

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ УКРАЇНИ
“КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ
ІМЕНІ ІГОРЯ СІКОРСЬКОГО”

Факультет прикладної математики
Кафедра програмного забезпечення комп’ютерних систем

Лабораторна робота № 2

з дисципліни “Бази Даних”

тема “Створення додатку бази даних, орієнтованого на взаємодію з СУБД
PostgreSQL”

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Перевірів

“ ____ ” “ ____ ” 20__ р.

викладач

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варіант № 18

Київ 2020

Метою роботи є здобуття вмінь програмування прикладних додатків баз даних PostgreSQL.

Загальне завдання роботи полягає у наступному:

1. Реалізувати функції внесення, редагування та вилучення даних у таблицях бази даних, створених у лабораторній роботі №1, засобами консольного інтерфейсу.
2. Передбачити автоматичне пакетне генерування «рандомізованих» даних у базі.
3. Забезпечити реалізацію пошуку за декількома атрибутами з двох та більше сутностей одночасно: для числових атрибутів – у рамках діапазону, для рядкових – як шаблон функції LIKE оператора SELECT SQL, для логічного типу – значення True/False, для дат – у рамках діапазону дат.
4. Програмний код виконати згідно шаблону MVC (модель-подання-контролер).

Repository URL:

<https://github.com/pr0skilled/DB-1>

Пункт 1.

```
Enter command:  
get_anime  
Enter id:9  
Id: 9, Title: Title, Year: 2012, Series: 12, Rating: 2,34
```

```
Enter command:  
get_anime  
Enter id:5  
bad value
```

```
Enter command:  
delete_anime  
Enter id:5  
ERROR
```

```
Enter command:  
delete_anime  
Enter id:10  
success
```

```
Enter command:  
get_anime  
Enter id:10  
bad value
```

```
Enter command:  
insert_anime  
Enter title:  
asd  
Enter release year:  
qwe  
bad value
```

```
Enter command:  
insert_anime  
Enter title:  
asd  
Enter release year:  
2002  
Enter series:  
120  
Enter rating:  
8.96  
success
```

Пункт 2.

```
SELECT * FROM public.anime  
ORDER BY anime_id DESC LIMIT 100
```

Output Explain Messages Notifications

anime_id [PK] integer	title character varying (100)	year integer	series integer	rating numeric (4,2)
99966	WEULJYKMX	1987	252	6.80
99965	UWJXBXYRW	2005	721	9.22
99964	PKVGWPAPI	1952	470	6.63
99963	BYABWHXIP	1955	391	1.58
99962	VHREQSOVT	1952	932	1.87
99961	BCKWRBNMM	1944	416	0.51
99960	WJUFLCQUY	1904	373	4.81
99959	JLPVQKJVC	2008	578	4.08
99958	CSYTDDYPG	1908	801	9.09
99957	FJEXQUYEX	1945	876	0.40
99956	TEGNJNGRD	2020	817	9.89
99955	RURNIUOAQ	2000	332	8.34

```
SELECT * FROM public.girls
ORDER BY girl_id ASC
```

put Explain Messages Notifications

girl_id [PK] integer	fullname character varying (50)	age integer	hair character varying (30)	eyes character varying (30)
1141	BMN1GRHUF	48	VEIXA	NWHXI
1142	RNMAEUKIL	51	TTWOG	MYBSO
1143	RYTVXXSMM	53	WGDSV	UXJIE
1144	FKKULCQLX	81	ECXMA	QJOMX
1145	DVYRYHXIL	74	YUQYO	HVGAK
1146	MQETEPOJN	63	UUJYT	QQLHJ
1147	CUDIWCDA	8	CHBSA	NYFSN
1148	TLELPBUVJ	90	WCDJX	APMKY
1149	EUGHKNUYQ	10	BSABQ	CONXO
1150	NHAYQAVTF	29	KQDLP	HJGEV
1151	AUIFHQUEB	30	XVXSB	QFSTA
1152	MNPWJJWPS	14	UTYXH	XUKPD
1153	SJBHIKIO	30	JNKKA	YRMDG
1154	QPCTKMGJI	87	XMNCQ	OYVPS
1155	WUIREDEDL	59	BKDG	WCDRP

```
SELECT * FROM public.producers
ORDER BY producer_id ASC
```


ut Explain Messages Notifications

producer_id [PK] integer	name character varying (50)	studio character varying (50)	number_of_works integer
50	CIQVMIPYV	SXKIP	23
51	LLHEYYPB	KMNXM	26
52	CTLQXUTJQ	VLNCY	18
53	JJUYOPSQA	CHBAK	13
54	PWTCRIJQY	RDMWO	24
55	VSQAMQQIH	LOHJV	5
56	GYVSUVEXE	TBTMN	21
57	SGOPWCOOB	YIWVU	5
58	AMMKXCJJR	OVDTI	16
59	EPXVTBQDD	FBQEB	18
60	YLLXABJCA	MDWWG	14
61	UHVYJFFVQ	RBYWL	9
62	CKOOMOFUM	ETDMD	29
63	BIUPFFVVU	YRBYE	2

{ } gen_anime_id()

{ } gen_girl_id()

{ } gen_producer_id()

 Materialized Views

▼ { } Procedures (5)

{ } random_anime(n integer)

{ } random_girls(n integer)

{ } random_links_a_p(n integer)

{ } random_links_g_a(n integer)

{ } random_producers(n integer)

```

CREATE OR REPLACE FUNCTION public.gen_anime_id(
)
RETURNS integer
LANGUAGE 'plpgsql'

COST 100
VOLATILE

AS $BODY$
DECLARE
res int;
BEGIN
SELECT anime_id INTO res FROM anime ORDER BY RANDOM() LIMIT 1;
RETURN res;
END;
$BODY$;

ALTER FUNCTION public.gen_anime_id()
OWNER TO postgres;

```

```
1 call random_anime(10)
```

Data Output Explain Messages Notification

CALL

Query returned successfully in 63 msec.

```

1 -- PROCEDURE: public.random_anime(integer)
2
3 -- DROP PROCEDURE public.random_anime(integer);
4
5 CREATE OR REPLACE PROCEDURE public.random_anime(
6   n integer)
7 LANGUAGE 'plpgsql'
8 AS $BODY$
9 DECLARE
10   counter integer := 0;
11 BEGIN
12   while(counter < n) loop
13     counter := counter + 1;
14     INSERT INTO anime
15       (title, year, series, rating)
16       (select chr(trunc(65 * random() + 25)::int) || chr(trunc(65 * random() + 25)::int) || chr(trunc(65 * random() + 25)::int) || chr(trunc(65 * random() + 25)::int)
17         || chr(trunc(65 * random() + 25)::int) || chr(trunc(65 * random() + 25)::int) || chr(trunc(65 * random() + 25)::int) || chr(trunc(65 * random() + 25)::int)
18         || chr(trunc(65 * random() + 25)::int) || chr(trunc(65 * random() + 25)::int) as title,
19        (trunc(123 * random() + 1980)::int) as year,
20        (trunc(1 * random() + 1000)::int) as series,
21        (random() * 10) as rating);
22   end loop;
23 END
24 $BODY$;
25

```

Пункт 3.

```

Enter command:
search1
Enter minimum series in title:
100
Enter minimum producer's works:
10
Enter girl's name:
60
Query executed and results returned in 24 milliseconds
Anime id: 58358, Title: ICHKUPHTP, Series: 388, Producer id: 16630, Name: GONCQKQKJ, Number of works: 28, Girl id: 99268, Name: GCEADYTMW,
Anime id: 58358, Title: ICHKUPHTP, Series: 388, Producer id: 16630, Name: GONCQKQKJ, Number of works: 28, Girl id: 65138, Name: ITVLARAOL,
Anime id: 98256, Title: QCHUSGCIJ, Series: 819, Producer id: 22525, Name: WUXGXIXOW, Number of works: 16, Girl id: 47348, Name: SRMHADVEV,
Anime id: 32263, Title: THYUARGK, Series: 392, Producer id: 64417, Name: THGEECTRB, Number of works: 20, Girl id: 27685, Name: GWTUKJADD,
Anime id: 41914, Title: JHLGLXLO, Series: 973, Producer id: 98849, Name: XJKNQKQSS, Number of works: 18, Girl id: 29532, Name: GADNABYKH,
Anime id: 34146, Title: ORWRPTQMD, Series: 600, Producer id: 59622, Name: T8FUQPKT, Number of works: 18, Girl id: 15827, Name: ADXRNGESH,
Anime id: 74120, Title: MUVOGENY, Series: 701, Producer id: 44866, Name: LYVUCKLAT, Number of works: 21, Girl id: 68594, Name: LHBHPGAD,

```

```

SELECT
an.anime_id, an.title, an.series, prod.producer_id, prod.name, prod.number_of_works, gir.girl_id, gir.fullname
FROM anime AS an
    LEFT JOIN links_anime_producers AS anprod
        ON an.anime_id = anprod.anime_id
    LEFT JOIN producers AS prod
        ON anprod.producer_id = prod.producer_id
    LEFT JOIN links_girls_anime AS ganime
        ON an.anime_id = ganime.anime_id
    LEFT JOIN girls AS gir
        ON ganime.girl_id = gir.girl_id
WHERE an.series > @100
AND prod.number_of_works > @18
AND gir.fullname like '%AD%'

```

Data Output Explain Messages Notifications

	anime_id integer	title character varying (100)	series integer	producer_id integer	name character varying (50)	number_of_works integer	girl_id integer	fullname character varying (50)
1	58358	ICHMUPHTP	388	16630	GONCNCQNNJ		99268	GCEADYTMW
2	58358	ICHMUPHTP	388	16630	GONCNCQNNJ		65138	ITVLARADL
3	98256	QCHUSGCLJ	819	22525	WUWXRXIOW		47348	SRWHADYFV
4	32263	THYUKARGX	392	64417	THGEECTRB		27685	GWTUKJADD
5	41914	IMULGCXLO	973	98049	XJKDRQMSS		29537	GADNABYXH
6	34146	ORWRPTQND	600	59622	TBFUQPKT		15027	ADXRNGESM
7	74120	WUVHXGENY	701	44066	LYVUCKLAT		60594	LHBHPMGAD

```

Enter command:
search2
Enter minimal title's rating(0.00 - 10.00):
8.00
Enter minimum girl's age:
18
Enter maximum girl's age:
25
Query executed and results returned in 1285 milliseconds
Anime id: 1. Title: Naruto. Rating: 9,2. Girl id: 7. Name: Kushina Uzumaki. Age: 24.
Anime id: 3. Title: Re:Zero. Rating: 8,76. Girl id: 8. Name: Emilia. Age: 19.
Anime id: 66777. Title: MYDCLFXBX. Rating: 8,36. Girl id: 85173. Name: OHHGDKMNX. Age: 23.
Anime id: 33275. Title: TVWXRTFRH. Rating: 9,25. Girl id: 85323. Name: HKWEPHRCY. Age: 23.
Anime id: 79508. Title: BCSQQFRFL. Rating: 8,83. Girl id: 2082. Name: LLFBEEIEY. Age: 18.
Anime id: 14992. Title: VTHRXXVFX. Rating: 9,49. Girl id: 61130. Name: OIKYFPPXU. Age: 21.
Anime id: 41752. Title: ELAIQIWDI. Rating: 8,77. Girl id: 13047. Name: TQQMMBDQR. Age: 23.
Anime id: 95681. Title: QCIDAQQUC. Rating: 9,2. Girl id: 97503. Name: HWCYVBOPT. Age: 19.
Anime id: 100027. Title: XYVDZHCET. Rating: 8,67. Girl id: 53453. Name: FFKCVQTRP. Age: 19.

```

```
SELECT anime.anime_id, anime.title, anime.rating, girls.girl_id, girls.fullname, girls.age
from links_girls_anime
inner join anime on links_girls_anime.anime_id = anime.anime_id
inner join girls on links_girls_anime.girl_id = girls.girl_id
WHERE anime.rating > 8
AND girls.age between 18 and 25
```

ata Output Explain Messages Notifications

	anime_id integer	title character varying (100)	rating numeric (4,2)	girl_id integer	fullname character varying (50)	age integer
1	1	Naruto	9.20	7	Kushina Uzumaki	24
2	3	Re:Zero	8.76	8	Emilia	19
3	66777	MYDCLFXBX	8.36	85173	OHHGDKMNX	23
4	33275	TVWXRTFRH	9.25	85323	HKWEPHRCY	23
5	79508	BCSQQRFL	8.83	2082	LLFBEEIEY	18
6	14992	VTHRXXVfy	9.49	61130	OIKYFPPXU	21
7	41752	ELAIQIWDt	8.77	13047	TQQMMBDQR	23
8	95681	QCIDAQQUC	9.20	97503	HWCYVBOPT	19
9	100027	XBYDJHFTT	8.67	52453	SEKGYOJBS	19
10	49433	RAJFSLSRN	9.31	17688	JXCEUFWMJ	20
11	70426	JKGCNQJFJ	8.69	89234	QRFAUICDJ	21
12	36964	PLMXOJVYP	9.83	76500	NIQCLDPLH	20

```
Enter command:
search3
Enter producer's name:
PO
Enter minimum anime year:
1990
Enter maximum anime year:
2018
Query executed and results returned in 13 milliseconds
Producer id: 3874. Name: LMPOGOYTV. Number of works: 22. Anime id: 78096. Title: LNKOIVTMJ. Release year: 2004.
Producer id: 4747. Name: POVIQBKVM. Number of works: 22. Anime id: 53406. Title: BVUSVRKLQ. Release year: 1999.
Producer id: 10669. Name: EMDTJPOMO. Number of works: 7. Anime id: 87682. Title: APUBPXNHW. Release year: 2013.
Producer id: 17103. Name: NPOEOHRMK. Number of works: 23. Anime id: 22945. Title: EFXCKXFGI. Release year: 2011.
Producer id: 56073. Name: USNBEPOEI. Number of works: 5. Anime id: 2. Title: No Game No Life. Release year: 2014.
Producer id: 64998. Name: XRIDVCPOY. Number of works: 17. Anime id: 19413. Title: JHERKMLPL. Release year: 2004.
Producer id: 89497. Name: JPOOSVXRU. Number of works: 20. Anime id: 72115. Title: ICCYIENJB. Release year: 2001.
Producer id: 95228. Name: RPOLBXYS. Number of works: 27. Anime id: 32175. Title: FFYOASPON. Release year: 2018.
```

```
SELECT
producers.producer_id, producers.name, producers.number_of_works, anime.anime_id, anime.title, anime.year
from links_anime_producers
inner join anime on links_anime_producers.anime_id = anime.anime_id
inner join producers on links_anime_producers.producer_id = producers.producer_id
WHERE producers.name like '%PO%' AND anime.year between 1990 and 2018
```

ata Output Explain Messages Notifications

producer_id integer	name character varying (50)	number_of_works integer	anime_id integer	title character varying (100)	year integer
3874	LMPOGOYTV	22	78096	LNKOIVTMJ	2004
4747	POVIQBKVM	22	53406	BVUSVRKLQ	1999
10669	EMDTJPOMO	7	87682	APUBPXNHW	2013
17103	NPOEOHRMK	23	22945	EFXCKXFGI	2011
56073	USNBEPOEI	5	2	No Game No Life	2014
64998	XRIDVCPOY	17	19413	JHERKMLPL	2004
89497	JPOOSVXRU	20	72115	ICCYIENJB	2001
95228	RPOLBXYS	27	32175	FFYOASPON	2018













Пункт 4.

 master ▾ [DB-1](#) / [lab2](#) / DatabaseLab2 /



pr0skilled lab2

..

	Configuration	lab2
	Controllers	lab2
	Infrastructure	lab2
	Models	lab2
	Properties	lab2
	Views	lab2
	bin/Debug	lab2
	obj/Debug	lab2
	App.config	lab2
	Program.cs	lab2
	lab2_DB.csproj	lab2
	packages.config	lab2