

**МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ
РОССИЙСКОЙ ФЕДЕРАЦИИ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ ОБРАЗОВАТЕЛЬНОЕ
УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ «Белгородский государственный
национальный исследовательский университет»**

Лабораторная работа №5
дисциплина «Современные методы, среды и языки программирования»
по теме «Разработка программных систем с использованием шаблонов поведения в Java»

Выполнил: студент группы 12002135
Проверил:

Макаров Д.С.

Лабораторная работа №5

«Разработка программных систем с использованием шаблонов поведения в Java»

Цель работы: Научиться осуществлять выбор поведенческих шаблонов проектирования при разработке программных систем, писать код реализации шаблона на языке Java в соответствии с основными принципами объектно-ориентированного программирования.

Задание I

Паттерн Chain of responsibility. Прохождение платежа через банковскую систему сопровождается целым рядом действий: фиксирующих, контролирующих, снимающих процент банка и прочие вычеты и действия. Построить для различного вида платежей (обычных, льготных, государственных, внутрибанковских) в соответствии с предметной областью и разработать модель системы.

Ход работы

Regular chain

```
initJob -> startJob -> logJob -> transitJob -> rewardJob -> logJob -> finishJob
```

Preferential chain

```
initJob -> startJob -> logJob -> calcJob -> transitJob -> rewardJob -> logJob -> finishJob
```

Government chain

```
initJob -> startJob -> logJob -> transitJob -> rewardJob -> logJob -> finishJob -> reportJob
```

Inner chain

```
initJob -> startJob -> logJob -> transitJob -> logJob -> finishJob
```

Пример работы программы:

- InitJob -> StartJob -> LogJob -> TransitJob transfer 3928280439349187966 value from 39a3b041-be8c-4ebd-6a04-773b6ab03eac to f063e3da-6668-46b3-4eac-070138f5d17a -> RewardJob -> reward 0 value from 39a3b041-be8c-4ebd-6a04-773b6ab03eac -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 4733201591209658587 value from 70fd9eb6-4663-4820-41fa-44468dbaf20e to 2aa6b63b-e051-4493-6956-f792f0daabf3 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 15392654221877484375 value from 6a4eda10-6a60-486c-4b0e-f017c5f78991 to a226a9c3-0a1b-4b8a-58dc-ead9b6acc5e0 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 17828564370720314383 value from bc086584-76e3-4613-5679-2a7bf019e869 to 995eabfb-c070-430b-5ea5-776130c8e695 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 18446589659279014525 value from 00e8198d-3ce9-48e5-6280-7e01409d943d to 0725ae22-ab2d-412d-4b2d-2ee1fd7f5085 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 12699578954183765238 value from 7076b20c-356b-412d-43e6-2dbfc3efe87d to 80a5ab6c-ff70-471c-79bb-37b8ee92ccd6 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 10745945218498712990 value from f7e75096-9bea-49d2-53a8-fa9fb4b130d1 to 8b83f004-3bca-4248-5555-f4bdc8f1402b -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 14527155178564592439 value from 9f423a4f-9bd1-4e72-6e70-8d6e0f3bcb24 to 6cdb18c8-df86-462c-4ac4-0867fcbda195 -> RewardJob -> reward 0 value from 9f423a4f-9bd1-4e72-6e70-8d6e0f3bcb24 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 202081161520089208 value from 75aff6fd-402b-44c8-7d22-798da54ab709 to e282ac8b-60c6-4d53-7206-af1c1035c848 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 13623013640331546398 value from 0f20c9ca-fb36-4774-4263-351830508e96 to 98433472-ca9d-4250-6b65-219fd77430b3 -> LogJob -> FinishJob

- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 15506695694596737517 value from de060dff-53bc-44a3-5f13-06f398af1cab to 70fc5fd5-a4d6-4298-604c-ee6ca5155014 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 10838488289907830082 value from 9c8ea2c6-e9fa-439f-4efe-a846d4b9d51e to 084f8507-a50b-4a0a-6081-766b7aaf6bdc -> RewardJob -> revard 0 value from 9c8ea2c6-e9fa-439f-4efe-a846d4b9d51e -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 10847686998058353338 value from bc819d1b-7d4f-4eee-662c-89c1e1645fc4 to a54806c6-85ef-4e48-64d5-247d325bed6b -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 17357004923509526292 value from 3acf21b7-4d29-4dc4-7f16-e5b831441dda to 29c3852e-aaf0-4324-5082-b0686fc894e0 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 18114679294871142041 value from 75c896eb-163f-42ea-7d95-22b63a65c8ae to ee0c42b8-801e-4323-5264-49d8d5654c78 -> RewardJob -> revard 0 value from 75c896eb-163f-42ea-7d95-22b63a65c8ae -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 4070499434783547057 value from 9079d165-33eb-4c15-706c-8679b75b1eaa to 8c52a2e3-0ad4-49c0-6337-d2f92f02860e -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 14876172008183407661 value from 8a9afbc7-d11c-486e-6576-34945635ad96 to 6d433d2c-9578-436f-5811-af7df74a6ffb -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 15402937343539281899 value from 5fa079ef-4ae5-437e-61bb-a0b84be028ec to 6dc1a2dd-673a-452e-7dbd-93265344cd2d -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 6082666451588670106 value from 73ffbddb-454a-4c48-66cd-f5fc3fbbd711 to d1918a45-c00c-44ec-4cbe-d5b1db6e4c5e -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 16604896475089279694 value from e22eca19-6ac6-44db-51f8-9b9db8a187e6 to 0fd35c2e-f439-4508-768b-1c0c37d1516e -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 2432483592508930039 value from da5f5afb-e4f8-4f55-79b9-c0ffff42db6 to a00bf0c5-34b7-426b-6ed3-e6769d054e62 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 15700287012328789772 value from 8a0ccfed-e2de-44c9-4d75-8015096925b0 to 9c1b260a-ba3d-4719-75a1-da4762bd3b97 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 2482601485463964244 value from 4a359f93-da29-40b6-627b-01a22b43cdb5 to 86f675db-283c-4b45-757d-2868edbaf086 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 10011289550273893912 value from 8f4ac44d-2a6a-42bb-4ff2-953d4250fa5a to f0fc3f7a-30a8-4d40-730d-661b1dfc7989 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 5198838225866009648 value from d02b1183-0ddd-4946-5489-d81650a546cc to 57d692d7-3b9f-4f9a-4049-2b525de18e12 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 6386222379508848513 value from 996efecf-ec28-4d12-75b0-47b510c1371d to 5d096bf9-71d6-4e8f-5778-89a30a3f2347 -> RewardJob -> revard 0 value from 996efecf-ec28-4d12-75b0-47b510c1371d -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 7349462404639715625 value from 4eeafbc7-35f4-4f73-73a2-3036b2b64b4f to 916b659c-b5e9-4834-7e41-aac6893f6319 -> RewardJob -> revard 0 value from 4eeafbc7-35f4-4f73-73a2-3036b2b64b4f -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 4252840326258259373 value from 141b3850-9448-4078-75fe-a4a912f550ab to bd5fe084-276d-428a-5244-c76ef64c9b35 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 11282691308643682210 value from 4b7bd91f-6270-4438-5da1-3033067861e2 to 92d94f14-37e5-4f4b-5d71-b69de38390e2 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 3022247119679604301 value from eef9644e-0e50-4150-71a5-38f4aeca744e to 0a69f77a-9730-4e7c-5ff8-b254b88b716c -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 11346296795866552233 value from 58e871f5-e9c9-4d28-62bd-eccf2a2ee809 to 2d0cd801-7339-48bf-6ab5-1f48f9d447b1 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 15564361622402341372 value from a11ae3b6-df1f-4199-419e-2cb04a8c5546 to 0b1d323b-c48a-4003-7f28-73ea41d5d223 -> LogJob -> FinishJob

- InitJob -> StartJob -> LogJob -> TransitJob transfer 13280430668885309363 value from 5f57d3f9-e059-4acc-4098-d25dff510bf1 to 30c96b9a-25d0-43d3-51b2-7d81616b608b -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 10784516017281044344 value from 6e6d50cf-de21-416a-7f4b-29baa04a75ef to 0a4e97a4-daac-4c8e-55cc-56366271252d -> RewardJob -> revard 0 value from 6e6d50cf-de21-416a-7f4b-29baa04a75ef -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 15225696433797098507 value from db5394b6-21d2-4620-4438-6409619281f5 to 5af67010-17b4-43b8-418d-c5fccbc5b3eb -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 6349292440239674991 value from 47036f7a-82c2-43d2-66a5-cc0917b7335d to b5ed399e-9201-40ca-57ac-4f72d7208262 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 12951833617773086874 value from 0ce3f7e2-b3dd-40a2-561f-8dcbb7e1e3bdf to f765df51-6f80-4f42-53c7-aef89233917e -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 6461994454176441153 value from c05bd72a-9ff5-4890-7330-361f39f1fdbab to c0a149f0-8ab7-4f67-7c86-3fd162a84f1b -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 267248899788523597 value from 2b44017b-1df8-4399-4da9-295c8eed931b to 89c395ae-8571-437c-50b7-61626653d167 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 9816239529975847844 value from 241140bb-579b-43df-7e83-27676ffe1ef8 to 03de5a21-cda9-4afc-6453-93cee8bda94a -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 14201841198498436057 value from 35e8ccd2-3da7-4bdf-5403-662917dd4d3e to 7e2fc7b2-bda6-4fda-64b5-7b4e463b3ec1 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 17904792920505038523 value from fc7d409d-333d-4e6f-4b52-6f9ec8e48802 to 90af6ef9-8147-4f1a-6484-47ef2dfd8df7 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 4659109443509640172 value from 64314286-7802-4ad8-4e21-92fc630dc4c3 to cf46f252-9224-47d4-787f-f383aa409369 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 16758758716534588636 value from 94c3e003-237f-49fe-68a0-1c51c70f23b8 to 49f2412f-51ff-44b3-47ec-c89a4feb8175 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 2806833914791886356 value from 63833df3-30fa-4573-7bd0-cac07b0c8781 to a9551279-7d1d-403b-4d2d-159cae72c0c5 -> RewardJob -> revard 0 value from 63833df3-30fa-4573-7bd0-cac07b0c8781 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 15564985126138979329 value from 158af265-bc86-4c9a-75d1-cb5f3d420de3 to d10bcd4f-8e85-49bf-50b7-805d44dea3c3 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 14023212861384034955 value from 89d290e1-2f8a-414d-66e3-952096cd4ba0 to 0b298e4d-0e41-430f-709d-c69ea28055e1 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 1116659948342069449 value from 3ba2552f-b359-4d53-7677-aa6ffb3c78c2 to 42ca552b-6b79-43d0-68c3-0c29c7e6316b -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 16895242554038763066 value from 4397f718-88df-498a-6b01-fe60ac51a717 to 24fc97c4-564d-4204-4015-08388a9790c7 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 14208336668613609110 value from 1c34e411-1fb1-4ca8-7793-0fe061584e50 to fa8f16a5-1086-4233-6044-c17cb43cf14d -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 6069636351274813942 value from 99852f36-118a-4bc5-7664-5b11a73bbf16 to ad7415c7-096b-4e0e-5b2d-c04858b1c414 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 15832105336950821366 value from 0c3ab69a-7c1f-4af7-4597-a596e4fac71b to 19adbfed-ecf8-4fcd-4658-b26cbce6e379 -> RewardJob -> revard 0 value from 0c3ab69a-7c1f-4af7-4597-a596e4fac71b -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 9328570406707272618 value from af88ee11-2b61-488f-6604-15d6a3bdcdc0 to 80650299-7e13-4f23-539a-83aff61eebb5 -> RewardJob -> revard 0 value from af88ee11-2b61-488f-6604-15d6a3bdcdc0 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 5901674061685000150 value from 69830676-b89a-4b3b-7599-1c2201e715a1 to bff962fb-da62-469f-5400-86393945a676 -> LogJob -> FinishJob

- InitJob -> StartJob -> LogJob -> TransitJob transfer 17810670053280767814 value from 10356567-f279-41b1-5a91-d1a03f76496b to 2ff44d85-e092-40f8-4018-e1130064eeeb -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 14349193907269935514 value from 5417cc7a-2799-4e13-52dc-d1b342e9e9d7 to 48aa12e1-c6c0-4fd6-4a93-06bd212550bf -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 9381693351957442965 value from 2d85f855-4e28-4cf4-493e-fecdf47f7a89 to f36988b5-dbbf-4563-474c-a5d3d710a297 -> RewardJob -> revard 0 value from 2d85f855-4e28-4cf4-493e-fecdf47f7a89 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 9447033866107291845 value from fddd1760-9572-44f8-5c5f-fce7944d684d to af106c28-43ca-4271-61d9-dc15aecc4d44 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 12729379181866332932 value from 3a6da79a-215c-43b5-45d3-250c22db5df8 to cc12270a-b697-469c-649d-26535770862a -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 9381004880596311467 value from dcf91482-45cf-4998-43ca-4adebe3f341e to d86d81df-73c4-4cc2-5d28-81c31fb6ffd7 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 6282962222972230039 value from 0967c6fa-ee33-4e2f-5007-d973c7071698 to fe597c13-7f49-48a3-459b-b174926397d4 -> RewardJob -> revard 0 value from 0967c6fa-ee33-4e2f-5007-d973c7071698 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 10982375619947211852 value from 60917fc8-c7e0-43b0-4756-df9641501b91 to 7753c0bf-c7c2-4597-726d-b54e02d31931 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 4981271907496552247 value from 23bcdced-c0e1-4273-76d0-9bae1ab0d652 to bfd9758-57e7-4cfe-59bd-36667672775a -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 8794529070265661934 value from 304af982-37e3-4457-47c8-d982e020c432 to a8596bb7-ad8d-4e9b-5673-a8a0791785a3 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 2807429643473246147 value from 3bf07905-cbbe-40c7-67fe-7342b5ea05bf to 9220f3ee-e762-4d20-7348-a37b06ac0837 -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 5309607972683160235 value from c596b800-840d-461d-649d-8c8819ecd15e to 541a3ebe-6724-4f40-6568-a0dc3deed577 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 1502001289480890237 value from a39f17c5-66f6-4280-4f9c-892dceelb0b2 to 3f9471e5-d1ce-41cc-7530-e1f908952c9c -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 5667816077761232315 value from 075d6a67-0e49-41e4-4a89-9c8e0de2a056 to 1ee31b68-162e-4f68-6941-899efbccc176 -> RewardJob -> revard 0 value from 075d6a67-0e49-41e4-4a89-9c8e0de2a056 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 7531593258766499579 value from 0d5f3244-bf4f-45f4-7f55-b76fb91b53d1 to bf4eeac7-4ed5-49d3-5f70-a15598d1d43b -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 10162974601223451892 value from bed84e88-8902-42e0-48b8-18a69685a5b8 to 8221a235-c601-4c1e-6f4d-55eafa628e7b -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 9601418577525209070 value from 74068662-d0c3-45d5-681d-c93070a95fad to 1d9d411f-f1e1-4cbe-6b46-3aab55eb3c39 -> RewardJob -> revard 0 value from 74068662-d0c3-45d5-681d-c93070a95fad -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 11407748174699901257 value from aflaabf6-92fa-4556-6e21-320f085b1697 to 75506f14-2b56-4836-6e10-8c09361de18f -> RewardJob -> revard 0 value from aflaabf6-92fa-4556-6e21-320f085b1697 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 17105476073414715676 value from 46d25f91-5f27-44df-6a10-207908a3a584 to 5942c658-a55f-48ba-5244-71894e446eec -> RewardJob -> revard 0 value from 46d25f91-5f27-44df-6a10-207908a3a584 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 18379986872627719694 value from b01ec800-5ac3-4cfe-7ff1-c687626c787e to 3218aaa3-9ad3-40af-4950-f4c86c0ad8f0 -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 14684027116147838147 value from db9171f7-07df-4a9b-5af7-790f2aaeb23f to ef67697a-16ff-4c5f-6cc2-abe9d980e6ef -> LogJob -> FinishJob

- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 7804728722590208192 value from c78b82ca-3da0-482f-72a0-0a317574312a to 2159e300-e926-41fa-4e4c-74d89490c27d -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 17895317120145888890 value from 611793dc-be32-459e-6da3-115ee9d29021 to b8cae87f-2176-40a7-6427-66d1468dfc1d -> LogJob -> FinishJob
- InitJob -> StartJob -> LogJob -> TransitJob transfer 1653140545812380922 value from 3213cc14-9920-411b-4590-0857f095e60c to 8ac17c71-6096-4c90-61c1-d840e8294fdd -> LogJob -> FinishJob -> ReportJob
- InitJob -> StartJob -> LogJob -> CalcJob -> TransitJob transfer 17644639233768211774 value from a4b90244-7364-4264-69c2-e29312614732 to c8484b40-022a-49fd-4cfd-9a9a6d745a49 -> LogJob -> FinishJob

Приложение

Содержимое файла main.go

```
package main

import (
    "lab5/pkg/payment"
    "lab5/pkg/paymentchain"
)

// Паттерн Chain of responsibility.
// Протождение платежа через банковскую систему сопровождается целым рядом действий: фиксирующих,
// контролирующих, снимающих процент банка и прочие вычеты и действия.
// Построить цепочки для различного вида платежей (обычных, льготных, государственных, внутрибанковских)
// в соответствии с предметной областью и разработать модель системы.

// Regular chain
// initJob -> startJob -> logJob -> transitJob -> rewardJob -> logJob -> finishJob
// Preferential chain
// initJob -> startJob -> logJob -> calcJob -> transitJob -> rewardJob -> logJob -> finishJob
// Government chain
// initJob -> startJob -> logJob -> transitJob -> rewardJob -> logJob -> finishJob -> reportJob
// Inner chain
// initJob -> startJob -> logJob -> transitJob -> logJob -> finishJob

func getRegularChain() []paymentchain.PaymentChainLink {
    chain := make([]paymentchain.PaymentChainLink, 0)

    chain = append(chain, paymentchain.InitJob{})
    chain = append(chain, paymentchain.StartJob{})
    chain = append(chain, paymentchain.LogJob{})
    chain = append(chain, paymentchain.TransitJob{})
    chain = append(chain, paymentchain.RewardJob{})
    chain = append(chain, paymentchain.LogJob{})
    chain = append(chain, paymentchain.FinishJob{})

    return chain
}

func getPreferentialChain() []paymentchain.PaymentChainLink {
    chain := make([]paymentchain.PaymentChainLink, 0)

    chain = append(chain, paymentchain.InitJob{})
    chain = append(chain, paymentchain.StartJob{})
    chain = append(chain, paymentchain.LogJob{})
    chain = append(chain, paymentchain.CalcJob{})
    chain = append(chain, paymentchain.TransitJob{})
    chain = append(chain, paymentchain.LogJob{})
    chain = append(chain, paymentchain.FinishJob{})

    return chain
}

func getGovernmentChain() []paymentchain.PaymentChainLink {
    chain := make([]paymentchain.PaymentChainLink, 0)

    chain = append(chain, paymentchain.InitJob{})
    chain = append(chain, paymentchain.StartJob{})
    chain = append(chain, paymentchain.LogJob{})
    chain = append(chain, paymentchain.TransitJob{})
    chain = append(chain, paymentchain.LogJob{})
    chain = append(chain, paymentchain.FinishJob{})
    chain = append(chain, paymentchain.ReportJob{})

    return chain
}

func getInnerChain() []paymentchain.PaymentChainLink {
    chain := make([]paymentchain.PaymentChainLink, 0)

    chain = append(chain, paymentchain.InitJob{})
    chain = append(chain, paymentchain.StartJob{})
    chain = append(chain, paymentchain.LogJob{})
    chain = append(chain, paymentchain.TransitJob{})
    chain = append(chain, paymentchain.LogJob{})
    chain = append(chain, paymentchain.FinishJob{})
}
```

```

        return chain
    }

func main() {
    paymentsCount := 100

    chainMap := map[payment.PaymentType][]paymentchain.PaymentChainLink{
        payment.Regular:      getRegularChain(),
        payment.Preferential:  getPreferentialChain(),
        payment.Government:    getGovermentChain(),
        payment.Inner:        getInnerChain(),
    }

    payments := payment.GenerateMockPayments(paymentsCount)

    for _, p := range payments {
        for _, job := range chainMap[p.Type] {
            job.Execute(p)
        }
    }
}

```

Содержимое файла panic.go

```

package errorhandlers

func IfErrorStartPanic(err error) {
    if err != nil {
        panic(err)
    }
}

```

Содержимое файла payment.go

```

package payment

import (
    "lab5/pkg/errorhandlers"
    "math/rand"
    "time"

    uuid "github.com/nu7hatch/gouuid"
)

type Payment struct {
    Type      PaymentType
    Value      uint64
    VaultSrc   string
    VaultDst   string
    Timestamp  time.Time
}

func New(paymentType PaymentType, srcVault, dstVault string, value uint64, time time.Time) Payment {
    return Payment{Type: paymentType, VaultSrc: srcVault, VaultDst: dstVault, Value: value, Timestamp: time}
}

func GenerateMockPayments(count int) []Payment {
    rand.Seed(time.Now().Unix())
    resultList := make([]Payment, 0)

    for i := 0; i < count; i++ {

        srcVault, err := uuid.NewV4()
        errorhandlers.IfErrorStartPanic(err)

        dstVault, err := uuid.NewV4()
        errorhandlers.IfErrorStartPanic(err)

        value := rand.Uint64()
        paymentType := rand.Int63n(int64(countOfPaymentType()))

        time := time.Unix(rand.Int63(), 0)

        resultList = append(resultList, Payment{Type: PaymentType(paymentType), VaultSrc: srcVault.String(),
            ↪ VaultDst: dstVault.String(), Value: value, Timestamp: time})
    }
}

```



```

        return resultList
    }

```

Содержимое файла paymentChain.go

```

package paymentchain

import (
    "fmt"
    "lab5/pkg/payment"
)

type PaymentChainLink interface {
    Execute(p payment.Payment) error
}

type InitJob struct{}

func (j InitJob) Execute(p payment.Payment) error {
    fmt.Println("\n\nInitJob -> ")
    return nil
}

type StartJob struct{}

func (j StartJob) Execute(p payment.Payment) error {
    fmt.Println("StartJob -> ")
    return nil
}

type LogJob struct {
    text string
}

func (j LogJob) Execute(p payment.Payment) error {
    fmt.Println("LogJob -> ", j.text)
    return nil
}

type CalcJob struct{}

func (j CalcJob) Execute(p payment.Payment) error {
    fmt.Println("CalcJob -> ")
    return nil
}

type TransitJob struct{}

func (j TransitJob) Execute(p payment.Payment) error {
    fmt.Println("TransitJob")
    fmt.Printf("transfer %d value from %s to %s -> ", p.Value, p.VaultSrc, p.VaultDst)
    return nil
}

type RewardJob struct {
    rewardSize uint64
}

func (j RewardJob) Execute(p payment.Payment) error {
    fmt.Println("RewardJob -> ")
    fmt.Printf("reward %d value from %s -> ", j.rewardSize, p.VaultSrc)
    return nil
}

type FinishJob struct{}

func (j FinishJob) Execute(p payment.Payment) error {
    fmt.Println("FinishJob")
    return nil
}

type ReportJob struct{}

func (j ReportJob) Execute(p payment.Payment) error {
    fmt.Println("-> ReportJob")
    return nil
}

```

```
}
```

Содержимое файла paymentType.go

```
package payment

type PaymentType int64

const (
    regularStr      = "Regular"
    preferentialStr = "Preferential"
    governmentStr   = "Government"
    innerStr        = "Inner"
)

const (
    Regular PaymentType = iota
    Preferential
    Government
    Inner
)

var (
    paymentTypeMap = map[PaymentType]string{
        Regular:      regularStr,
        Preferential: preferentialStr,
        Government:   governmentStr,
        Inner:        innerStr,
    }
)

func (t PaymentType) String() string {
    v, ok := paymentTypeMap[t]
    if !ok {
        panic("unknown type")
    }
    return v
}

func countOfPaymentType() int {
    return len(paymentTypeMap)
}
```

Содержимое файла paymentTypeTest.go

```
package payment

import "testing"

func TestPaymentTypeString(t *testing.T) {
    expected := "Regular"
    received := Regular.String()
    if received != expected {
        t.Fatalf("expected %s, received %s", expected, received)
    }
}
```