



Univerzitet u Novom Sadu Tehnički  
fakultet „Mihajlo Pupin” Zrenjanin



## SEMINARSKI RAD

# AUTOŠKOLA

Predmet:

Arhitektura sistema za rukovanje bazama podataka

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## Sadržaj:

<u>Uvod.....</u>	<u>4</u>
<u>Kreiranje baze podataka.....</u>	<u>5</u>
<u>DDL (Data Definition Language) SQL.....</u>	<u>5</u>
<u>CREATE.....</u>	<u>5</u>
<u>ALTER.....</u>	<u>9</u>
<u>DROP.....</u>	<u>15</u>
<u>Prikaz šeme baze podataka (dijagram tabela sa poveznicima).....</u>	<u>20</u>
<u>Rečnik podataka(Data Dictionary).....</u>	<u>20</u>
<u>Prikaz DDL SQL skripte.....</u>	<u>24</u>
<u>Manipulacija podacima i elementarno ažuriranje baze podataka DML (Data manipulation language) SQL.....</u>	<u>30</u>
<u>INSERT.....</u>	<u>30</u>
<u>SELECT.....</u>	<u>47</u>
<u>UPDATE.....</u>	<u>52</u>
<u>DELETE DELETE.....</u>	<u>53</u>
<u>VIEW.....</u>	<u>53</u>
<u>STORED PROCEDURE.....</u>	<u>54</u>
<u>TRIGGER.....</u>	<u>54</u>
<u>Rad sa korisnicima baze podataka - DCL (Data Control Language).....</u>	<u>57</u>
<u>USERS.....</u>	<u>57</u>
<u>GRANT.....</u>	<u>58</u>
<u>REVOKE.....</u>	<u>58</u>
<u>DROP USERS.....</u>	<u>59</u>
<u>Obrada transakcija i zaključavanje baze podataka - TCL (Transaction Control Language), kontrola i upravljanje transakcijama.....</u>	<u>60</u>
<u>Opis softvera za rukovanje bazama podataka: SQL.....</u>	<u>64</u>
<u>Zaključak.....</u>	<u>65</u>
<u>Literatura.....</u>	<u>67</u>

## **Uvod**

U seminarskom radu je prikazana SQL baza podataka kreirana pomoću SQL Server Management Studio(SSMS). Tema je 'Autoškola' i omogućava čuvanje prijavljenih kandidata, predavača, instruktora vožnje, ispitnih zadataka, ocena na ispitu, kao i čuvanje legitimacija sa svim podacima o kandidatu i ispitu.

## Kreiranje baze podataka

### DDL (Data Definition Language) SQL

Version of SQL(Microsoft SQL Server 2019)

Any service packs presently installed (RTM)

Major/Minor build version (15.0.2000.5)

Bitness (X64)

#### CREATE

```
--  
-- Creating database 'Autoskola'  
--  
CREATE DATABASE Autoskola  
  
--  
-- Table structure for table 'Skola'  
--  
CREATE TABLE Skola(  
    SkolaId varchar(50) NOT NULL,  
    Naziv varchar(50) NOT NULL,  
    Grad varchar(50) NOT NULL,  
    UlicaBroj varchar(70) NOT NULL,  
    ClanKomisijeId int IDENTITY(1,1) NOT NULL  
)  
  
--  
-- Table structure for table 'Kandidat'  
--  
CREATE TABLE Kandidat(  
    KandidatId varchar(15) NOT NULL,  
    Ime varchar(50) NOT NULL,  
    Prezime varchar(40) NOT NULL,  
    Email varchar(50) NULL,  
    DatumRodjenja [date] NOT NULL,  
    Kategorija varchar(30) NOT NULL  
)  
  
--  
-- Table structure for table 'Zadatak'  
--  
CREATE TABLE Zadatak(  
    ZadatakId int NOT NULL,  
    IspitniZadatak varchar(90) NOT NULL)
```

```

--
-- Table structure for table 'Zaposlen'
-- AUTOINCREMENT for table 'Zaposlen'
--
CREATE TABLE Zaposlen(
    Id int IDENTITY(1,1) NOT NULL,
    Zanimanje varchar(80) NOT NULL,
    Ime varchar(30) NOT NULL,
    Prezime varchar(40) NOT NULL,
    SkolaId varchar(50) NOT NULL,
    Licenca bit NOT NULL
)
--
-- Table structure for table 'ClanKomisije'
-- AUTOINCREMENT for table 'ClanKomisije'
--
CREATE TABLE ClanKomisije(
    ClanKomisijeId int IDENTITY(1,1) NOT NULL,
    Ime nvarchar(30) NOT NULL,
    Prezime nvarchar(40) NOT NULL,
)
--
-- Table structure for table 'Legitimacija'
--
CREATE TABLE Legitimacija( LegitimacijaId
    int NOT NULL, ImeKandidata
    varchar(30) NOT NULL,
    PrezimeKandidata varchar(40) NOT NULL,
    ZaposlenId int NOT NULL,
    ClanKomisijeId int NOT NULL
)
--
-- Table structure for table 'Ispit'
--
CREATE TABLE Ispit(
    IspitId int NOT NULL,
    Rezultat bit NOT NULL,
    ClanKomisijeId int NOT NULL,
    KandidatId varchar(15) NOT NULL
)
--
-- Table structure for table 'IspitZadatak'
--
CREATE TABLE IspitZadatak(
    ZadatakId int NOT NULL,

```

```

IspitId int NOT NULL)
ALTER
--
-- Indexes for dumped tables
--
--
-- Indexes for table 'ClanKomisije'--
--
ALTER TABLE ClanKomisije
ADD PRIMARY KEY (ClanKomisijeId)

--
-- Indexes for table 'Skola'--
--
ALTER TABLE Skola
ADD PRIMARY KEY (SkolaId),
FOREIGN KEY (ClanKomisijeId) REFERENCES ClanKomisije(ClanKomisijeId)

--
-- Alter column into table 'Kandidat'--
--
ALTER TABLE Kandidat
ALTER COLUMN Ime varchar(30) NOT NULL

--
-- Indexes for table 'Kandidat'--
--
ALTER TABLE Kandidat
ADD PRIMARY KEY (KandidatId)

--
-- Indexes for table 'Zadatak'--
--
ALTER TABLE Zadatak
ADD PRIMARY KEY (ZadatakId)

--
-- Indexes for table 'Zaposlen'--
--
ALTER TABLE Zaposlen
ADD PRIMARY KEY (Id),
FOREIGN KEY (SkolaId) REFERENCES Skola(SkolaId)

--
-- Indexes for table 'Legitimacija'--
--
ALTER TABLE Legitimacija

```

```

ADD PRIMARY KEY (LegitimacijaId),
FOREIGN KEY (ZaposlenId) REFERENCES Zaposlen(Id),
KandidatId varchar(15) NOT NULL UNIQUE FOREIGN KEY REFERENCES
Kandidat(KandidatId),
FOREIGN KEY (ClanKomisijeId) REFERENCES ClanKomisije(ClanKomisijeId)

--
-- Indexes for table 'Ispit'
--
ALTER TABLE Ispit
ADD PRIMARY KEY (IspitId),
FOREIGN KEY (ClanKomisijeId) REFERENCES ClanKomisije(ClanKomisijeId),
FOREIGN KEY (KandidatId) REFERENCES Kandidat(KandidatId)

--
-- Indexes for table 'IspitZadatak'
--
ALTER TABLE IspitZadatak
ADD FOREIGN KEY (ZadatakId) REFERENCES Zadatak(ZadatakId) ,
FOREIGN KEY (IspitId) REFERENCES Ispit(IspitId)

--
-- Constraints for dumped tables
--

--
-- Constraints for table 'Zaposlen'
--
ALTER TABLE Zaposlen WITH CHECK ADD CONSTRAINT SkolaId_2 FOREIGN
KEY(SkolaId)
REFERENCES Skola (SkolaId)
ON UPDATE CASCADE
ON DELETE CASCADE
GO

--
-- Constraints for table 'IspitZadatak'
--
ALTER TABLE IspitZadatak WITH CHECK ADD CONSTRAINT ['5'] FOREIGN
KEY(IspitId)
REFERENCES Ispit (IspitId)
ON UPDATE CASCADE
ON DELETE CASCADE,
FOREIGN KEY(ZadatakId)
REFERENCES Zadatak (ZadatakId)
ON UPDATE CASCADE
ON DELETE CASCADE
GO

```

```

-- Constraints for table 'Ispit'
--
ALTER TABLE Ispit WITH CHECK ADD CONSTRAINT ['7'] FOREIGN
KEY(ClanKomisijeId)
REFERENCES ClanKomisije (ClanKomisijeId)
ON UPDATE CASCADE
ON DELETE CASCADE

--
-- Constraints for table 'Ispit'
--
ALTER TABLE Ispit WITH CHECK ADD CONSTRAINT Id_4 FOREIGN
KEY(KandidatId)
REFERENCES Kandidat (KandidatId)
ON UPDATE CASCADE
ON DELETE CASCADE

--
-- Constraints for table 'Legitimacija'
--
ALTER TABLE Legitimacija WITH CHECK ADD CONSTRAINT Id_7 FOREIGN
KEY(KandidatId)
REFERENCES Kandidat (KandidatId)
ON UPDATE CASCADE
ON DELETE CASCADE
GO

--
-- Constraints for table 'Legitimacija'
--
ALTER TABLE Legitimacija WITH CHECK ADD CONSTRAINT ['8'] FOREIGN
KEY(ZaposlenId)
REFERENCES Zaposlen(Id) ON UPDATE NO ACTION ,
FOREIGN KEY(ClanKomisijeId)
REFERENCES ClanKomisije (ClanKomisijeId) ON UPDATE NO ACTION
GO

DROP

--
-- Delete table 'Legitimacija'
--
DROP TABLE IF EXISTS dbo.Legitimacija

--
-- Delete table 'IspitZadatak'
--
DROP TABLE IF EXISTS dbo.IspitZadatak

```



```
-- Delete table 'Ispit'
--
DROP TABLE IF EXISTS dbo.Ispit

--
--Delete table 'Kandidat'
--
DROP TABLE IF EXISTS dbo.Kandidat

--
-- Delete table 'Zadatak'
--
DROP TABLE IF EXISTS dbo.Zadatak

--
-- Delete table 'ClanKomisije'
--
DROP TABLE IF EXISTS dbo.ClanKomisije

--
-- Delete table 'Zaposlen'
--
DROP TABLE IF EXISTS dbo.Zaposlen

--
-- Delete table 'Skola'
--
DROP TABLE IF EXISTS dbo.Skola

--
-- Delete column 'Email' into table 'Kandidat'
--
ALTER TABLE dbo.Kandidat
DROP COLUMN Email

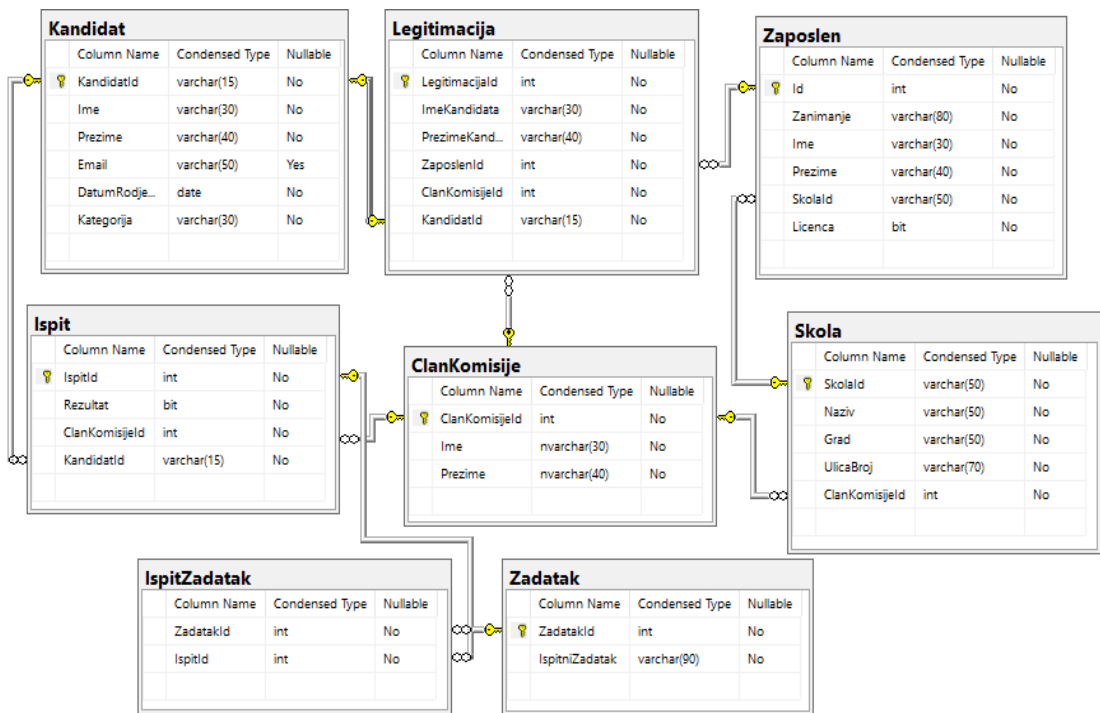
--
-- Delete database Autoskola
--
DROP DATABASE Autoskola;

--
-- Drop constraint
--
ALTER TABLE Legitimacija
DROP CONSTRAINT Id_7;

--
-- Drop constraint
--
```

```
ALTER TABLE Ispit  
DROP CONSTRAINT Id_4;
```

## Prikaz šeme baze podataka (dijagram tabela sa poveznicima)



## Rečnik podataka(Data Dictionary)

### Table dbo.ClanKomisije

	Column	Data Type	Identity	Nullable	Default
<b>PK</b>	ClanKomisijeId	int	X		
	Ime	nvarchar(30)			
	Prezime	nvarchar(40)			

### Indexes:

**PK\_\_ClanKomi\_\_7D5C848ADCB53F0A** (Primary Key) (Clustered)

ClanKomisijeId

### Referenced by:

**dbo.Ispit** (ClanKomisijeId)

**dbo.Legitimacija** (ClanKomisijeId)

**dbo.Skola** (ClanKomisijeId)

### **Table dbo.Ispit**

	Column	Data Type	Identity	Nullable	Default
<b>PK</b>	IspitId	int			
	Rezultat	bit			
<b>FK</b>	ClanKomisijeId	int			
<b>FK</b>	KandidatId	varchar(15)			

#### **Indexes:**

**PK\_\_Ispit\_\_2F2104AD175BC09D** (Primary Key) (Clustered)

IspitId

#### **References:**

**dbo.ClanKomisije** (ClanKomisijeId)

**dbo.Kandidat** (KandidatId)

#### **Referenced by:**

**dbo.IspitZadatak** (IspitId)

### **Table dbo.IspitZadatak**

	Column	Data Type	Identity	Nullable	Default
<b>FK</b>	ZadatakId	int			
<b>FK</b>	IspitId	int			

#### **References:**

**dbo.Ispit** (IspitId)

**dbo.Zadatak** (ZadatakId)

### **Table dbo.Zadatak**

	Column	Data Type	Identity	Nullable	Default
<b>PK</b>	ZadatakId	int			
	IspitniZadatak	varchar(90)			

#### **Indexes:**

**PK\_\_Zadatak\_\_EA89E6454975FF6D** (Primary Key) (Clustered)

ZadatakId

#### **Referenced by:**

**dbo.IspitZadatak** (ZadatakId)

## Table **dbo.Kandidat**

	Column	Data Type	Identity	Nullable	Default
<b>PK</b>	KandidatId	varchar(15)			
	Ime	varchar(30)			
	Prezime	varchar(40)			
	Email	varchar(50)		X	
	DatumRodjenja	date			
	Kategorija	varchar(30)			

### Indexes:

**PK\_\_Kandidat\_\_5F7D602B91B37798** (Primary Key) (Clustered)

KandidatId

### Referenced by:

**dbo.Ispit** (KandidatId)

**dbo.Legitimacija** (KandidatId)

## Table **dbo.Legitimacija**

	Column	Data Type	Identity	Nullable	Default
<b>PK</b>	LegitimacijaId	int			
	ImeKandidata	varchar(30)			
	PrezimeKandidata	varchar(40)			
<b>FK</b>	ZaposlenId	int			
<b>FK</b>	ClanKomisijeId	int			
<b>UK, FK</b>	KandidatId	varchar(15)			

### Indexes:

**PK\_\_Legitima\_\_7CE569B3F6E563FC** (Primary Key) (Clustered)

LegitimacijaId

**UQ\_\_Legitima\_\_5F7D602AC2867C6E** (Unique)

KandidatId

### References:

**dbo.ClanKomisije** (ClanKomisijeId)

**dbo.Kandidat** (KandidatId)

**dbo.Zaposlen** (ZaposlenId -> Id)

### Table **dbo.Skola**

	Column	Data Type	Identity	Nullable	Default
<b>PK</b>	SkolaId	varchar(50)			
	Naziv	varchar(50)			
	Grad	varchar(50)			
	UlicaBroj	varchar(70)			
<b>FK</b>	ClanKomisijeId	int	X		

#### Indexes:

**PK\_\_Skola\_\_22BF376BA6D25940** (Primary Key) (Clustered)

SkolaId

#### References:

**dbo.ClanKomisije** (ClanKomisijeId)

#### Referenced by:

**dbo.Zaposlen** (SkolaId)

### Table **dbo.Zaposlen**

	Column	Data Type	Identity	Nullable	Default
<b>PK</b>	Id	int	X		
	Zanimanje	varchar(80)			
	Ime	varchar(30)			
	Prezime	varchar(40)			
<b>FK</b>	SkolaId	varchar(50)			
	Licenca	bit			

#### Indexes:

**PK\_\_Zaposlen\_\_3214EC07B0D033E1** (Primary Key) (Clustered)

Id

#### References:

**dbo.Skola** (SkolaId)

#### Referenced by:

**dbo.Legitimacija** (ZaposlenId -> Id)

## Prikaz DDL SQL skripte

```
USE [Autoskola]
```

```
GO
```

```
/****** Object: Table [dbo].[ClanKomisije]    Script Date: 26/03/2020 6:27:10 pm  
*****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```
CREATE TABLE [dbo].[ClanKomisije](  
    [ClanKomisijeId] [int] IDENTITY(1,1) NOT NULL,  
    [Ime] [nvarchar](30) NOT NULL,  
    [Prezime] [nvarchar](40) NOT NULL,
```

```
PRIMARY KEY CLUSTERED
```

```
(
```

```
    [ClanKomisijeId] ASC
```

```
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF,  
IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS = ON,  
ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON  
[PRIMARY]
```

```
) ON [PRIMARY]
```

```
GO
```

```
/****** Object: Table [dbo].[Ispit]    Script Date: 26/03/2020 6:27:10 pm *****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```
CREATE TABLE [dbo].[Ispit](  
    [IspitId] [int] NOT NULL,  
    [Rezultat] [bit] NOT NULL,  
    [ClanKomisijeId] [int] NOT NULL,  
    [KandidatId] [varchar](15) NOT NULL,
```

```
PRIMARY KEY CLUSTERED
```

```
(
```

```
    [IspitId] ASC
```

```
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF,  
IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS = ON,  
ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON  
[PRIMARY]
```

```
) ON [PRIMARY]
```

```

GO
/***** Object: Table [dbo].[IspitZadatak]    Script Date: 26/03/2020 6:27:10 pm
*****/SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[IspitZadatak]([ZadatakId] [int] NOT NULL,
    [IspitId] [int] NOT NULL
) ON [PRIMARY]
GO
/***** Object: Table [dbo].[Kandidat]    Script Date: 26/03/2020 6:27:10 pm *****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Kandidat](
    [KandidatId] [varchar](15) NOT NULL,
    [Ime] [varchar](30) NOT NULL,
    [Prezime] [varchar](40) NOT NULL,
    [Email] [varchar](50) NULL,
    [DatumRodjenja] [date] NOT NULL,
    [Kategorija] [varchar](30) NOT NULL,
PRIMARY KEY CLUSTERED
(
    [KandidatId] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF,
IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS = ON,
ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON
[PRIMARY]
) ON [PRIMARY]
GO
/***** Object: Table [dbo].[Legitimacija]    Script Date: 26/03/2020 6:27:10 pm
*****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Legitimacija](
    [LegitimacijaId] [int] NOT NULL,
    [ImeKandidata] [varchar](30) NOT NULL,
    [PrezimeKandidata] [varchar](40) NOT NULL,
    [ZaposlenId] [int] NOT NULL,

```



```

[ClanKomisijeId] [int] NOT NULL, [KandidatId]
[varchar](15) NOT NULL,
PRIMARY KEY CLUSTERED
([LegitimacijaId] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF,
IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS = ON,
ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON
[PRIMARY]
) ON [PRIMARY]
GO
/***** Object: Table [dbo].[Skola] Script Date: 26/03/2020 6:27:10 pm *****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO

```

```

CREATE TABLE [dbo].[Skola](
    [SkolaId] [varchar](50) NOT NULL,
    [Naziv] [varchar](50) NOT NULL,
    [Grad] [varchar](50) NOT NULL,
    [UlicaBroj] [varchar](70) NOT NULL,
    [ClanKomisijeId] [int] IDENTITY(1,1) NOT NULL,
PRIMARY KEY CLUSTERED
(
    [SkolaId] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF,
IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS = ON,
ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON
[PRIMARY]
) ON [PRIMARY]
GO

```

```

/***** Object: Table [dbo].[Zadatak] Script Date: 26/03/2020 6:27:10 pm *****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO

```

```

CREATE TABLE [dbo].[Zadatak](
    [ZadatakId] [int] NOT NULL,
    [IspitniZadatak] [varchar](90) NOT NULL,
PRIMARY KEY CLUSTERED
([ZadatakId] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF,
IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS = ON,

```

```

ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON
[PRIMARY]
) ON [PRIMARY]
GO
/***** Object: Table [dbo].[Zaposlen]  Script Date: 26/03/2020 6:27:10 pm *****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Zaposlen](
    [Id] [int] IDENTITY(1,1) NOT NULL,
    [Zanimanje] [varchar](80) NOT NULL,
    [Ime] [varchar](30) NOT NULL,
    [Prezime] [varchar](40) NOT NULL,
    [SkolaId] [varchar](50) NOT NULL,
    [Licenca] [bit] NOT NULL,
PRIMARY KEY CLUSTERED
(
    [Id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF,
IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS = ON,
ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON
[PRIMARY]
) ON [PRIMARY]
GO
SET ANSI_PADDING ON
GO
/***** Object: Index [UQ__Legitima__5F7D602AC2867C6E]  Script Date:
26/03/2020 6:27:10 pm *****/
ALTER TABLE [dbo].[Legitimacija] ADD UNIQUE NONCLUSTERED
([KandidatId] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF,
SORT_IN_TEMPDB = OFF, IGNORE_DUP_KEY = OFF, ONLINE = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON,
OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
GO
ALTER TABLE [dbo].[Ispit] WITH CHECK ADD FOREIGN KEY([ClanKomisijeId])
REFERENCES [dbo].[ClanKomisije] ([ClanKomisijeId])
GO
ALTER TABLE [dbo].[Ispit] WITH CHECK ADD FOREIGN KEY([KandidatId])
REFERENCES [dbo].[Kandidat] ([KandidatId])
GO
ALTER TABLE [dbo].[IspitZadatak] WITH CHECK ADD FOREIGN KEY([IspitId])

```

```
REFERENCES [dbo].[Ispit] ([IspitId])
GO
ALTER TABLE [dbo].[IspitZadatak] WITH CHECK ADD FOREIGN
KEY([ZadatakId])
REFERENCES [dbo].[Zadatak] ([ZadatakId])
GO
ALTER TABLE [dbo].[Legitimacija] WITH CHECK ADD FOREIGN
KEY([ClanKomisijeId])
REFERENCES [dbo].[ClanKomisije] ([ClanKomisijeId])
GO
ALTER TABLE [dbo].[Legitimacija] WITH CHECK ADD FOREIGN
KEY([KandidatId])
REFERENCES [dbo].[Kandidat] ([KandidatId])
GO
ALTER TABLE [dbo].[Legitimacija] WITH CHECK ADD FOREIGN
KEY([ZaposlenId])
REFERENCES [dbo].[Zaposlen] ([Id])
GO
ALTER TABLE [dbo].[Skola] WITH CHECK ADD FOREIGN
KEY([ClanKomisijeId])
REFERENCES [dbo].[ClanKomisije] ([ClanKomisijeId])
GO
ALTER TABLE [dbo].[Zaposlen] WITH CHECK ADD FOREIGN KEY([SkolaId])
REFERENCES [dbo].[Skola] ([SkolaId])
GO
```

## Manipulacija podacima i elementarno ažuriranje baze podataka

### DML (Data manipulation language) SQL

#### INSERT

```
INSERT INTO Autoskola.dbo.Kandidat(KandidatId,Ime, Prezime, Email, DatumRodjenja, Kategorija)
```

```
VALUES ('000038344','Ivana','Sovilj','isovilj1@gmail.com','8/4/1997','B'),  
('000037344','Petar','Petrovic','pera@gmail.com','3/5/1998','B'),  
('000032344','Marko','Markovic','matkee@gmail.com','2/7/1991','B'),  
('000058344','Stefan','Stefanovic','stefaa@gmail.com','4/6/1992','B'),  
('000138344','Jovan','Jovanovic','jovanovicj9@gmail.com','1/5/1993','B'),  
('000038394','Mirko','Mirkovic','mirko94@gmail.com','5/4/1994','A'),  
('000038349','Lazar','Lazarevic','laki95@gmail.com','5/3/1995','A'),  
('000038333','Teodor','Teodorovic','ttero4@gmail.com','9/2/1996','C'),  
('000038123','Milica','Miljkovic','miljkovicm123@hotmail.com','7/2/1997','C'),  
('000031234','Jelena','Jankovic','','3/1/1996','C'),  
('1000118344','Jakov','Janjic','jakovv@gmail.com','6/2/1997','B'),  
('200037344','Janko','Veselinov','veselin@gmail.com','5/2/1998','C'),  
('030032344','Milica','Barna','milicabb@gmail.com','5/2/1991','C'),  
('040058344','Nina','Banovic','ninaaa2@gmail.com','4/3/1992','A'),  
('00138344','Dunja','Vojnovic','dunjanja@gmail.com','4/4/1993','B'),  
('0506038394','Aleksandra','Sovilj','asovilj@gmail.com','3/4/1994','B'),  
('006638349','Goran','Janjic','goranjanjic@gmail.com','3/5/1995','A'),  
('008038333','Dalibor','Bogdanovic','daliborbogdanovic@gmail.com','2/5/1996','CE'),  
('080038123','Una','Markov','unauna8@hotmail.com','1/7/1997','CE'),  
('000931234','Gordana','Simonovic','','1/7/1996','CE');
```

```
INSERT INTO Autoskola.dbo.ClanKomisije(Ime, Prezime)
```

```
VALUES ('Petar','Jankovic'),  
('Milenko','Jovanovic'),  
('Sara','Panic'),  
('Jovan','Jakovljevic'),  
('Bogoljub','Bjelos');
```

```
-- SET IDENTITY_INSERT to ON.
```

```
SET IDENTITY_INSERT Autoskola.dbo.Skola ON;
```

```
GO
```

```
INSERT INTO Autoskola.dbo.Skola (SkolaId, Naziv, Grad, UlicaBroj, ClanKomisijeId)
```

VALUES('05684216432732894832','Auto Skola 023','Zrenjanin','Ive Lole Ribara 19',  
1), ('4673824761000024839','Euro start','Zrenjanin','Emila Gavrilica 28',1),  
('141532784124729193','Auto Skola Zeleni Talas','Zrenjanin','Petefijeva 15',1),  
('42121482648271','Vozacka akademija Zrenjanin','Zrenjanin','Koce Kolarova 19',2),  
('19994839677039473021','Sasa PLUS','Zrenjanin','Gimnazijska 12',2),  
('563295392653298592','Auto Skola STEP','Novi Sad','Gagarinova 10',5),  
('1763743232553253','Auto Skola DUNAV','Novi Sad','Futoska 1',4),  
('199948396773021','Auto Skola Floyd doo','Novi Sad','Kozacinskog 3',4),  
('199947039473021','Auto Skola PAVLIN','Novi Beograd','Bulevar Mihajla Pupina  
141',3),  
('1839677039473021','Zeleno svetlo','Beograd','Cvijiceva 63',3),  
('9994839677039473021','Auto Skola STOP LINE','Beograd','Bulevar Arsenija  
Černojevića 37',3),  
('24647829193184','Mile BiV','Zrenjanin','Cara Dusana 3',2);

INSERT INTO Autoskola.dbo.Zaposlen(Zanimanje, Ime, Prezime, SkolaId, Licenca)

VALUES ('instruktor', 'Milenko', 'Jovanovic', '19994839677039473021', 1),  
('instruktor', 'Aleksandar', 'Alferov', '19994839677039473021', 1),  
('predavac', 'Sinisa', 'Berar', '19994839677039473021', 1),  
('predavac', 'Aleksandra', 'Alferov', '19994839677039473021', 1),  
('instruktor', 'Strahinja', 'Savin', '05684216432732894832', 1),  
('instruktor', 'Aleksandar', 'Banovic', '05684216432732894832', 1),  
('instruktor', 'Jadranka', 'Vavan', '05684216432732894832', 1),  
('predavac', 'Jovana', 'Brnic', '05684216432732894832', 1),  
('predavac', 'Stefan', 'Juvanin', '05684216432732894832', 1),  
('instruktor', 'Milan', 'Milinkov', '141532784124729193', 1),  
('instruktor', 'Milan', 'Banovic', '141532784124729193', 1),  
('predavac', 'Sanja', 'Stevic', '141532784124729193', 1),  
('predavac', 'Teodora', 'Despotov', '141532784124729193', 1),  
('predavac', 'Dalija', 'Granic', '141532784124729193', 1),  
('instruktor', 'Strahinja', 'Savin', '4673824761000024839', 1),  
('instruktor', 'Aleksandar', 'Banovic', '4673824761000024839', 1),  
('instruktor', 'Jadranka', 'Vavan', '4673824761000024839', 1),  
('predavac', 'Jovana', 'Brnic', '4673824761000024839', 1),  
('predavac', 'Stefan', 'Juvanin', '4673824761000024839', 1),  
('instruktor', 'Mihajlo', 'Kesic', '42121482648271', 1),  
('instruktor', 'Sladjana', 'Banovic', '42121482648271', 1),  
('predavac', 'Dijana', 'Cekic', '42121482648271', 1),  
('predavac', 'Igor', 'Garaj', '42121482648271', 1),  
('predavac', 'Ivan', 'Garaj', '42121482648271', 1),  
('instruktor', 'Bogoljub', 'Sojic', '563295392653298592', 1),  
('instruktor', 'Miljana', 'Belic', '563295392653298592', 1),

('instruktor', 'Dusan', 'Gojkov', '563295392653298592', 1),  
 ('predavac', 'Adam', 'Maran', '563295392653298592', 1),  
 ('predavac', 'Nemanja', 'Svilarov', '563295392653298592', 1),  
 ('instruktor', 'Tamara', 'Rajic', '1763743232553253', 1),  
 ('instruktor', 'Vladana', 'Babic', '1763743232553253', 1),  
 ('instruktor', 'Bojan', 'Babic', '1763743232553253', 1),  
 ('predavac', 'Kristijan', 'Cinar', '1763743232553253', 1),  
 ('predavac', 'Stefan', 'Kleplic', '1763743232553253', 1),  
 ('instruktor', 'Milan', 'Stanojevic', '199948396773021', 1),  
 ('instruktor', 'Gorana', 'Petrovic', '199948396773021', 1),  
 ('instruktor', 'Mladen', 'Protic', '199948396773021', 1),  
 ('predavac', 'Jelena', 'Peric', '199948396773021', 1),  
 ('predavac', 'Vladan', 'Krajinovic', '199948396773021', 1),  
 ('instruktor', 'Nevena', 'Balog', '199947039473021', 1),  
 ('instruktor', 'Isidora', 'Boskovic', '199947039473021', 1),  
 ('instruktor', 'Bogdan', 'Brankovic', '199947039473021', 1),  
 ('predavac', 'Bozidar', 'Jakovljevic', '199947039473021', 1),  
 ('predavac', 'Martin', 'Stetin', '199947039473021', 1),  
 ('instruktor', 'Marko', 'Mrdjenovic', '1839677039473021', 1),  
 ('instruktor', 'Jovanka', 'Bandok', '1839677039473021', 1),  
 ('instruktor', 'Bogdana', 'Vladislavljevic', '1839677039473021', 1),  
 ('predavac', 'Veljko', 'Janjic', '1839677039473021', 1),  
 ('predavac', 'Vladimir', 'Stojadinovic', '1839677039473021', 1),  
 ('instruktor', 'Pavle', 'Bajin', '9994839677039473021', 1),  
 ('instruktor', 'Jovan', 'Sovilj', '9994839677039473021', 1),  
 ('instruktor', 'Dragica', 'Vlahovic', '9994839677039473021', 1),  
 ('predavac', 'Zorica', 'Banjac', '9994839677039473021', 1),  
 ('predavac', 'Stojan', 'Krstic', '9994839677039473021', 1),  
 ('instruktor', 'Strahinja', 'Slavic', '24647829193184', 1),  
 ('instruktor', 'Branislav', 'Vlajic', '24647829193184', 1),  
 ('instruktor', 'Branislava', 'Vlajic', '24647829193184', 1),  
 ('predavac', 'Boban', 'Zornic', '24647829193184', 1),  
 ('predavac', 'Jasmina', 'Brakic', '24647829193184', 1);

INSERT INTO Autoskola.dbo.Zadatak(ZadatakId, IspitniZadatak)

VALUES (1,'priprema vozila, polukruzni, zona usporenog saobracaja, zona skole,  
 poligon'),  
 (2,'priprema vozila, polukruzni, zona usporenog saobracaja, zona skole, poligon'),  
 (3,'priprema vozila, kruzni tok, zona 30, zona skole, poligon'),  
 (4,'priprema vozila, polukruzni, raskrsnica, zona skole, poligon'),  
 (5,'priprema vozila, kruzni tok, parkiranje, zona skole, poligon'),  
 (6,'priprema vozila, polukruzni, prvenstvo prolaza, zona skole, poligon');

```

INSERT INTO Autoskola.dbo.Legitimacija(LegitimacijaId, ImeKandidata,
PrezimeKandidata, ZaposlenId, ClanKomisijeId, KandidatId)
VALUES (1, 'Ivana', 'Sovilj', 3, 1, '000038344' ),
(2, 'Petar', 'Petrovic', 4, 1, '000037344' ),
(3, 'Marko', 'Markovic', 5, 1, '000032344' ),
(4, 'Stefan', 'Stefanovic', 6, 1, '000058344' ),
(5, 'Jovan', 'Jovanovic', 7, 1, '000138344' ),
(6, 'Mirko', 'Mirkovic', 8, 1, '000038394' ),
(7, 'Lazar', 'Lazarevic', 9, 2, '000038349' ),
(8, 'Teodor', 'Teodorovic', 10, 2, '000038333' ),
(9, 'Milica', 'Miljkovic', 11, 3, '000038123' ),
(10, 'Jelena', 'Jankovic', 12, 2, '000031234' ),
(11, 'Jakov', 'Janjic', 15, 3, '1000118344' ),
(12, 'Janko', 'Veselinov', 14, 4, '200037344' ),
(13, 'Milica', 'Barna', 13, 4, '030032344' ),
(14, 'Nina', 'Banovic', 16, 4, '040058344' ),
(15, 'Dunja', 'Vojnovic', 17, 4, '00138344' ),
(16, 'Dalibor', 'Bogdanovic', 18, 5, '008038333' ),
(17, 'Una', 'Markov', 19, 5, '080038123' ),
(18, 'Gordana', 'Simonovic', 20, 5, '000931234' ),
(19, 'Goran', 'Janjic', 21, 5, '006638349' ),
(20, 'Aleksandra', 'Sovilj', 22, 5, '0506038394' );

```

```

INSERT INTO Autoskola.dbo.Ispit(IspitId, Rezultat, ClanKomisijeId, KandidatId)
VALUES (1, 1, 1, '000038344'),
(2, 1, 1, '000037344'),
(3, 0, 1, '000032344'),
(4, 0, 1, '000058344'),
(5, 0, 1, '000138344'),
(6, 1, 1, '000038394'),
(7, 1, 2, '000038349'),
(8, 1, 2, '000038333'),
(9, 1, 3, '000038123'),
(10, 0, 2, '000031234'),
(11, 0, 3, '1000118344'),
(12, 0, 4, '200037344' ),
(13, 0, 4, '030032344' ),
(14, 0, 4, '040058344' ),
(15, 1, 4, '00138344'),
(16, 1, 5, '008038333'),

```

```
(17, 1, 5, '080038123'),  
(18, 1, 5, '000931234'),  
(19, 1, 5, '006638349'),  
(20, 1, 5, '0506038394');
```

```
INSERT INTO Autoskola.dbo.IspitZadatak(IspitId, ZadatakId)
```

```
VALUES (1, 1),
```

```
(1, 2),
```

```
(1, 3),
```

```
(1, 4),
```

```
(1, 5),
```

```
(1, 6),
```

```
(2, 1),
```

```
(2, 2),
```

```
(2, 3),
```

```
(2, 4),
```

```
(2, 5),
```

```
(2, 6),
```

```
(3, 1),
```

```
(3, 2),
```

```
(3, 3),
```

```
(3, 4),
```

```
(3, 5),
```

```
(3, 6),
```

```
(4, 1),
```

```
(4, 2),
```

```
(4, 3),
```

```
(4, 4),
```

```
(4, 5),
```

```
(4, 6),
```

```
(5, 1),
```

```
(5, 2),
```

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(5, 3),
```

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(5, 4),
```

```
(5, 5),
```

```
(5, 6),
```

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(6, 1),
```

```
(6, 2),
```

```
(6, 3),
```

```
(6, 4),
```

```
(6, 5),
```

```
(6, 6),
```

```
(7, 1),
```





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(18, 4),  
(18, 5),  
(18, 6),  
(19, 1),  
(19, 2),  
(19, 3),  
(19, 4),  
(19, 5),  
(19, 6),  
(20, 1),  
(20, 2),  
(20, 3),  
(20, 4),  
(20, 5),  
(20, 6);

**SELECT**

```
SELECT Naziv, Grad
FROM Autoskola.dbo.Skola
WHERE Grad = 'Zrenjanin' OR Grad = 'Novi Sad'
ORDER BY Naziv ASC
```

```
SELECT DISTINCT Ime, Prezime, Kategorija
FROM Autoskola.dbo.Kandidat
ORDER BY Kategorija ASC
```

```
SELECT TOP 5 Ime, Prezime, Licenca
FROM Autoskola.dbo.Zaposlen
WHERE Ime LIKE 'A%'
```

```
SELECT Ime, Prezime, Kategorija, DatumRodjenja
FROM Autoskola.dbo.Kandidat
WHERE DatumRodjenja BETWEEN '1/1/1990' AND '1/1/1993' AND Kategorija = 'B'
```

```
SELECT * FROM Autoskola.dbo.Skola
WHERE Grad IN ('Zrenjanin')
```

```
SELECT COUNT(SkolaId) AS Counter, Grad FROM Autoskola.dbo.Skola
GROUP BY Grad
HAVING COUNT(SkolaId) >1
```

--

--Prikaz kandidata koji su položili vozacki ispit

--

```
SELECT Kandidat.Ime AS ImeKandidata, Kandidat.Prezime AS PrezimeKandidata,
Kategorija, Ispit.Rezultat, ClanKomisije.Ime AS ImeClanaKomisije,
ClanKomisije.Prezime AS PrezimeClanaKomisije
FROM Autoskola.dbo.Kandidat
INNER JOIN Autoskola.dbo.Ispit
ON Ispit.KandidatId = Kandidat.KandidatId
INNER JOIN Autoskola.dbo.ClanKomisije
ON Ispit.ClanKomisijeId = ClanKomisije.ClanKomisijeId
WHERE Rezultat = 1 AND Kategorija= 'B'
```

--

--Spisak svih instruktora u Zrenjaninu koji rade u školi: Auto Skola 023

--



```
SELECT Ime, Prezime, Zanimanje, Grad, Naziv
FROM Autoskola.dbo.Zaposlen
INNER JOIN Autoskola.dbo.Skola
ON Zaposlen.SkolaId = Skola.SkolaId
WHERE Grad='Zrenjanin' AND Zanimanje = 'Instruktor' AND Naziv='Auto Skola 023'
```

```
--
--Prikaz svih legitimacija u autoskoli 'Sasa PLUS'
```

```
--
SELECT LegitimacijaId, ImeKandidata, PrezimeKandidata, Naziv
FROM Autoskola.dbo.Legitimacija
INNER JOIN Autoskola.dbo.Zaposlen
ON Legitimacija.ZaposlenId =Zaposlen.Id
INNER JOIN Autoskola.dbo.Skola
ON Zaposlen.SkolaId = Skola.SkolaId
WHERE Naziv = 'Sasa PLUS'
```

```
--
--Upit sa podupitom: Prikaz svih kandidata sa rezultatima ispita kod clana komisije- Petra
```

```
--
USE Autoskola
SELECT Kandidat.Ime,
Kandidat.Prezime,
Ispit.Rezultat,
ClanKomisije.Ime
FROM
Kandidat INNER JOIN
Ispit ON Ispit.KandidatId=Kandidat.KandidatId
INNER JOIN ClanKomisije
ON ClanKomisije.ClanKomisijeId=Ispit.ClanKomisijeId
WHERE
ClanKomisije.ClanKomisijeId
IN(
SELECT Skola.ClanKomisijeId
FROM
ClanKomisije
INNER JOIN Skola
ON
ClanKomisije.ClanKomisijeId=Skola.ClanKomisijeId
WHERE ClanKomisije.Ime = 'Petar')
ORDER BY Kandidat.Ime ASC
```

	Ime	Prezime	Rezultat	Ime
1	Ivana	Sovilj	1	Petar
2	Jovan	Jovanovic	0	Petar
3	Marko	Markovic	0	Petar
4	Mirko	Mirkovic	1	Petar
5	Petar	Petrovic	1	Petar
6	Stefan	Stefanovic	0	Petar

--

--Upit sa podupitom: Prikaz svih kandidata koji su polozili ispit u skolama u Zrenjaninu

--

```

USE Autoskola
SELECT Kandidat.Ime, Kandidat.Prezime, Ispit.Rezultat
FROM
Kandidat INNER JOIN
Ispit ON Ispit.KandidatId=Kandidat.KandidatId
INNER JOIN
ClanKomisije
ON ClanKomisije.ClanKomisijeId=Ispit.ClanKomisijeId
WHERE
ClanKomisije.ClanKomisijeId IN(
SELECT Skola.ClanKomisijeId
FROM
ClanKomisije
INNER JOIN Skola ON
ClanKomisije.ClanKomisijeId=Skola.ClanKomisijeId
WHERE Ispit.Rezultat = '1' AND Skola.Grad ='Zrenjanin')
ORDER BY Kandidat.Ime ASC

```

	Ime	Prezime	Rezultat
1	Ivana	Sovilj	1
2	Lazar	Lazarevic	1
3	Mirko	Mirkovic	1
4	Petar	Petrovic	1
5	Teodor	Teodorovic	1

--

--Broj polozenih i nepolozenih ispita kod clana komisije - Petar

--

```

USE Autoskola
SELECT
Ispit.Rezultat,
COUNT(Ispit.IspitId) as CountIspit
FROM Ispit

```

```
INNER JOIN ClanKomisije
ON ClanKomisije.ClanKomisijeId=Ispit.ClanKomisijeId
WHERE ClanKomisije.Ime = 'Petar'
GROUP BY Ispit.Rezultat
```

	Rezultat	CountIspit
1	0	3
2	1	3

## UPDATE

```
UPDATE Autoskola.dbo.Kandidat
SET Email = 'teodorovicTeodor2@gmail.com'
WHERE KandidatId='000038333'
```

```
UPDATE Autoskola.dbo.Skola
SET UlicaBroj = 'Gimnazijska 26'
WHERE SkolaId = '19994839677039473021'
```

## DELETE

```
DELETE
FROM Autoskola.dbo.Legitimacija
WHERE LegitimacijaId = 1
```

## VIEW

```
CREATE VIEW [Instruktori u Auto Skoli Sasa PLUS]
AS
SELECT Ime, Prezime, Zanimanje, Grad, Naziv
FROM Autoskola.dbo.Zaposlen
INNER JOIN Autoskola.dbo.Skola
ON Zaposlen.SkolaId = Skola.SkolaId
WHERE Grad='Zrenjanin' AND Zanimanje = 'Instruktor' AND Naziv='Auto Skola 023'
```



```
SELECT * FROM [Instruktori u Auto Skoli Sasa PLUS]
DROP VIEW [Instruktori u Auto Skoli Sasa PLUS]
```

### STORED PROCEDURE

```
CREATE PROCEDURE KandidatiKategorijeB @Kategorija varchar(30) AS
SELECT Kandidat.Ime AS ImeKandidata, Kandidat.Prezime AS PrezimeKandidata,
Kategorija, Ispit.Rezultat, ClanKomisije.Ime AS ImeClanaKomisije,
ClanKomisije.Prezime AS PrezimeClanaKomisije
FROM Autoskola.dbo.Kandidat
INNER JOIN Autoskola.dbo.Ispit
ON Ispit.KandidatId = Kandidat.KandidatId
INNER JOIN Autoskola.dbo.ClanKomisije
ON Ispit.ClanKomisijeId = ClanKomisije.ClanKomisijeId
WHERE Kategorija = @Kategorija
```

```
EXEC KandidatiKategorijeB @Kategorija = 'B';
```

```
DROP PROCEDURE KandidatiKategorijeB
```

### TRIGGER

```
USE [Autoskola]
GO
/***** Object: Trigger [dbo].[TRIMMER_TGR] Script Date: 03/04/2020 2:31:46 pm
*****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
ALTER TRIGGER [dbo].[TRIMMER_TGR] ON [dbo].[Kandidat]
AFTER INSERT, UPDATE
AS
IF UPDATE (Ime)
DECLARE @IME NVARCHAR(50)
DECLARE @KANDIDATID VARCHAR(15)

SELECT @IME = Ime from Inserted
SELECT @KANDIDATID = KandidatId from Inserted

BEGIN
UPDATE Kandidat SET Ime = RTRIM(LTRIM(@IME))
WHERE KandidatId = @KANDIDATID
```

END

```
CREATE TRIGGER [TRIGGER] ON [dbo].[Skola]
AFTER INSERT, UPDATE
AS
```

```
IF UPDATE (Naziv)
DECLARE @NAZIV VARCHAR(50)
DECLARE @SKOLAID VARCHAR(50)
```

```
SELECT @NAZIV = Naziv from Inserted
SELECT @SKOLAID = SkolaId from Inserted
BEGIN
UPDATE Skola SET Naziv = LOWER(@NAZIV)
WHERE SkolaId = @SKOLAID
END
```

## Rad sa korisnicima baze podataka - DCL (Data Control Language)

### USERS

#### USE Autoskola

```
CREATE LOGIN AdministratorLogin WITH PASSWORD = '12345';
```

```
CREATE LOGIN LoginKandidat WITH PASSWORD = '123';
```

```
CREATE LOGIN LoginZaposlen WITH PASSWORD = '1234';
```

```
CREATE USER Admininistrator FOR LOGIN AdminLogin
```

```
CREATE USER Kandidat FOR LOGIN KandidatLogin
```

```
CREATE USER Zaposlen FOR LOGIN ZaposlenLogin
```

### GRANT

#### --kandidat

```
USE Autoskola
```

```
GRANT SELECT, UPDATE ON Kandidat TO Kandidat
```

#### --administrator

```
GRANT SELECT, UPDATE, INSERT, DELETE ON Zaposlen TO Admininistrator
```

```
GRANT SELECT, UPDATE, INSERT, DELETE ON ClanKomisije TO Admininistrator
```

```
GRANT SELECT, UPDATE, INSERT, DELETE ON Ispit TO Admininistrator
```

```
GRANT SELECT, UPDATE, INSERT, DELETE ON IspitZadatak TO Admininistrator
```

```
GRANT SELECT, UPDATE, INSERT, DELETE ON Kandidat TO Admininistrator
```

```
GRANT SELECT, UPDATE, INSERT,DELETE ON Legitimacija TO Admininistrator
```

```
GRANT SELECT, UPDATE, INSERT,DELETE ON Skola TO Admininistrator
```

```
GRANT SELECT, UPDATE, INSERT, DELETE ON Zadatak TO Admininistrator
```

#### --zaposlen

```
GRANT SELECT, UPDATE, INSERT ON Zaposlen TO Zaposlen
```

```
GRANT SELECT, UPDATE, INSERT ON ClanKomisije TO Zaposlen
```

```
GRANT SELECT, UPDATE, INSERT, DELETE ON Ispit TO Zaposlen
```

```
GRANT SELECT, UPDATE ON IspitZadatak TO Zaposlen
```

```
GRANT SELECT, UPDATE, INSERT, DELETE ON Kandidat TO Zaposlen
```

```
GRANT SELECT, UPDATE, INSERT, DELETE ON Legitimacija TO Zaposlen
```

```
GRANT SELECT, UPDATE ON Skola TO Zaposlen
```

```
GRANT SELECT, UPDATE, INSERT, DELETE ON Zadatak TO Zaposlen
```

### REVOKE

```
USE Autoskola
```

```
REVOKE INSERT ON Ispit FROM Zaposlen;
```

REVOKE UPDATE, INSERT ON ClanKomisije TO Kandidat

**DROP USERS**

DROP USER IF EXISTS Kandidat

DROP USER IF EXISTS Administrator

DROP USER IF EXISTS Zaposlen

## Obrada transakcija i zaključavanje baze podataka - TCL (Transaction Control Language), kontrola i upravljanje transakcijama

```
USE Autoskola
BEGIN TRANSACTION
DECLARE @ZaposlenId int
DECLARE @Zanimanje varchar(80)
DECLARE @Ime varchar(30)
DECLARE @Prezime varchar(40)
DECLARE @SkolaId varchar(50)
DECLARE @Licenca bit
DECLARE @KandidatId varchar(15)
DECLARE @ImeKandidat varchar(30)
DECLARE @PrezimeKandidat varchar(40)
DECLARE @Email varchar(50)
DECLARE @DatumRodjenja date
DECLARE @Kategorija varchar(30)
DECLARE @LegitimacijaId int
DECLARE @ClanKomisijeId int

SELECT @ZaposlenId=Id
FROM Autoskola.dbo.Zaposlen WITH(TABLOCK)
IF @ZaposlenId IS NULL
BEGIN
DECLARE @maksrb INT
SELECT @maksrb=MAX(Id)
FROM Autoskola.dbo.Zaposlen
IF @maksrb IS NULL
SET @maksrb=1
ELSE
SET @maksrb=@maksrb+1
SET @ZaposlenId=@maksrb
SET @Zanimanje = 'predavac'
SET @Ime = 'Ivana'
SET @Prezime = 'Sovilj'
SET @SkolaId = '199947039473021'
SET @Licenca = '1'
INSERT INTO Autoskola.dbo.Zaposlen(Id, Zanimanje, Ime, Prezime, Skolaid, Licenca)
VALUES(@ZaposlenId, @Zanimanje, @Ime, @Prezime, @SkolaId, @Licenca)
SELECT @KandidatId=KandidatId
FROM Autoskola.dbo.Kandidat WITH(TABLOCK)

IF @KandidatId IS NULL
```

```

BEGIN
DECLARE @maksbr INT
SELECT @maksbr=MAX(KandidatId)
FROM Autorskola.dbo.Kandidat
IF @maksrb IS NULL
SET @maksbr=1
ELSE
SET @maksbr=@maksbr+1
SET @KandidatId=@maksbr
SET @ImeKandidat = 'Jovana'
SET @PrezimeKandidat = 'Jelic'
SET @Email = 'jelicJ@gmail.com'
SET @DatumRodjenja = '4/4/2001'
SET @Kategorija = 'B'
INSERT INTO Autorskola.dbo.Kandidat(KandidatId, Ime, Prezime, Email,
DatumRodjenja, Kategorija)
VALUES(@KandidatId, @ImeKandidat, @PrezimeKandidat, @Email, @DatumRodjenja,
@Kategorija)
SELECT @LegitimacijaId=LegitimacijaId
FROM Autorskola.dbo.Legitimacija WITH(TABLOCK)
IF @LegitimacijaId IS NULL
BEGIN
DECLARE @maksb INT
SELECT @maksb=MAX(LegitimacijaId)
FROM Autorskola.dbo.Legitimacija
IF @maksb IS NULL
SET @maksb=1
ELSE
SET @maksb=@maksb+1
SET @LegitimacijaId=@maksb
SET @ClanKomisijeId = 2
INSERT INTO Autorskola.dbo.Legitimacija(LegitimacijaId, ImeKandidata,
PrezimeKandidata, ZaposlenId, ClanKomisijeId, KandidatId)
VALUES(@LegitimacijaId, @ImeKandidat, @PrezimeKandidat, @ZaposlenId,
@ClanKomisijeId, @KandidatId);
IF @@ERROR=0 BEGIN
COMMIT TRANSACTION
ROLLBACK TRANSACTION
END
END
END
END

```

## Opis softvera za rukovanje bazama podataka: SQL

Baza podataka kao deljiva kolekcija međusobno logičko povezanih podataka danas je najčešće korišćena metoda za čuvanje, organizovanje, prikupljanje i sortiranje podataka, kao i smanjenje redundantnosti. Baze podataka u savremeno organizovanom društvu imaju veliku primenu (kupovina u supermarketu, podizanje gotovine na automatu, osiguranje vozila, korišćenje biblioteke, korišćenje interneta, evidencija građana, katastar i mnoge druge primene).

Za funkcionisanje ovakvih sistema, pored baze podataka potreban je i aplikativni softver za komunikaciju sa bazama. Tu funkciju omogućuje *Data Base Management System* (skraćeno DBMS), ili sistem za upravljanje bazom podataka – softverski sistem koji omogućuje kreiranje, definisanje, korišćenje, održavanje i kontrolu pristupa bazi podataka. DBMS omogućuje krajnim korisnicima ili programerima da dele podatke, odnosno pruža mogućnost da se podaci jednovremeno koriste od strane više aplikacija.

Relativna baza podataka čuva podatke u odvojenim tabelama, umesto da sve podatke stavlja u jednu veliku skladištu. Strukture baze podataka su organizovane u fizičke datoteke optimizovane za brzinu. Logički model, sa objektima kao što su baze podataka, tabele, prikazi, redovi i stupci, nudi fleksibilno programsko okruženje. Postavljate pravila koja regulišu odnose između različitih polja podataka, kao što su jedan na jedan, jedan prema mnogima, jedinstveni, potrebni ili opcionalni i „pokazivači“ između različitih tabela. Baza podataka primenjuje ova pravila, tako da uz dobro osmišljenu bazu podataka, vaša aplikacija nikada ne vidi nedosledne, duplikatne, siroče, zastarele ili nedostajuće podatke.

SQL (Structured Query Language) je standardni relacioni upitni jezik (ANSI i ISO standard). Njegov tvorac je Čemberlin (Chamberlin), a nastao je u IBM-ovoj istraživačkoj laboratoriji (IBM Research Laboratory) u San Hoseu, Kalifornija 1974. godine, dakle na istom mestu gde je Kod 1970. definisao osnovne koncepte relacionog modela podataka.

SQL Server Management Studio je integrisano okruženje za upravljanje bilo kojim SQL infrastrukturom. SSMS nudi alate za konfigurisanje, nadgledanje i administraciju instanci SQL servera i baza podataka.

## **Zaključak**

Modelovani sistem zadovoljava osnovne potrebe za beleženje vozačkih ispita, kandidata i njihovih legitimacija, ali ne pokriva sve funkcionalnosti i zahteva dalji razvoj.

U slučaju daljeg razvoja doprineo bi poboljšanju funkcionisanja aplikacije koju koriste zaposleni u postojećim autoškolama zbog velikih propusta programera prilikom samog razvoja, kao i lošeg održavanja softvera.



## Literatura

1. <https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-ver15>
2. <https://kompjuterias.com/baze-podataka/?script=lat>