

**Ispit iz predmeta IT350 – Baze podataka**

**27.06.2018.**

*Ispit traje 150 minuta*

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| --- | --- | --- | --- | --- | --- |
| *Ime i prezime* | *Broj indeksa* | *Zadatak 1* | *Zadatak 2* | *Zadatak 3* | *Ukupno* |
|  |  |  |  |  |  |

***Napomene:***

1. Da bi se ispit položio, neophodno je osvojiti minimalno ***10 poena*** na zadacima i minimalno ***5 poena*** na teorijskim pitanjima.
2. Za vreme ispita nije dozvoljeno korišćenje mobilnih telefona ili drugih komunikacionih uređaja, kao ni Interneta.
3. Za izradu konceptualnog modela koristiti *PowerDesigner*.
4. DDL naredbe iz zadatka 1 i upite iz zadatka 2 sačuvati kao .sql fajl.
5. Sve fajlove imenujete na sledeći način: IT350-JunA-2018-BrInd-ImePrezime-RedniBrojZadatka. Npr.

*IT350-JunA-2018-1234-VeljkoGrkovic-Zad1a*

Fajlove smeštate u folder sa nazivom ***IT350-JunA-2018-BrInd-ImePrezime***, a pre predaje radova folder arhivirati. **Nepravilno imenovani radovi neće biti pregledavani.**

1. Po završetku, javite se dežurnom profesoru/asistentu koji će od vas preuzeti vaš rad. **Slanje radova mail-om nije dozvoljeno.**

***Zadaci i pitanja:***

1. **Zadatak (10 poena):** Data je tabela *Songs* kao deo aplikacije za prodaju muzičkih numera. Na osnovu datog, sprovesti normalizaciju date relacije do BCNF i za dobijeni normalizovani logički model:
   1. Napisati DDL naredbe kojim se kreiraju tabele relacione baze podataka
   2. Nacrtati konceptualni model baze podataka korišćenjem E/R dijagrama.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **id** | **asrtist band** | **album** | **song** | **order number** | **order**  **date** | **cust**  **id** | **cust**  **name** | **cust account\_no** |
| 1231 | Red Hot  Chilli  Peppers | Blood Sugar Sex Magik | 01. "The Power of Equality", (04:03) - Kiedis, Flea | 121 | 20.06.2018. | 3213 | John Doe | a545a53210 |
| 1232 | Red Hot  Chilli  Peppers | Blood Sugar Sex Magik | 02. "If You Have to Ask",  (03:37) - Kiedis, Smith, Flea | 122 | 29.06.2018. | 3281 | Jane Doe | v458s8943 |
| 1233 | Red Hot  Chilli  Peppers | Blood Sugar Sex Magik | 09. "Give It Away",  (4:43) - Kiedis, Smith, Flea | 123 | 25.06.2018. | 3213 | John Doe | a545a53210 |
| 1234 | Red Hot  Chilli  Peppers | Blood Sugar Sex Magik | 10. "Blood Sugar Sex Magik", (4:31) - Kiedis, Smith, Flea | 124 | 10.06.2018. | 3281 | Jane Doe | v458s8943 |
| 1235 | Red Hot  Chilli  Peppers | Blood Sugar Sex Magik | 11. "Under the Bridge",  (4:24) - Kiedis, Smith, Frusciante | 125 | 16.06.2018. | 3213 | John Doe | a545a53210 |
| 1236 | Red Hot  Chilli  Peppers | Californication | 04. "Otherside",  (4:15) - Kiedis, Smith, Frusciante | 126 | 11.06.2018. | 3213 | John Doe | a545a53210 |
| 1237 | Red Hot  Chilli  Peppers | Californication | 05. "Get on top",  (4:24) - Kiedis, Flea, Frusciante | 127 | 01.06.2018. | 3281 | Jane Doe | v458s8943 |
| 1238 | Red Hot  Chilli  Peppers | Californication | 07. "Easily",  (3:51) - Kiedis, Smith, Flea | 128 | 30.06.2018. | 3281 | Jane Doe | v458s8943 |

*Tabela 1. Songs*

Napomena: U koloni song (npr. 01. "The Power of Equality", (04:03) - Kiedis, Flea) je zapis pesme sa albuma, a redom podaci su: redni broj pesme na albumu, naziv pesme, trajenje pesme, autori pesme

1. **Zadatak (10 poena):** Na osnovu fizičkog modela baze podataka (model avio-kompanije), datog na slici 2., generisane su skripte za kreiranje baze podataka i unos test podataka. Izvršite priložene skripte i nad generisanom bazom izvršite sledeće:

* 1. **(1.5 poena)** U tabeli ***pax*** dodati proveru da *ClassID* ne može biti van skupa ID-ijeva u tabeli *class.*[ALTER](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/alter-table.html) [TABLE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/alter-table.html) `Pax` ADD FOREIGN KEY (`ClassID`) REFERENCES `Class`(`ClassID`)

* 1. **(1.5 poena)** U tabeli „class“ dodati novi zapis ***„Lux“***. Zameniti u tabelama „***pax***“, „***fligtclass***“ i „***stats***“ sva pojavljivanja klase tipa „***Platinum***“ klasom koju ste dodali.   
       
     INSERT INTO `Class` (`className`) VALUES (‘Lux’);  
       
     [UPDATE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/update.html) `Pax` [SET](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/set.html) `Pax`.`ClassID` = ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `ClassID` FROM `Class` WHERE `class`.`ClassName` = 'Lux') WHERE `Pax`.`ClassID` = ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `ClassID` FROM `Class` WHERE `class`.`ClassName` = 'Platinum');  
       
     UPDATE `FlightClass` SET `FlightClass`.`ClassID` = (SELECT `ClassID` FROM `Class` WHERE `class`.`ClassName` = 'Lux') WHERE `FlightClass`.`ClassID` = (SELECT `ClassID` FROM `Class` WHERE `class`.`ClassName` = 'Platinum');  
       
     UPDATE `Stats` SET `Stats`.`ClassID` = (SELECT `ClassID` FROM `Class` WHERE `class`.`ClassName` = 'Lux') WHERE `Stats`.`ClassID` = (SELECT `ClassID` FROM `Class` WHERE `class`.`ClassName` = 'Platinum');

* 1. **(2 poena)** Naći nazive svih aviona, kao i ukupan broj tih aviona, koje koristi avio kompanija, uređene opadajući, koristeći *LEFT JOIN*.   
       
     [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `aircraftTYPE`.`AircraftTypeID`,`aircraftTYPE`.`AIRCRAFTNAME`, [COUNT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/group-by-functions.html#function_count)(aircraft.AircraftTypeID) AS `count` FROM `aircrafttype` [LEFT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/string-functions.html#function_left) JOIN `Aircraft` ON `Aircraft`.`AircraftTypeID` = `aircraftTYPE`.`AircraftTypeID` GROUP BY `AircraftName` ORDER BY `AIRCRAFTNAME` DESC

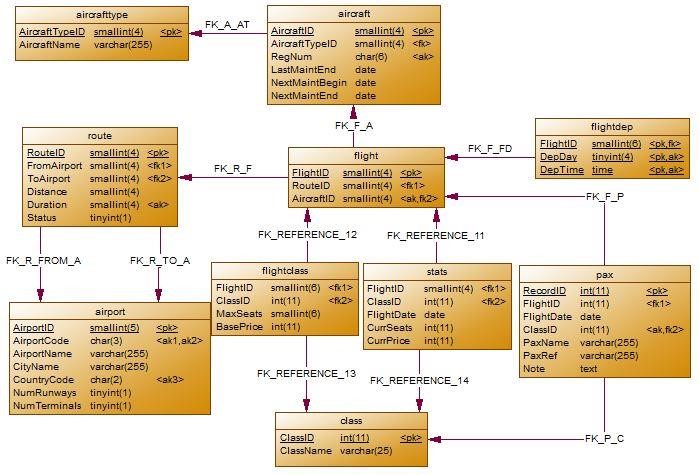
* 1. **(2 poena)** Napraviti ***view*** *RasporedLetova* koji sadrži nedeljni raspored letova aviokompanije.   
       
     CREATE VIEW `RasporedLetova` AS

SELECT \*

FROM `flightdep`

ORDER BY `DepDay`, `DepTime`;

* 1. **(3 poena)** Koristeći dobijeni rezultat u predhodnom zadatku (view RasporedLetova), napisati upit kojim ćete prikazati listu svih letova petkom, subotom i nedeljom sa aerodroma “Orly” u Parizu ili “Côte d'Azur “ u Nici, između 9:00 i 15:00 časova. Rezultat urediti rastuće po danu i vremenu poslaska.   
     [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `rasporedletova`.\* FROM `rasporedletova` WHERE `rasporedletova`.`FlightID` [IN](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/comparison-operators.html#function_in) ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `flight`.`FlightID` FROM flight WHERE FLIGHT.RouteID [IN](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/comparison-operators.html#function_in) ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `ROUTE`.`RouteID` FROM `ROUTE` WHERE `route`.`RouteID` [IN](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/comparison-operators.html#function_in) ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `fLIGHT`.`RouteID` FROM `flighT` WHERE `FLIGHT`.`FlightID` [IN](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/comparison-operators.html#function_in) ( [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `FLIGHTID` FROM ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) \* FROM `rasporedletova` WHERE (`DepDay` = '5' [OR](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_or) `DepDay` = '6' [OR](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_or) `DepDay` = '7') [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_and) (CAST(`DepTime` as [time](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/date-and-time-types.html)) >= '09:00:00' [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_and) CAST(`DepTime` as [time](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/date-and-time-types.html)) < '15:00:00') ) `tmp` )) [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_and) `ROUTE`.`FromAirport` = ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `airport`.`AirportID` FROM `airport` WHERE `AIRPORT`.`AirportName` [LIKE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/string-comparison-functions.html#operator_like) '%Orly%' [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_and) `airport`.`CityName` = 'Paris') [OR](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_or) `ROUTE`.`FromAirport` = ([SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/select.html) `airport`.`AirportID` FROM `airport` WHERE `AIRPORT`.`AirportName` [LIKE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/string-comparison-functions.html#operator_like) "%Côte d'Azur%" [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/5.5/en/logical-operators.html#operator_and) `airport`.`CityName` = 'Nice'))) ORDER BY rasporedletova.DepDay, rasporedletova.DepTime;



*Slika 2. – Fiziki model baze podataka*

1. **Pitanja (10 poena):** Odgovoriti na sledeća pitanja.
2. **(2,5 poena)** Objasnite i navedite primer *Deadlock-a*.

1. **(2,5 poena)** Kako se koriste After image, a kako Before image pri opravku baza podataka?

1. **(2,5 poena)** Šta se rešava objektno-relacionim mapiranjem?

1. **(2,5 poena)** Na osnovu date relacione baze podataka kreirati XML dokument.

