



Академија  
струковних студија  
Шумадија

одсек у Трстенику

# РАДНИ МАТЕРИЈАЛ







2.

w

2,

45

/

(record)

2.

(self-describing).

### 2.1.

$$(1 = 10^{15} \dots)$$

$$( = 10^{12} \dots)$$

#### 2.1.1.

w

(

2.

2.1.2.

1506983710325 2016  
0211979850123 2015  
1112985830456 2015

-1.

-1.

	1506983710325		2016
	0211979850123		2015
	1112985830456		2015

1.,

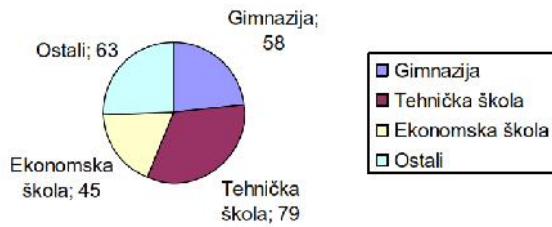
( )

2.



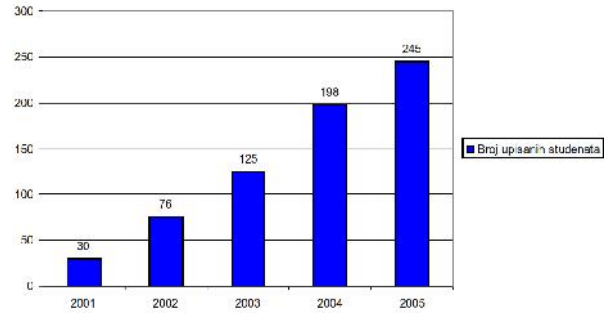
2.

**Broj upisanih studenata po školama**

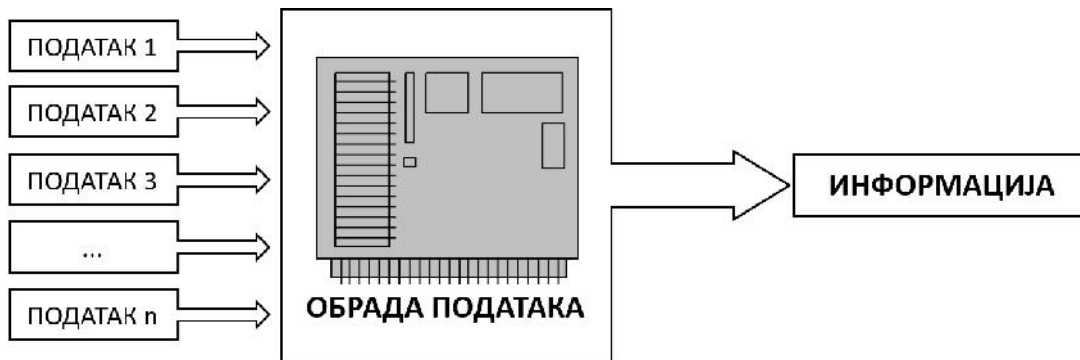


1.

**Broj upisanih studenata po godinama**



[1]



2.

[1]

**2.1.3.**

(end user data).

( ) , , ( ) , , 2. , , ,

-2.

Ime	- Character, String, Text	15	3	15		/
Jmbg	- Character, String, Text	13	13	13	JMBG	/
Smer	- Character, String, Text	3	3	3		
GodUpisa	- Number - Integer	4	4	4		

2.

2.,

### 2.2.

( , ),

3.,

(

"

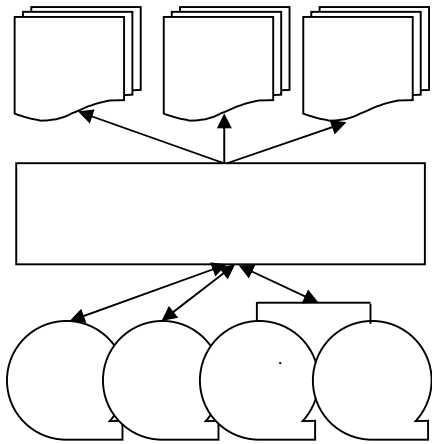
"

"

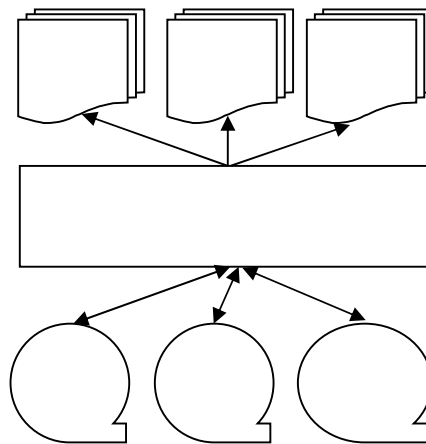
).

"

"



3.



[8]:

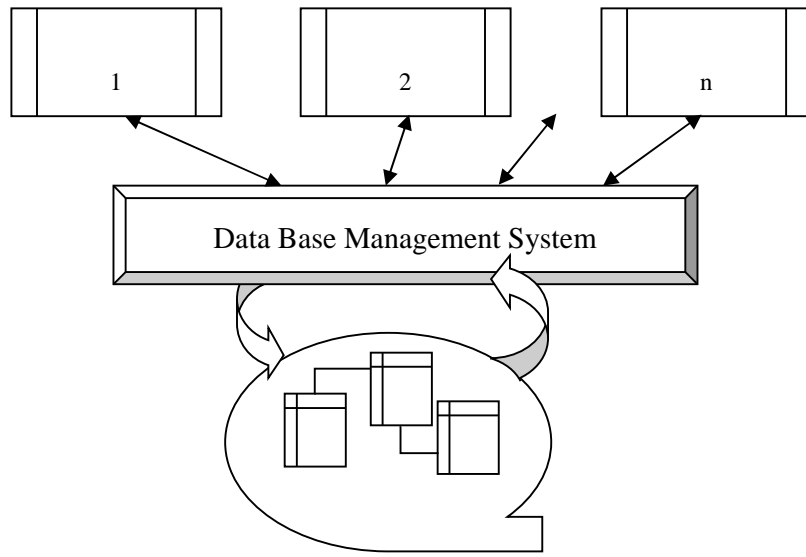


2.

a (DBMS - Data Base Management System)

4. DBMS

. DBMS



4. DBMS

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( )

DBMS

, DBMS

...)

( )

( )

2.

DBMS

( , )

( ). DBMS

( ),

. DBMS

DBMS. DBMS

( )

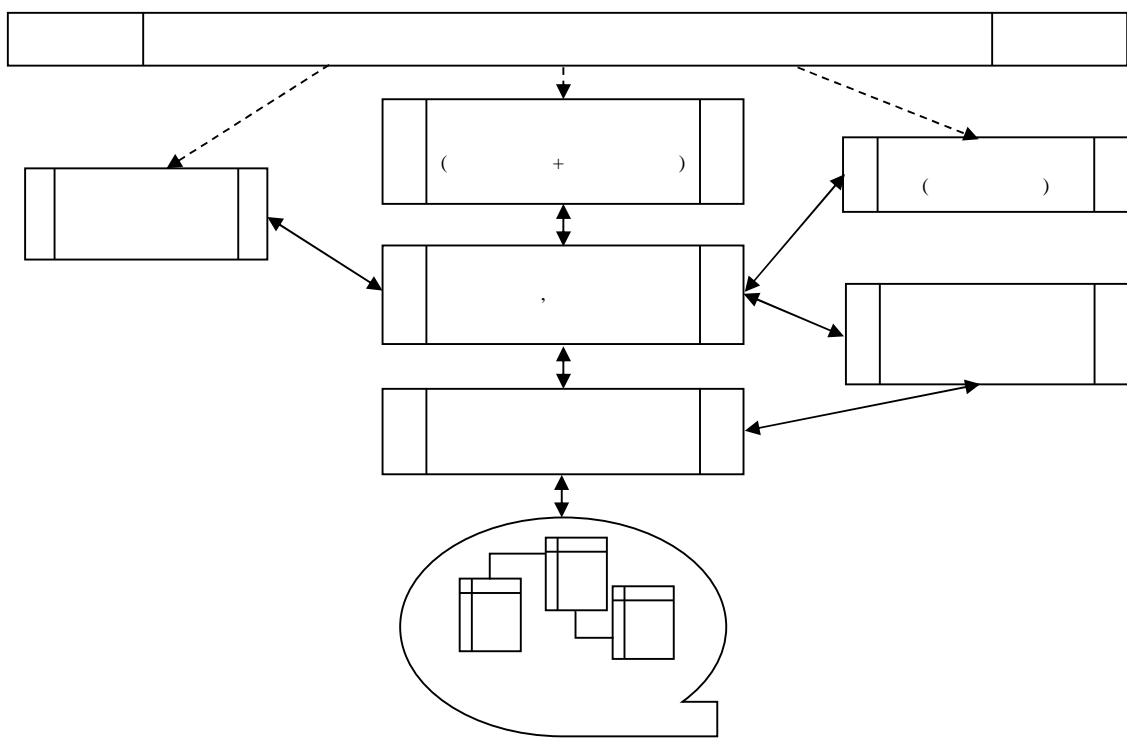
### 2.2.1.

5.,:

- 
- 
- 
- 

(BP).

BP.



5.



2.

DBMS ( , )  
(Database Language).

➤ (Data Definition Language)

➤ (Data Manipulation Language)

BP.

5.,

BP

( BP)  
BP).

( )

e  
(Structured Query Language),

BP.

SQL

BP

[1]. BP ,  
BP

" "

BP

BP

(IS)

( ) [8]:

U itaj *iznos* za prenos;  
Na i ra un *R1* sa koga se *iznos* skida;  
Upiši *iznosR1-iznos* na ra un *R1*;  
Na i ra un *R2* na koji se *iznos* stavlja;  
Upiši *iznosR2+iznos* na ra un *R2*.

5

5

BP

ACID ( ) Consistency ( ) Isolation ( ) Durability ( ) Atomicity

(Atomicity).

BP COMMIT

ROLLBACK. COMMIT

" "

. ROLLBACK

BP

(Consistency).

" "

BP.

BP

(Isolation).

(Durability).

**2.3.**

- 
- 
- 

DBMS

DBMS.  
[8]:

- 
- 
- 

DBMS

ANSI/SPARC

ANSI/SPARC ( "American National Standards Institute, Standards Planning And Requirements Committee")

Ameri kog

DBMS ([10]).

**2.3.1. ANSI/SPARC**

DBMS,

DBMS,

( )



2.

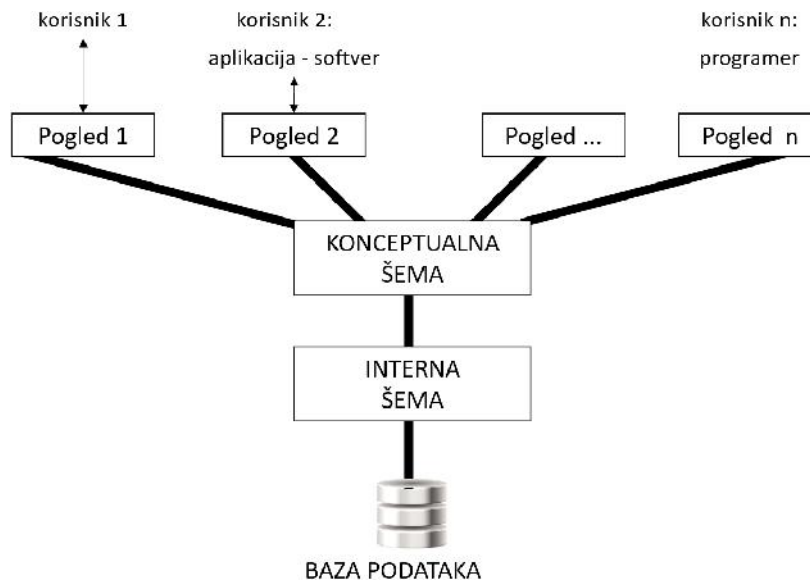
ANSI/SPARC DBMS DBMS ANSI/SPARC DBMS

6.

➤ ( ) ,  
(Internal Data Definition Language-IDDL)

➤ ( ), ( )

➤ ( " ) ( " ).



### 6. ANSI/SPARC

" "

DBMS

2.

1.

2.

3.

4.

5.

2.3.1.1.

2.3.1.2.

2.



2.3.1.3.

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( )

DBMS.

2.3.1.4.

DBMS

ANSI/SPARC

, DBMS

DBMS

2.3.1.5.

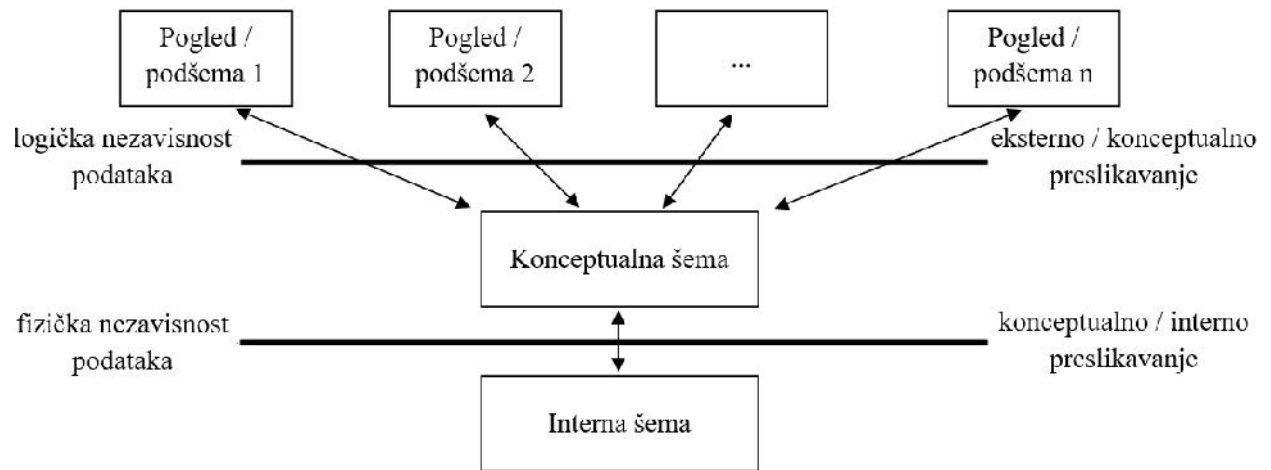
ANSI/SPARC

7.:



( )

( / ), )



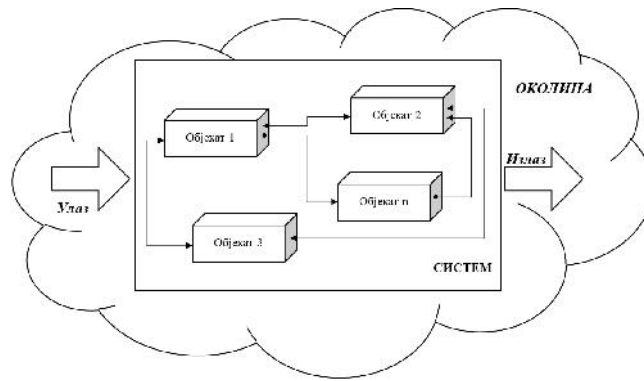
7. Šematski prikaz jednog hijerarhijskog modela



4.

## 4.

( ) ( ),  
, , ,  
.  
( ) , 16.  
[8].



16.

, [8]

DBMS.

- , ;
- . ;
- ; ;
- . " " : < ,
- , >.

### 4.1.

- , . " "
- . :
- ( ) , .
- ( )
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- , , .
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- - ( )
- ( )
- ( ) .
- o , 5.,

### 4.2.

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- Chen-
- ( ) ,
- [8].

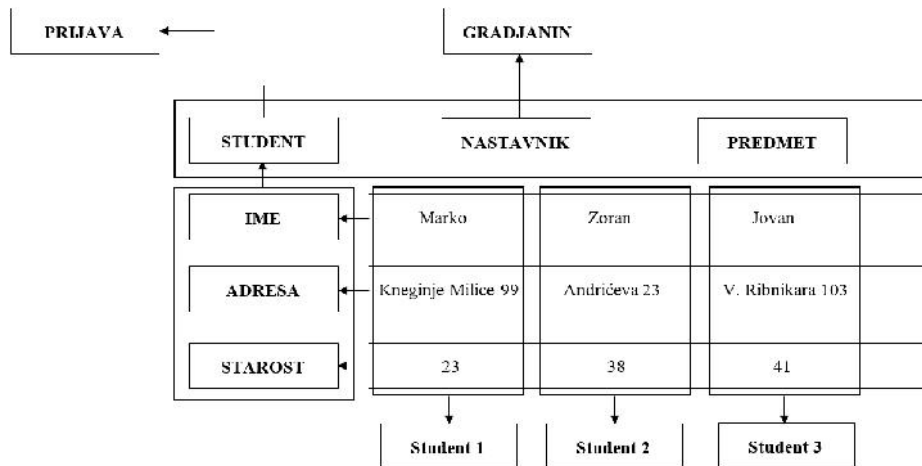




),  
 ( ).  
 ( ) ,  
 {Student, Radnik, Dete, Penzioner}  
 Gra anin.

Student, Radnik, Dete Penzioner. Gra anin

Student, Predmet Nastavnik Prijava  
 17.,  
 { Marko, Zoran, Jovan }, {Kneginje Milice 99, Andri e va 23, V. Ribnikara 103} {22, 38,  
 41}  
 ( ) < Marko, Kneginje Milice 99, 22> , <Zoran, Andri e va 23, 38> < Jovan, V.  
 Ribnikara 103, 41>  
 Student, Student -1, Student -2, Student -3,  
 Student, STUDENT.  
 Student <IME, ADRESA,  
 STAROST> . Student Nastavnik Gradjanin  
 ( Student Nastavnik, Predmet)<Student, Nastavnik, Predmet>  
 Prijava, PRIJAVA.



17.

[2]

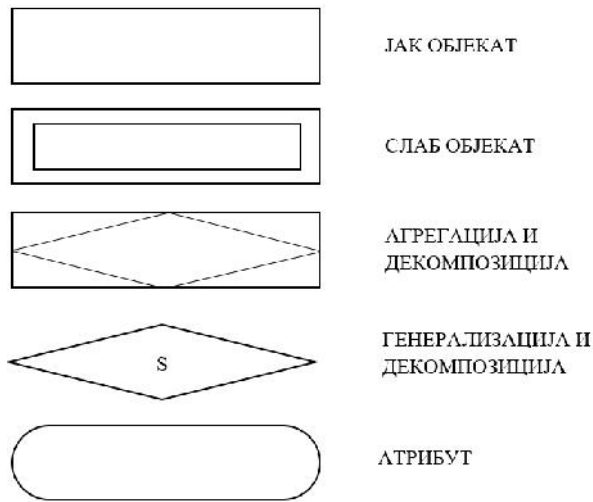
4.

( ).

( ).

### 4.2.2.

18.



18.

[2]

#### 4.2.2.1.

( )

*Radnik,*  
*RADNIK*

*Radnik.*

(

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).

,  
 ( , ),  
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➤ ( , ...),  
 ➤ ,  
 ➤ ( , , ...),  
 ➤ / / ( , ...),  
 ➤ ,  
 ➤ ( - , - ),  
 ➤ / ,  
 ➤ (

).

• ( ) -  
 •

:

- Radnik:  
 - RADNIK: set\_of Radnik

( )

Zapošljava . < 19., >

2 ( 1 , 2 ) ( ) 1 1 2



4.

GG 1, 1. DG > 1, 0, 1 > 1, > 1, DG ≤ GG.

RADI RADNIK

ODELENJE (DG = 1, GG = 1) - PROIZVODI

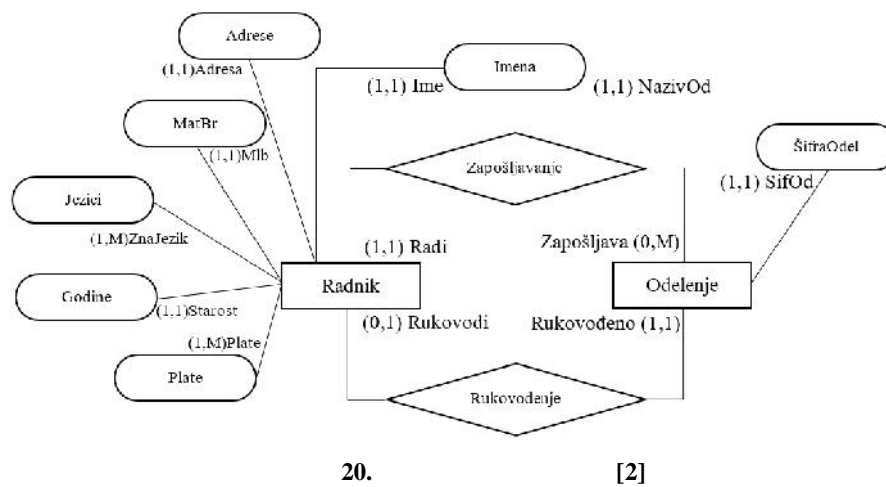
ODELENJE

PROIZVOD (DG = 0, GG = 19.).

4.2.2.2.

RADNIK

(Matbr, Adrese...).



Mlb: Radnik -> Matbr (1,1)  
 ImeR: Radnik -> Imena (1,1)  
 ZnaJezik: Radnik -> Jezici (1, )

DG=1, GG=1,

DG=0 1, GG=1,

4.

Mlb

Radnik.  
.ZnaJezik

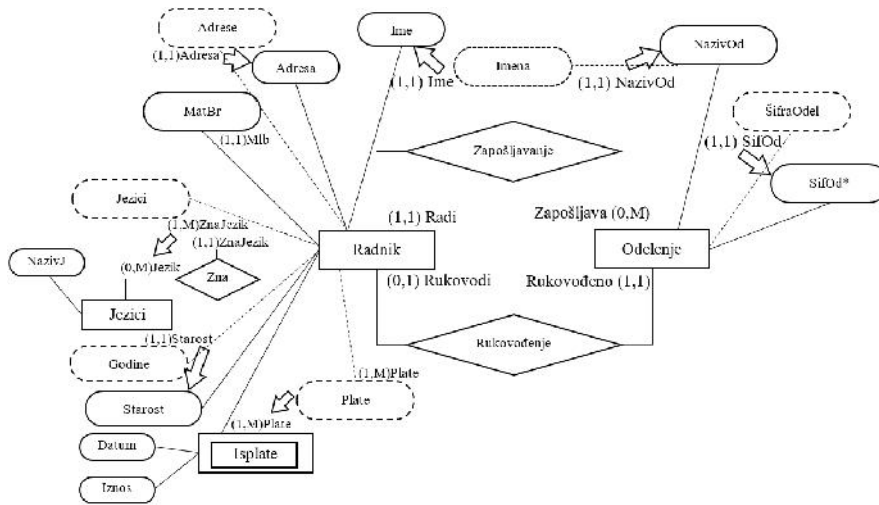
GG= ,

:

• Integer,  
Character, Real, String, Logical, Date

• ( ImeR NazivOd  
Imena),

• . Plate  
<Datum, Iznos>.



21.

[2]

( -> ) DG=1.

4.

GG=1,

21.

( )

, T-3.

-3.

Mib	Long	NotNull And Substring(1,2) Between 1,31 And Substring(3,4) Between 1,12....
NazivJ	String	In(Srpski,Ruski, Engleski, Nema ki)
Adresa	String	
Datum	Date	
Starost	Short	Between 15,65
SifOd	Short	Moduo_11

:

- (>, <, =),
- *Between*,
- *In* ( ),
- *NotNull*,

*And, Or Not.*

( )

IMENA

(

20),

RADNIK

IME

IMENA.

RADNIK È IMENA

( )

4.

*INVERZNO*

( )

„ ”

*RADT* , , *RADNIK Ě ODELENJE* ( ) *RADNIK, ODELENJE.*

” ”

” ”

?

:



) *DBMS-* ( ” ” (

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, , - ( , ), , ,



*DOMEN Ě OBJEKAT,*

4.2.2.3.

( ). ” ”

/

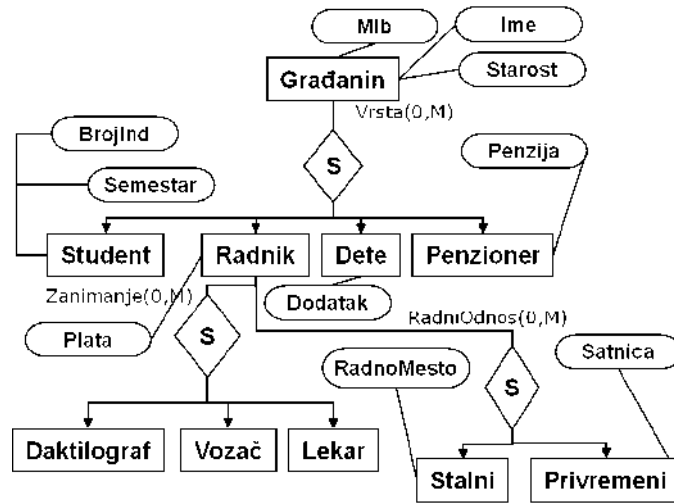
*Radnik, Student, Penzioner, Dete Radnik*

*Gra anin, Voza , Daktilograf, Lekar*

22.



( )  $GG = 1$ ,  
 RADNIK ( )  
 )  $GG > 1$ ,  
 $DG = 0$ ,  
 ( ).



22. ( ) [2]

( )  
 21., Radnik Zanimanje  
 Inženjer, Vozač, Lekar, RadniOdnos Stalan  
 Privremeni.  
 ( )  
 NADTIP Ě NEPOVEZANA UNIJA PODTIPOVA

➤  
 ➤  
 Student Građanin BrojInd  
 Semestar, " ", Mlb, Ime, Starost. Lekar  
 Specijalnost, Plata, Mlb, Ime Starost. Lekar  
 : Lekar, " "  
 ), Radnik ( , )  
 ) Građanin ( , ).



24. n- [2]

4.2.2.4.

1.: , , .

( , ),

25.

*Registrovan* , *Predmet*  
*Studenata.*

25. " , , "

2.: , , .

*Prijava*

*Student Predmet.*

, 26.

26. " , , "

3: , ( ).

*Student* ( ). *Vrsta,* 27.

*Student*

27. " , , "

( , , )

).

4.: , - .

*Zadatak*

*Projekat,* 28.

4.

*NazivZad*  
<ŠifProj, NazivZad>,

*Zadatka* -a

" " ,  
.  
.

**28.** " , - "

4.: , .

" " *Predmet Katedra*

, 29.

**29.** " , "

*Predmet Pripada Katedri* , *Katedra*

*Predmet. Katedra*

( )

*Predmet* .

, *Predmet*

*Katedra.*

*Katedri,*

**4.2.3.**

- ( )

:

➤ ( ) ,

➤ ( ) .

**4.2.3.1.**

, .  
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( )

**OBJEKAT È DOMEN.**

4.

„ ” , GG > 1,

([9]):

*def\_redosleda\_presl:: naziv\_preslikanja REDOSLED vrsta\_redosleda*  
*vrsta\_redosleda:: PRVI | POSLEDNJI | ISPRED | IZA | SORTIRANO\_PO [OPADAJU EM]*  
*naziv\_atributa\_kodomena*

:

*POSLEDNJI* , *ISPRED* *IZA* (" ") *PRVI*,  
*OPADAJU I*,

4.2.3.2.

( )

( ).