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| Gerb-BMSTU_01 | **Министерство науки и высшего образования Российской Федерации**  **Федеральное государственное бюджетное образовательное учреждение**  **высшего образования**  **«Московский государственный технический университет**  **имени Н.Э. Баумана**  **(национальный исследовательский университет)»**  **(МГТУ им. Н.Э. Баумана)** |

ФАКУЛЬТЕТ Информатика и системы управления

КАФЕДРА Программное обеспечение ЭВМ и информационные технологии

**ОТЧЕТ ПО ЛАБОРАТОРНОЙ РАБОТЕ № 7**

**по курсу «Функциональное и логическое**

**программирование»**

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# Задание

Разработать свою программу - «Телефонный справочник». Абоненты могут иметь несколько телефонов. Протестировать работу программы, используя разные вопросы.

* «Телефонный справочник»: Фамилия, №тел, Адрес – структура (Город, Улица, №дома, №кв),
* «Автомобили»: Фамилия\_владельца, Марка, Цвет, Стоимость, Номер.

Владелец может иметь несколько телефонов, автомобилей (Факты). В разных городах есть однофамильцы, в одном городе – фамилия уникальна.

Используя конъюнктивное правило и простой вопрос, обеспечить возможность поиска:

* По Марке и Цвету автомобиля найти Фамилию, Город, Телефон .

# Текст программы и тесты

domains

surname = symbol.

phone = string.

city = symbol.

street = symbol.

houseNumber = integer.

apartmentNumber = integer.

address = addr(city, street, houseNumber, apartmentNumber)

car\_model = symbol.

colour = symbol.

price = integer.

number = symbol.

predicates

phonebook(surname, phone, address).

car(surname, car\_model, colour, price, number).

person(car\_model, colour, surname, phone, city).

clauses

phonebook(surname1, "89999999991", addr(city1, street1, 1, 123)).

phonebook(surname1, "89999999992", addr(city1, street1, 1, 123)).

phonebook(surname1, "89999999993", addr(city2, street12, 12, 223)).

phonebook(surname2, "89998999994", addr(city2, street1, 20, 222)).

phonebook(surname2, "89999999995", addr(city2, street1, 20, 222)).

phonebook(surname3, "89999999996", addr(city3, street3, 3, 5)).

car(surname1, m1, black, 100, qwe33q).

car(surname1, m3, black, 110, asd22r).

car(surname1, m3, red, 44, ert44t).

car(surname2, m1, black, 100, gfd44y).

car(surname2, m2, white, 200, fre34r).

car(surname2, m4, red, 200, dfg11r).

person(Marka, Colour, Surname, Phone, City):-

car(Surname, Marka, Colour, \_, \_),

phonebook(Surname, Phone, addr(City, \_, \_, \_)).

**goal**

phonebook(surname1, "89999999991", addr(city1, street1, 1, 123)).

|  |
| --- |
| yes |

phonebook(surname10, "89999999991", addr(city1, street1, 1, 123)).

|  |
| --- |
| no |

phonebook(surname1, Phone, addr(city1, street1, 1, 123)).

|  |
| --- |
| Phone=89999999991  Phone=89999999992  2 Solutions |

phonebook(Surname, Phone, addr(City, Street, Num, Anum)).

|  |
| --- |
| Surname=surname1, Phone=89999999991, City=city1, Street=street1, Num=1, Anum=123  Surname=surname1, Phone=89999999992, City=city1, Street=street1, Num=1, Anum=123  Surname=surname1, Phone=89999999993, City=city2, Street=street12, Num=12, Anum=223  Surname=surname2, Phone=89998999994, City=city2, Street=street1, Num=20, Anum=222  Surname=surname2, Phone=89999999995, City=city2, Street=street1, Num=20, Anum=222  Surname=surname3, Phone=89999999996, City=city3, Street=street3, Num=3, Anum=5  6 Solutions |

car(surname1, m1, black, 100, qwe33q).

|  |
| --- |
| yes |

car(surname1, m1, yellow, 100, qwe33q).

|  |
| --- |
| no |

car(Surname, m1, yellow, 100, Number).

|  |
| --- |
| No solution |

car(Surname, m1, black, 100, Number).

|  |
| --- |
| Surname=surname1, Number=qwe33q  Surname=surname2, Number=gfd44y  2 Solutions |

car(Surname, Model, Colour, Price, Number).

|  |
| --- |
| Surname=surname1, Model=m1, Colour=black, Price=100, Number=qwe33q  Surname=surname1, Model=m3, Colour=black, Price=110, Number=asd22r  Surname=surname1, Model=m3, Colour=red, Price=44, Number=ert44t  Surname=surname2, Model=m1, Colour=black, Price=100, Number=gfd44y  Surname=surname2, Model=m2, Colour=white, Price=200, Number=fre34r  Surname=surname2, Model=m4, Colour=red, Price=200, Number=dfg11r  6 Solutions |

person(m1, black, surname1, "89999999991", city1).

|  |
| --- |
| yes |

person(m1, yellow, surname1, "89999999991", city1).

|  |
| --- |
| no |

person(m1, black, Surname, Phone, City).

|  |
| --- |
| Surname=surname1, Phone=89999999991, City=city1  Surname=surname1, Phone=89999999992, City=city1  Surname=surname1, Phone=89999999993, City=city2  Surname=surname2, Phone=89998999994, City=city2  Surname=surname2, Phone=89999999995, City=city2  5 Solutions |

person(m10, white, Surname, Phone, City).

|  |
| --- |
| No Solution |

person(Model, Colour, surname1, "89999999993", city2).

|  |
| --- |
| Model=m1, Colour=black  Model=m3, Colour=black  Model=m3, Colour=red  3 Solutions |

person(Model, Colour, surname3, "89999999996", city3).

|  |
| --- |
| No Solution |

person(Model, Colour, Surname, Phone, City).

|  |
| --- |
| Model=m1, Colour=black, Surname=surname1, Phone=89999999991, City=city1  Model=m1, Colour=black, Surname=surname1, Phone=89999999992, City=city1  Model=m1, Colour=black, Surname=surname1, Phone=89999999993, City=city2  Model=m3, Colour=black, Surname=surname1, Phone=89999999991, City=city1  Model=m3, Colour=black, Surname=surname1, Phone=89999999992, City=city1  Model=m3, Colour=black, Surname=surname1, Phone=89999999993, City=city2  Model=m3, Colour=red, Surname=surname1, Phone=89999999991, City=city1  Model=m3, Colour=red, Surname=surname1, Phone=89999999992, City=city1  Model=m3, Colour=red, Surname=surname1, Phone=89999999993, City=city2  Model=m1, Colour=black, Surname=surname2, Phone=89998999994, City=city2  Model=m1, Colour=black, Surname=surname2, Phone=89999999995, City=city2  Model=m2, Colour=white, Surname=surname2, Phone=89998999994, City=city2  Model=m2, Colour=white, Surname=surname2, Phone=89999999995, City=city2  Model=m4, Colour=red, Surname=surname2, Phone=89998999994, City=city2  Model=m4, Colour=red, Surname=surname2, Phone=89999999995, City=city2  15 Solutions |

