

Databázové systémy

Projekt část 1

Richard Gubo

Zadanie

Vytvorenie databázovej aplikácie, ktorá rieši šesť scenárov (popísané nižšie).

Doména

Aplikácia pracuje z databázou pre námorníctvo. Jedná sa o veľmi zjednodušené opísanie lodí, ich dôstojníkov, do akých flotíl patria a ich servis. Flotily sa zúčastňujú na misiách a majú domáci prístav. Dôstojníci sú pripojení k prístavu, flotile alebo lodi.

Prostredie

Vývojové prostredie: NetBeans IDE 8.0.2 (Build 201411181905)

Java: 1.8.0_40; Java HotSpot(TM) 64-Bit Server VM 25.40-b25

Runtime: Java(TM) SE Runtime Environment 1.8.0_40-b26

PostgreSQL JDBC: postgresql-9.4.1208.jar

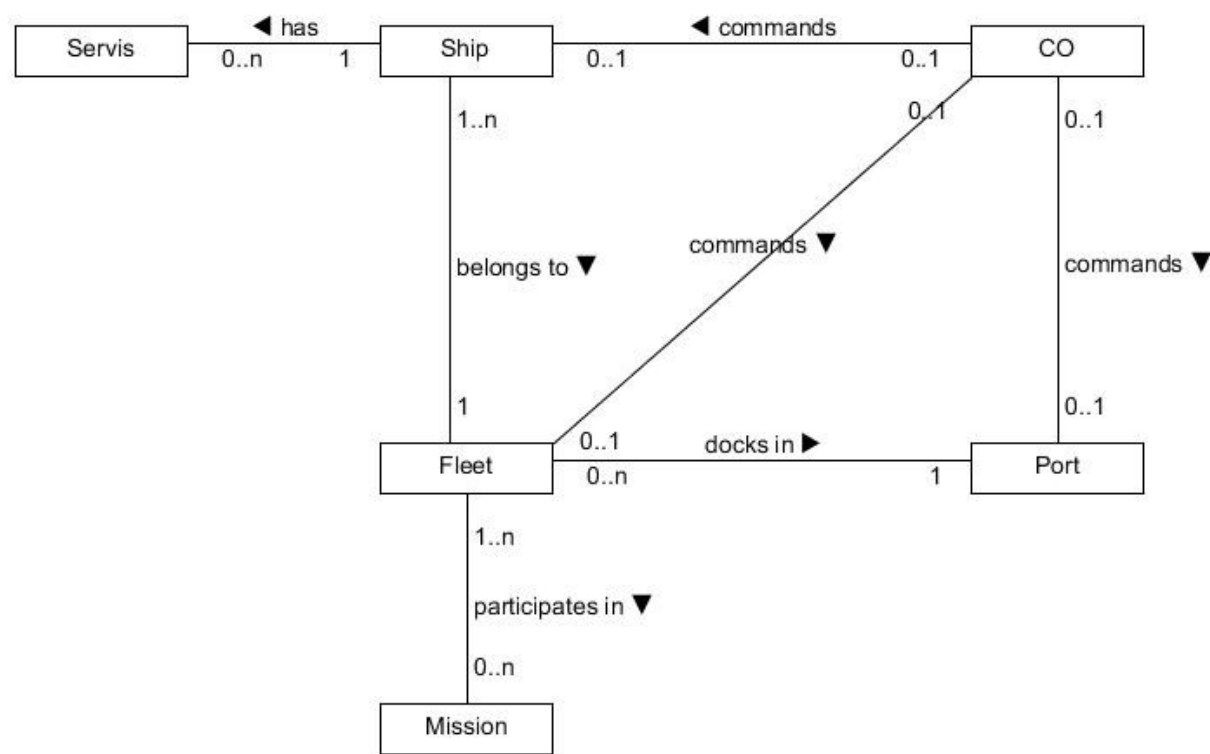
Databáza: PostgreSQL 9.5.1, compiled by Visual C++ build 1800, 64-bit

Zdroje

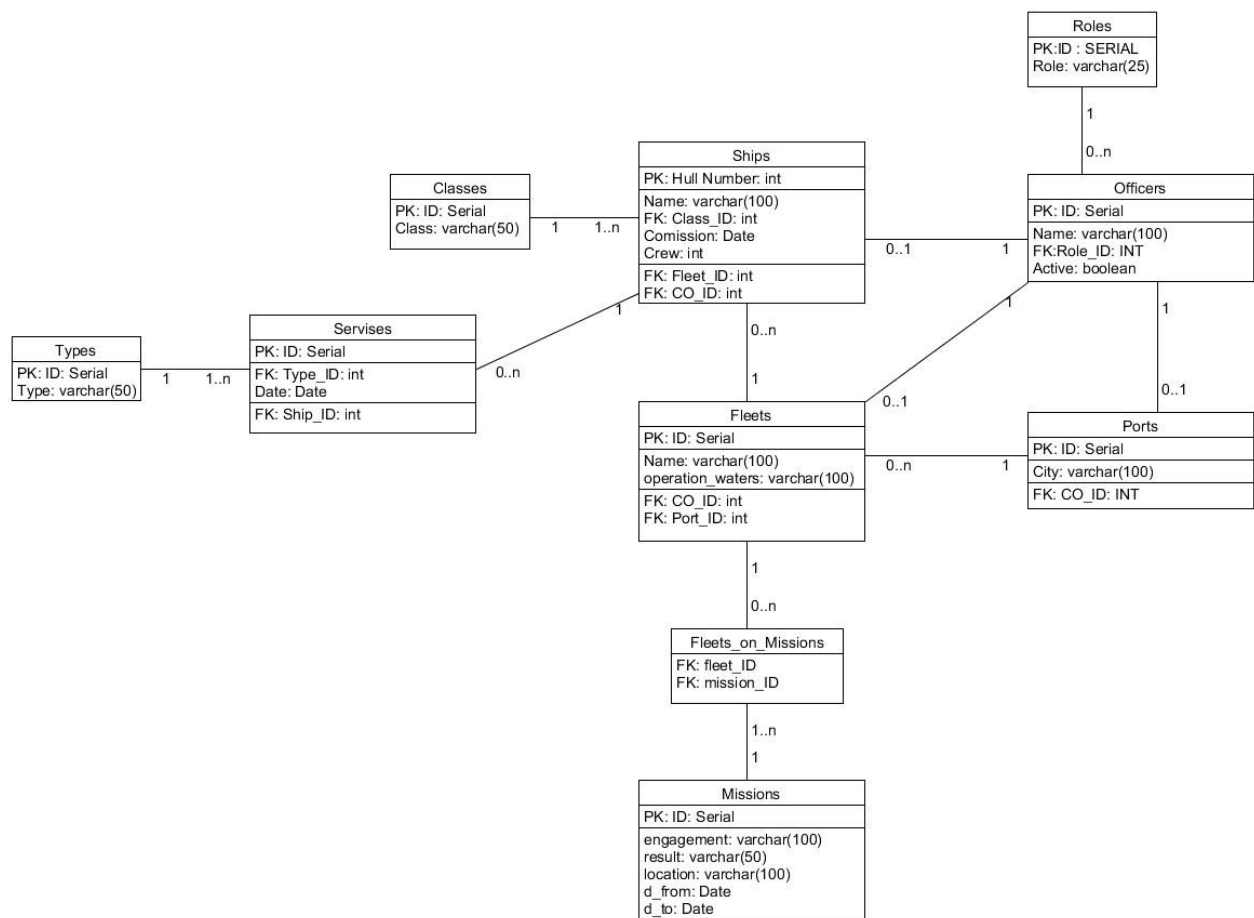
Databaza.sql – vytvorenie tabuliek

Data.sql – dáta na preskúšanie

Logický model



Fyzický model



Scenáre

Scenár 1: Vytvorenie nového záznamu

Vytvorenie lode, vytvorenie misie, vytvorenie servisného záznamu

Príklad: Vytvorenie lode

The dialog box contains the following fields and controls:

- Hull Number:** Text field with value 9878
- Name:** Text field with value Alstar
- Cpatain:** Text field with value Hector Reid
- Class:** Dropdown menu with value Nimitz
- Crew:** Text field with value 1500
- Commission:** Text field with value 10-8-1998
- Fleet:** Dropdown menu with value 1st Atlantic
- Free Captains:** A list box titled "Free Captains" containing the following names:
 - Hector Reid (highlighted)
 - Kimberly Meyer
 - Jasmine Neal
 - Opal Olson
 - Leticia Adkins
 - Alma Figueroa
 - Jerald Cruz
 - Betsy Ruiz
 - Allen Holloway
 - Fredrick Edwards
- Buttons:** Cancel and Save buttons at the bottom left.

SQL Query:

```
INSERT INTO Ships (hull_number, name, class_id, comission, crew, fleet_id, co_id) VALUES  
(Hull Number, 'Name' , class_id, 'Comission', Crew, fleet_id, cap_id );
```

fleet_id, class_id – vybraté ako index JComboBox

cap_id – nájdené podľa mena(musí existovať – voľný sú zobrazený)

Scenár 2: Aktualizácia existujúceho záznamu

Príklad: Úprava lode

The screenshot shows a software window for managing ships. On the left is a form with the following fields:

- Hull Number: 111
- Name: Nimitz
- Cptain: Dixie Dunn
- Class: Nimitz (dropdown menu)
- Crew: 1500
- Commission: 1991-05-28
- Fleet: 1st Atlantic (dropdown menu)

At the bottom left of the form are 'Cancel' and 'Save' buttons. A red arrow points to the 'Save' button.

On the right side of the window is a table titled 'Services' with the following data:

Id	Servis	Date
18	Supply restock	2012-07-15
15	Supply restock	2013-07-01
20	Ammunition restock	2014-12-05
13	Engine Check	2015-10-10

At the bottom right of the window are buttons for 'New', 'ID:' (with an input field), and 'Delete'.

SQL Query:

UPDATE Ships

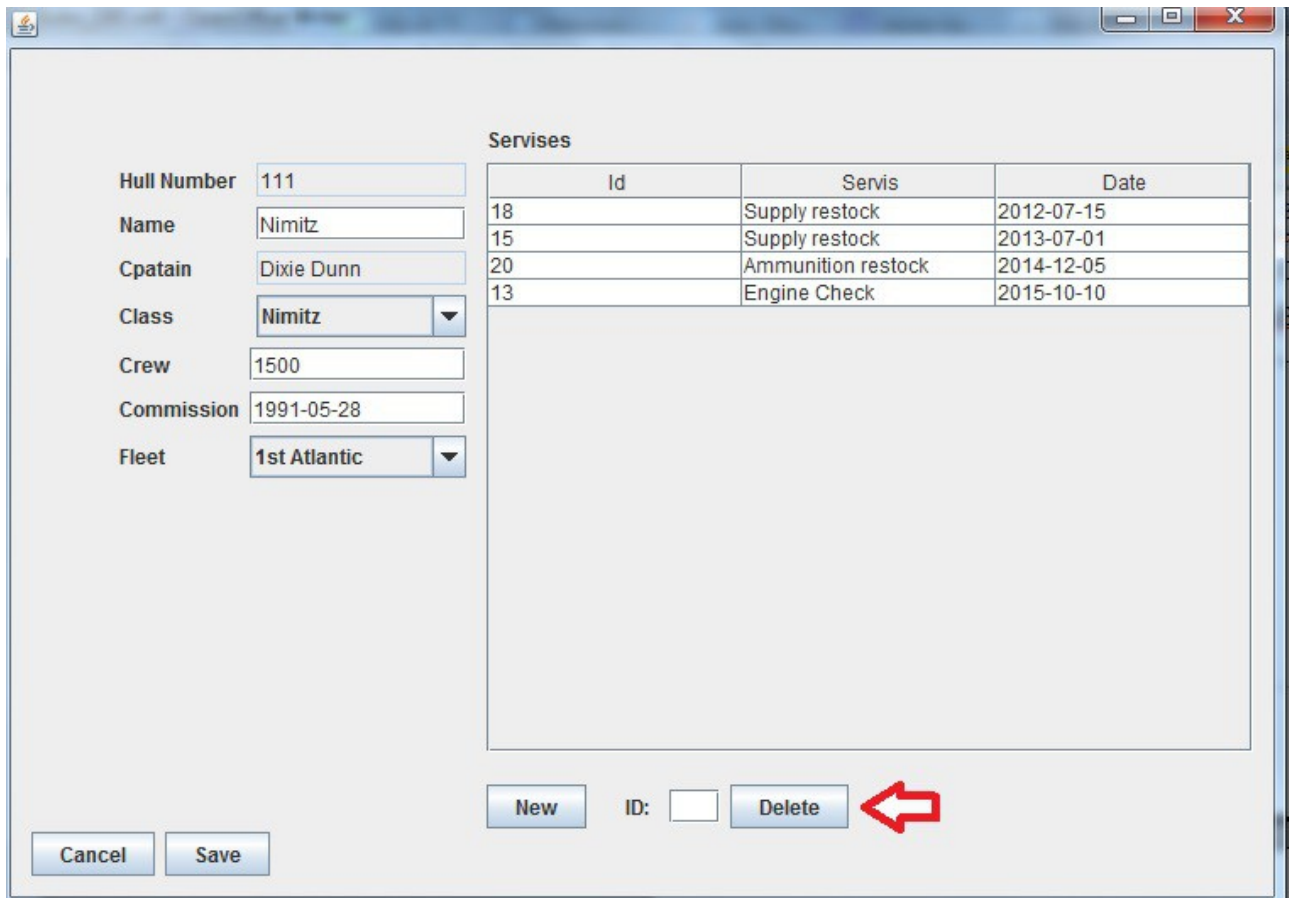
SET name = 'name', class_id = cla , comission = 'dat', crew = crew, fleet_id = fleet

WHERE Ships.hull_number = Hull Number;

Scenár 3: Vymazanie záznamu

Vymazanie lode, vymazanie misie, vymazanie servisu

Príklad: Vymazanie servisu



The screenshot shows a database application window with a form on the left and a table on the right. The form contains fields for ship details: Hull Number (111), Name (Nimitz), Cptain (Dixie Dunn), Class (Nimitz), Crew (1500), Commission (1991-05-28), and Fleet (1st Atlantic). The table, titled 'Services', has columns for Id, Servis, and Date. It contains four rows of service records. At the bottom, there are buttons for 'Cancel', 'Save', 'New', and 'Delete'. A red arrow points to the 'Delete' button, indicating the action to be performed.

Id	Servis	Date
18	Supply restock	2012-07-15
15	Supply restock	2013-07-01
20	Ammunition restock	2014-12-05
13	Engine Check	2015-10-10

SQL Query: DELETE FROM Servises WHERE Servises.id = id;

Scenár 4: Zobrazenie prehľadu viacerých záznamov (spolu vybranou základnou štatistikou)

Zobrazenie dôstojníkov, zobrazenie misií, zobrazenie misií pre flotilu, zobrazenie lodí, zobrazenie lodí pre flotilu, zobrazenie servisov pre loď, zobrazenie prístavov(počet flotíl v prístave), zobrazenie flotily(počet lodí vo flotile)

Príklad: Zobrazenie flotily(počet lodí vo flotile)

The screenshot shows a web application interface. On the left, there is a table with the following data:

Id	Name	Operation Wat...	Admiral	Home Port	No. of Ships
1	1st Atlantic Fle...	North Atlantic	Marcella Price	Norfolk	3
2	2nd Atlantic Fl...	Middle Atlantic	Elisa Lopez	Norfolk	3
3	3rd Atlantic Fl...	South Atlantic	Janet Anderson	Oxnard	3
4	1st Pacific Fleet	North Pacific	Thelma Beck	Everett	3
5	2nd Pacific Fl...	South Pacific	Alice Carroll	Everett	3

A red circle highlights the 'No. of Ships' column. To the right of the table, there is a 'Refresh' button. Below the table, there is a large empty rectangular area. On the right side of the interface, there are several controls: a 'No of Ships' input field with a value of '0' and a 'NONE' dropdown menu, a 'Port' dropdown menu with 'None' selected, a 'Filter' button, an 'ID' input field with a 'Show' button, an 'All Missions' button, and a 'Back' button at the bottom right.

SQL Query:

```
SELECT Fleets.id as "Id", Fleets.name as "Name", Fleets.operation_waters as "Operation Waters",  
Officers.name as "Admiral", Ports.city as "Home Port", count(Ships.hull_number) as "No. of Ships"  
FROM Fleets
```

```
LEFT JOIN Officers ON Fleets.co_id = Officers.id
```

```
LEFT JOIN Ships ON Ships.fleet_id = Fleets.id
```

```
LEFT JOIN Ports ON Fleets.port_id = Ports.id
```

```
GROUP BY Fleets.id, Fleets.name, Fleets.operation_waters, Officers.name, Ports.city
```

```
ORDER BY Fleets.id;
```

Scenár 5: Zobrazenie konkrétneho záznamu

Zobrazenie lode, zobrazenie flotily

The screenshot shows a web application window with a title bar. Inside, there are several input fields and buttons. On the left, there are four labeled input fields: 'Name' with '1st Atlantic Fleet', 'Port' with 'Norfolk', 'Admiral' with 'Marcella Price', and 'Waters' with 'North Atlantic'. Below these are two buttons: 'Missions' and 'Back'. On the right, there is a table with two columns: 'Name' and 'Hull number'. The table contains three rows of data: 'Nimitz' with '111', 'Malevolence' with '666', and 'Normady' with '852'.

Name	Hull number
Nimitz	111
Malevolence	666
Normady	852

SQL Query:

```
SELECT Fleets.name as "Name", Fleets.operation_waters as "Operation Waters", Officers.name as "Admiral", Ports.city as "Home Port" FROM Fleets  
LEFT JOIN Officers ON Fleets.co_id = Officers.id  
LEFT JOIN Ports ON Fleets.port_id = Ports.id  
WHERE Fleets.id = id  
GROUP BY Fleets.id, Fleets.name, Fleets.operation_waters, Officers.name, Ports.city  
ORDER BY Fleets.id;
```


Scenár 6: Filtrovanie záznamov spĺňajúcich určité kritériá zadané používateľom

Filtrovanie pri všetkých lodiach, flotilách a dôstojníkch

Príklad: Filtrovanie lodí

Id	Name	Operation Wat...	Admiral	Home Port	No. of Ships
1	1st Atlantic Fle...	North Atlantic	Marcella Price	Norfolk	3
2	2nd Atlantic Fl...	Middle Atlantic	Elisa Lopez	Norfolk	3
3	3rd Atlantic Fl...	South Atlantic	Janet Anderson	Oxnard	3
4	1st Pacific Fleet	North Pacific	Thelma Beck	Everett	3
5	2nd Pacific Fl...	South Pacific	Alice Carroll	Everett	3

Refresh

No of Ships NONE ▾

Port ▾

Filter

- None
- Norfolk
- Oxnard
- Everett

ID

Show

All Missions

Back

SQL Query: pridanie WHERE a Having

```
if (ships == "NONE" && port == "None") {  
    ship = "";  
    ports = "";  
}
```

```
if (ships == "NONE" && port != "None"){  
    ship = "";  
    ports = "WHERE Ports.city = " + port + "";  
}
```

```
if (ships != "NONE" && port == "None"){  
    ports = "";  
    if (ships == "<") ship = "HAVING count(Ships.hull_number) < " + count;  
    if (ships == ">") ship = "HAVING count(Ships.hull_number) > " + count;  
    if (ships == "=") ship = "HAVING count(Ships.hull_number) = " + count;  
}
```

```
if (ships != "NONE" && port != "None"){  
    ports = "WHERE Ports.city = " + port + "";  
    if (ships == "<") ship = "HAVING count(Ships.hull_number) < " + count;  
    if (ships == ">") ship = "HAVING count(Ships.hull_number) > " + count;  
    if (ships == "=") ship = "HAVING count(Ships.hull_number) = " + count;  
}
```