give), explain how to use it (explainHowToUse). (implements the AstronautHelp interface, which contain their actions, we can attach it to any entity)

Znayka can give an order (giveOrder ()).

Workers can come to the astronauts (arriveAtTheAstronauts), talk about their plan (sayPlan), their solution (tellWhatTheyDecided), think about a solution (thinkAboutTheyDecided).

Scooperfield is the director of a pasta factory.

The factory can tell about itself, and get / lose the state of weightlessness (through the weightlessness field)

We call all the methods we need from the text, we get the source text.

Laboratory work 4, description

New requirements have appeared for the lab - you need to figure out how to arrange two exception classes, as well as add a local, anonymous and nested class.

Therefore, we added an unchecked class-exception NoGunException, which is thrown in our case if, for some unknown reason, the police did not have a weapon - then this story will not happen, because the workers do not care about the police (as a scenario). Unchecked because cops always have guns.

We also added a checked class-exception NoResourcesException, which means that we have run out of some resources (a very real situation, therefore checked). In this case, we will interrupt history and say that the astronauts have run out of resources.

Further, the Scooperfield class, representing the character of the same name, became an interface so that we could implement an anonymous class in the Main class that will represent it.

The police now have a nested non-static Gun class that is a weapon for the police. The weapon can shoot)

Znayka now has an Order class in the giveOrder () method - an order that Znayka can give.

And for astronauts, a static class Instruction was created, which represents an instruction.

And so there are no more changes.

***Диограмма:***

Graphical user interface

Description automatically generated

***GitHub//:***

***Код программы:***

**Output:**

**Вывод:**