**Звіт**

**Лабораторна работа 7. Об'єктно-орієнтована декомпозиція**

**Мета роботи**: Використання об'єктно-орієнтованого підходу для розробки об'єкта предметної (прикладної) галузі.

**ВИМОГИ**

* Використовуючи об'єктно-орієнтований аналіз, реалізувати класи для представлення сутностей відповідно прикладної задачі - domain-об'єктів.
* Забезпечити та продемонструвати коректне введення та відображення кирилиці.
* Продемонструвати можливість управління масивом domain-об'єктів.

9. Квиткова каса

Дані про маршрут: маршрут - необмежений набір значень у вигляді "назва станції, час прибуття (для проміжних і кінцевої), час відправлення (для початкової та проміжних), кількість вільних місць"; загальна кількість місць; дні тижня; номер рейсу.

* 1. **Розробник**: Капелька Ярослав Іванович, КІТ-119а, варіант №9.

1. **ОПИС ПРОГРАМИ**
   1. **Засоби ООП**: клас, метод класу, поле класу.
   2. **Ієрархія та структура класів:** один публічний клас Main та публічний клас RouteClass, у якого є поля: загальна кількість місць; дні тижня; номер рейсу, гетери, сетери, конструктор класу та метод виведення даних класу, класс StationClass, у якого є поля: назва станції, час прибуття (для проміжних і кінцевої), час відправлення (для початкової та проміжних), кількість вільних місць"; гетери, сетери, конструктор класу та метод виведення даних класу, публічний класс RoutesClass, який зберігає масив об’єктів класу RouteClass.
   3. **Важливі фрагменти програми:**

**public** **class** RouteClass

{

**private** **int** total\_number\_of\_seats;

**private** GregorianCalendar days\_of\_the\_week;

**private** **int** flight\_number;

StationClass station[] = **new** StationClass[6];

**public** **int** getTotal\_number\_of\_seats()

{

**return** total\_number\_of\_seats;

}

**public** **void** setTotal\_number\_of\_seats(**int** total\_number\_of\_seats)

{

**this**.total\_number\_of\_seats = total\_number\_of\_seats;

}

**public** GregorianCalendar getDay\_of\_the\_week()

{

**return** days\_of\_the\_week;

}

**public** **void** setDays\_of\_the\_week(GregorianCalendar days\_of\_the\_week)

{

**this**.days\_of\_the\_week = days\_of\_the\_week;

}

**public** **int** getFlight\_number()

{

**return** flight\_number;

}

**public** **void** setFlight\_number(**int** flight\_number)

{

**this**.flight\_number = flight\_number;

}

**public** RouteClass() {};

**public** RouteClass(**int** total\_number,GregorianCalendar days,**int** flight)

{

total\_number\_of\_seats = total\_number;

**this**.days\_of\_the\_week = days;

flight\_number = flight;

}

**public** **void** outputData()

{

System.***out***.println("Общее количество мест: " + total\_number\_of\_seats);

System.***out***.println("День недели: " + days\_of\_the\_week.getTime());

System.***out***.println("Номер рейса: " + flight\_number);

}

}

**public** **class** StationClass

{

**private** String station\_name;

**private** String departure\_time;

**private** String arrival\_time;

**private** String starting\_station;

**private** String terminal\_station;

**private** String intermediate\_stations;

**private** String departure\_time\_of\_intermediate\_stations;

**private** String arrival\_time\_of\_intermediate\_stations;

**private** **int** number\_of\_free\_seats;

**public** String getStation\_name()

{

**return** station\_name;

}

**public** **void** setStation\_name(String station\_name)

{

**this**.station\_name = station\_name;

}

**public** String getDeparture\_time()

{

**return** departure\_time;

}

**public** **void** setDeparture\_time(String departure\_time)

{

**this**.departure\_time = departure\_time;

}

**public** String getArrival\_time()

{

**return** arrival\_time;

}

**public** **void** setArrival\_time(String arrival\_time)

{

**this**.arrival\_time = arrival\_time;

}

**public** String getStarting\_station()

{

**return** starting\_station;

}

**public** **void** setStarting\_station(String starting\_station)

{

**this**.starting\_station = starting\_station;

}

**public** String getTerminal\_station()

{

**return** terminal\_station;

}

**public** **void** setTerminal\_station(String terminal\_station)

{

**this**.terminal\_station = terminal\_station;

}

**public** String getIntermediate\_stations()

{

**return** intermediate\_stations;

}

**public** **void** setIntermediate\_stations(String intermediate\_stations)

{

**this**.intermediate\_stations = intermediate\_stations;

}

**public** String getDeparture\_time\_of\_intermediate\_stations()

{

**return** departure\_time\_of\_intermediate\_stations;

}

**public** **void** setDeparture\_time\_of\_intermediate\_stations(String departure\_time\_of\_intermediate\_stations)

{

**this**.departure\_time\_of\_intermediate\_stations = departure\_time\_of\_intermediate\_stations;

}

**public** String getArrival\_time\_of\_intermediate\_stations()

{

**return** arrival\_time\_of\_intermediate\_stations;

}

**public** **void** setArrival\_time\_of\_intermediate\_stations(String arrival\_time\_of\_intermediate\_stations)

{

**this**.arrival\_time\_of\_intermediate\_stations = arrival\_time\_of\_intermediate\_stations;

}

**public** **int** getNumber\_of\_free\_seats()

{

**return** number\_of\_free\_seats;

}

**public** **void** setNumber\_of\_free\_seats(**int** number\_of\_free\_seats)

{

**this**.number\_of\_free\_seats = number\_of\_free\_seats;

}

**public** StationClass() {};

**public** StationClass(String name, String time,String time1,String start,String terminal,String intermediate, String time\_of\_intermediate, String time1\_of\_intermediate,**int** number)

{

**this**.station\_name = name;

**this**.departure\_time = time;

**this**.arrival\_time = time1;

**this**.starting\_station = start;

**this**.terminal\_station = terminal;

**this**.intermediate\_stations = intermediate;

**this**.departure\_time\_of\_intermediate\_stations = time\_of\_intermediate;

**this**.arrival\_time\_of\_intermediate\_stations = time1\_of\_intermediate;

**this**.number\_of\_free\_seats = number;

}

**public** **void** outputDataStation()

{

System.***out***.println("Названия станции: " + station\_name);

System.***out***.println("Время отправления: " + departure\_time);

System.***out***.println("Время прибытия: " + arrival\_time);

System.***out***.println("Начальная станция: " + starting\_station);

System.***out***.println("Конечная станция: " + terminal\_station);

System.***out***.println("Промежуточная станция: " + intermediate\_stations);

System.***out***.println("Время отправления для промежуточных станций: " + departure\_time\_of\_intermediate\_stations);

System.***out***.println("Время прибытия для промежуточных станций: " + arrival\_time\_of\_intermediate\_stations);

System.***out***.println("Количество пустых мест: " + number\_of\_free\_seats);

}

}

**public** **class** Main07

{

**public** **static** **void** main(String[] args)

{

String Station\_name1 = "Лозовая-Харьков";

String Station\_name2 = "Харьков-Гавриловка";

String Station\_name3 = "Харьков-Изюм";

String Station\_name4 = "Красноград-Харьков";

String Station\_name5 = "Мерефа-Харьков";

String Station\_name6 = "Славянск-Харьков";

String departure\_time1 = "15:24";

String departure\_time2 = "15:59";

String departure\_time3 = "06:40";

String departure\_time4 = "16:44";

String departure\_time5 = "06:58";

String departure\_time6 = "06:27";

String arrival\_time1 = "19:13";

String arrival\_time2 = "20:37";

String arrival\_time3 = "10:14";

String arrival\_time4 = "19:34";

String arrival\_time5 = "07:45";

String arrival\_time6 = "10:51";

String starting\_station1 = "Лозовая";

String starting\_station2 = "Харьков";

String starting\_station3 = "Харьков";

String starting\_station4 = "Красноград";

String starting\_station5 = "Мерефа";

String starting\_station6 = "Славянск";

String terminal\_station1 = "Харьков";

String terminal\_station2 = "Гавриловка";

String terminal\_station3 = "Изюм";

String terminal\_station4 = "Харьков";

String terminal\_station5 = "Харьков";

String terminal\_station6 = "Харьков";

String intermediate\_stations1 = "Панютино";

String intermediate\_stations2 = "Мерефа";

String intermediate\_stations3 = "Маяк";

String intermediate\_stations4 = "Власовка";

String intermediate\_stations5 = "Покотиловка";

String intermediate\_stations6 = "Гусаровка";

String departure\_time\_of\_intermediate\_stations1 = "15:35";

String departure\_time\_of\_intermediate\_stations2 = "16:43";

String departure\_time\_of\_intermediate\_stations3 = "09:24";

String departure\_time\_of\_intermediate\_stations4 = "17:37";

String departure\_time\_of\_intermediate\_stations5 = "07:25";

String departure\_time\_of\_intermediate\_stations6 = "06:56";

String arrival\_time\_of\_intermediate\_stations1 = "15:36";

String arrival\_time\_of\_intermediate\_stations2 = "16:54";

String arrival\_time\_of\_intermediate\_stations3 = "09:25";

String arrival\_time\_of\_intermediate\_stations4 = "17:38";

String arrival\_time\_of\_intermediate\_stations5 = "07:26";

String arrival\_time\_of\_intermediate\_stations6 = "06:57";

**int** number\_of\_free\_seats1 = 35;

**int** number\_of\_free\_seats2 = 48;

**int** number\_of\_free\_seats3 = 72;

**int** number\_of\_free\_seats4 = 65;

**int** number\_of\_free\_seats5 = 37;

**int** number\_of\_free\_seats6 = 86;

GregorianCalendar days\_of\_the\_week1 = **new** GregorianCalendar(2020, 10, 22);

days\_of\_the\_week1.set(Calendar.***HOUR\_OF\_DAY***, 15);

days\_of\_the\_week1.set(Calendar.***MINUTE***, 24);

days\_of\_the\_week1.set(Calendar.***SECOND***, 00);

GregorianCalendar days\_of\_the\_week2 = **new** GregorianCalendar(2020, 10, 25);

days\_of\_the\_week2.set(Calendar.***HOUR\_OF\_DAY***, 15);

days\_of\_the\_week2.set(Calendar.***MINUTE***, 59);

days\_of\_the\_week2.set(Calendar.***SECOND***, 00);

GregorianCalendar days\_of\_the\_week3 = **new** GregorianCalendar(2020, 10, 30);

days\_of\_the\_week3.set(Calendar.***HOUR\_OF\_DAY***, 6);

days\_of\_the\_week3.set(Calendar.***MINUTE***, 40);

days\_of\_the\_week3.set(Calendar.***SECOND***, 00);

GregorianCalendar days\_of\_the\_week4 = **new** GregorianCalendar(2020, 10, 22);

days\_of\_the\_week4.set(Calendar.***HOUR\_OF\_DAY***, 16);

days\_of\_the\_week4.set(Calendar.***MINUTE***, 44);

days\_of\_the\_week4.set(Calendar.***SECOND***, 00);

GregorianCalendar days\_of\_the\_week5 = **new** GregorianCalendar(2020, 10, 25);

days\_of\_the\_week5.set(Calendar.***HOUR\_OF\_DAY***, 6);

days\_of\_the\_week5.set(Calendar.***MINUTE***, 58);

days\_of\_the\_week5.set(Calendar.***SECOND***, 00);

GregorianCalendar days\_of\_the\_week6 = **new** GregorianCalendar(2020, 10, 30);

days\_of\_the\_week6.set(Calendar.***HOUR\_OF\_DAY***, 6);

days\_of\_the\_week6.set(Calendar.***MINUTE***, 27);

days\_of\_the\_week6.set(Calendar.***SECOND***, 00);

StationClass stationclass1 = **new** StationClass(Station\_name1, departure\_time1, arrival\_time1, starting\_station1, terminal\_station1, intermediate\_stations1, departure\_time\_of\_intermediate\_stations1, arrival\_time\_of\_intermediate\_stations1, number\_of\_free\_seats1);

StationClass stationclass2 = **new** StationClass(Station\_name2, departure\_time2, arrival\_time2, starting\_station2, terminal\_station2, intermediate\_stations2, departure\_time\_of\_intermediate\_stations2, arrival\_time\_of\_intermediate\_stations2, number\_of\_free\_seats2);

StationClass stationclass3 = **new** StationClass(Station\_name3, departure\_time3, arrival\_time3, starting\_station3, terminal\_station3, intermediate\_stations3, departure\_time\_of\_intermediate\_stations3, arrival\_time\_of\_intermediate\_stations3, number\_of\_free\_seats3);

StationClass stationclass4 = **new** StationClass(Station\_name4, departure\_time4, arrival\_time4, starting\_station4, terminal\_station4, intermediate\_stations4, departure\_time\_of\_intermediate\_stations4, arrival\_time\_of\_intermediate\_stations4, number\_of\_free\_seats4);

StationClass stationclass5 = **new** StationClass(Station\_name5, departure\_time5, arrival\_time5, starting\_station5, terminal\_station5, intermediate\_stations5, departure\_time\_of\_intermediate\_stations5, arrival\_time\_of\_intermediate\_stations5, number\_of\_free\_seats5);

StationClass stationclass6 = **new** StationClass(Station\_name6, departure\_time6, arrival\_time6, starting\_station6, terminal\_station6, intermediate\_stations6, departure\_time\_of\_intermediate\_stations6, arrival\_time\_of\_intermediate\_stations6, number\_of\_free\_seats6);

RouteClass routeclass1 = **new** RouteClass(150, days\_of\_the\_week1, 1);

RouteClass routeclass2 = **new** RouteClass(200, days\_of\_the\_week2, 2);

RouteClass routeclass3 = **new** RouteClass(250, days\_of\_the\_week3, 3);

RouteClass routeclass4 = **new** RouteClass(300, days\_of\_the\_week4, 4);

RouteClass routeclass5 = **new** RouteClass(270, days\_of\_the\_week5, 5);

RouteClass routeclass6 = **new** RouteClass(120, days\_of\_the\_week6, 6);

RoutesClass Route\_list = **new** RoutesClass();

Route\_list.route[0] = **new** RouteClass(150, days\_of\_the\_week1, 1);

Route\_list.route[1] = **new** RouteClass(200, days\_of\_the\_week2, 2);

Route\_list.route[2] = **new** RouteClass(250, days\_of\_the\_week3, 3);

Route\_list.route[3] = **new** RouteClass(300, days\_of\_the\_week4, 4);

Route\_list.route[4] = **new** RouteClass(270, days\_of\_the\_week5, 5);

Route\_list.route[5] = **new** RouteClass(120, days\_of\_the\_week6, 6);

RouteClass Station\_list = **new** RouteClass();

Station\_list.station[0] = **new** StationClass(Station\_name1, departure\_time1, arrival\_time1, starting\_station1, terminal\_station1, intermediate\_stations1, departure\_time\_of\_intermediate\_stations1, arrival\_time\_of\_intermediate\_stations1, number\_of\_free\_seats1);

Station\_list.station[1] = **new** StationClass(Station\_name2, departure\_time2, arrival\_time2, starting\_station2, terminal\_station2, intermediate\_stations2, departure\_time\_of\_intermediate\_stations2, arrival\_time\_of\_intermediate\_stations2, number\_of\_free\_seats2);

Station\_list.station[2] = **new** StationClass(Station\_name3, departure\_time3, arrival\_time3, starting\_station3, terminal\_station3, intermediate\_stations3, departure\_time\_of\_intermediate\_stations3, arrival\_time\_of\_intermediate\_stations3, number\_of\_free\_seats3);

Station\_list.station[3] = **new** StationClass(Station\_name4, departure\_time4, arrival\_time4, starting\_station4, terminal\_station4, intermediate\_stations4, departure\_time\_of\_intermediate\_stations4, arrival\_time\_of\_intermediate\_stations4, number\_of\_free\_seats4);

Station\_list.station[4] = **new** StationClass(Station\_name5, departure\_time5, arrival\_time5, starting\_station5, terminal\_station5, intermediate\_stations5, departure\_time\_of\_intermediate\_stations5, arrival\_time\_of\_intermediate\_stations5, number\_of\_free\_seats5);

Station\_list.station[5] = **new** StationClass(Station\_name6, departure\_time6, arrival\_time6, starting\_station6, terminal\_station6, intermediate\_stations6, departure\_time\_of\_intermediate\_stations6, arrival\_time\_of\_intermediate\_stations6, number\_of\_free\_seats6);

**for**(**int** i = 0; i < 6; i++)

{

Station\_list.station[i].outputDataStation();

Route\_list.route[i].outputData();

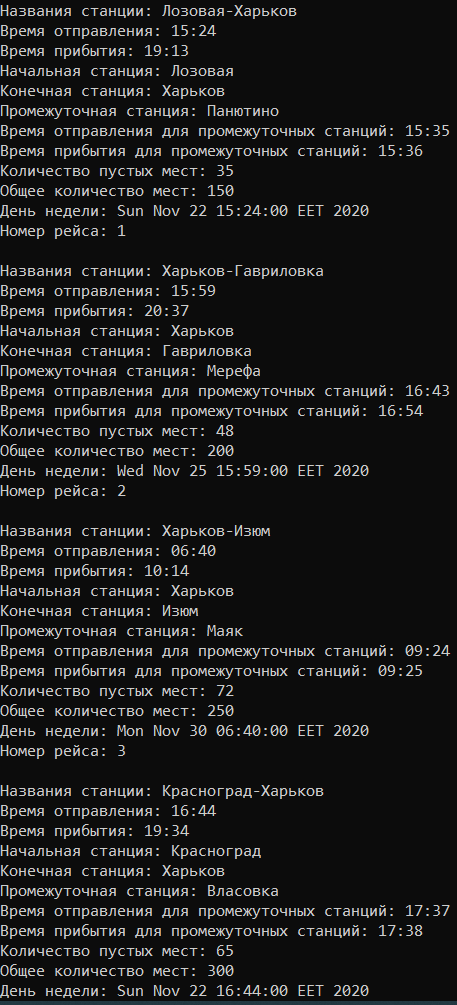
System.***out***.println();

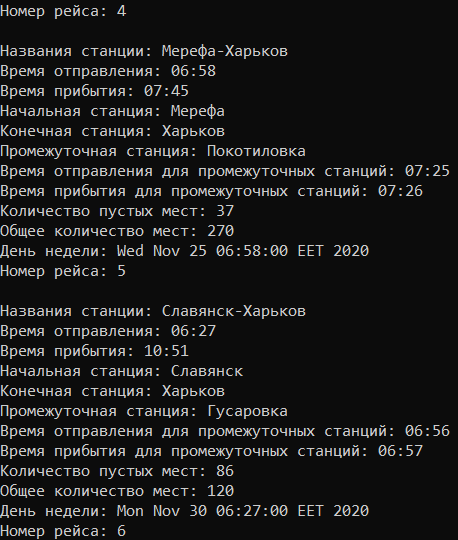
}

}

}

**Результат роботи програми:**





**Висновки**

При виконанні даної лабораторної роботи було набуто практичного досвіду роботи з об’єктно-орієнтованою декомпозицією.

Програма протестована, виконується без помилок.