Lecture 2

Best 2019

Personal Project

Personal application

- Web application to extract data from a (IoT) sensor network
- Use you imagination and knowledge of your field to find a specific application
  - smart house
  - environmental sensor network
  - automated fault detection for electronics
  - etc.

Default database setup

- 2 tables
  - sensor table
  - measurement table

one (sensor) to **many** (measurement) relationship between tables

ID_sens	Type	Name	Meas.
1	Temperature	Room 1	C
2	Humidity	Town 1	%
3	Mechanical stress	Eastern Wall 1	N
4	…	…	…

ID_meas	ID_sens	Time	Value
1	1	2019-07-16 …	4
2	2	2019-07-16 …	6.1
3	1	2019-07-16 …	5.2
4	4	2019-07-16 …	6.3
5	2	2019-07-16 …	2.4
6	3	2019-07-16 …	435
…	…	…	…

Difficulty levels

- Different difficulty levels depending on your background in programming and/or web programming
  - beginner
  - intermediate low
  - intermediate high
  - advanced

Beginner Level

- uses the default database setup
- 2 pages (based on previous HTML/CSS project: Save As..)
  - List of sensors (click ->)
  - List of measurements for that particular sensor

Intermediate low Level

- uses the default database setup
- 4 pages (based on previous HTML/CSS project: Save As..)
  - Choose sensor type (click ->)
  - List of sensors of that type (click ->)
  - Choose time interval (click ->)
  - List of measurements for that particular sensor and that time interval

Intermediate high Level

- uses more tables in database setup
  - more parameters for the sensor: location, measurement range (min/max) etc.
  - normalization of the database, type, location, measurement type go to different tables

ID_sens	Type	Name	Location
1	1	Room 1	1
2	1	Town 1	2
3	2	Eastern Wall 1	2
4	…	…	…

ID_type	Meas	Unit
1	Temperature	C
2	Humidity	%
3	Pressure	N/m2
…	…	…

ID_loc	Name
1	Iasi
2	Moscow
3	Athens
4	Istanbul

Intermediate high Level

- 4 pages (based on previous HTML/CSS project: Save As..)
  - Choose sensor type/location/etc. (click ->)
  - List of sensors of that match (click ->)
  - Choose time interval (click ->)
  - List of measurements + basic data processing (min/max/average)

Advanced level

- multiple tables in database setup
- 6 pages (based on previous HTML/CSS project: Save As..)
  - add page to add a sensor in the database
  - add page to generate random measurements in measurement table
  - List of measurements + advanced data processing:
    - min/max/average,
    - comparison with previous time interval (increase/decrease)
    - detection of measurement not in range for that particular sensor
    - etc.

Frameworks

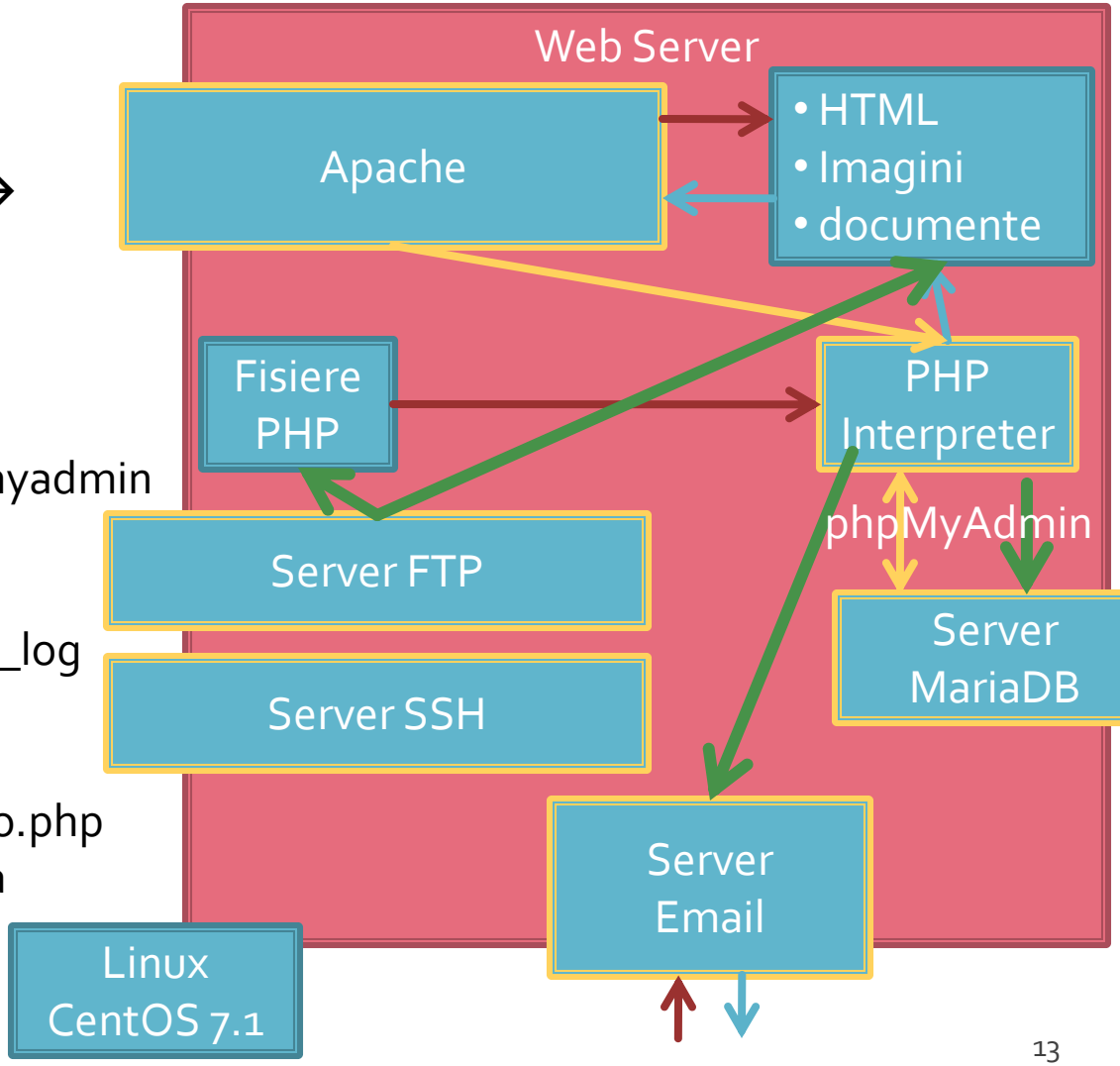
- Absolutely **NO** frameworks allowed!

MySql – Server Centos 7.1

Mini – Indrumar practic
Lucru cu bazele de date

Utilizare LAMP

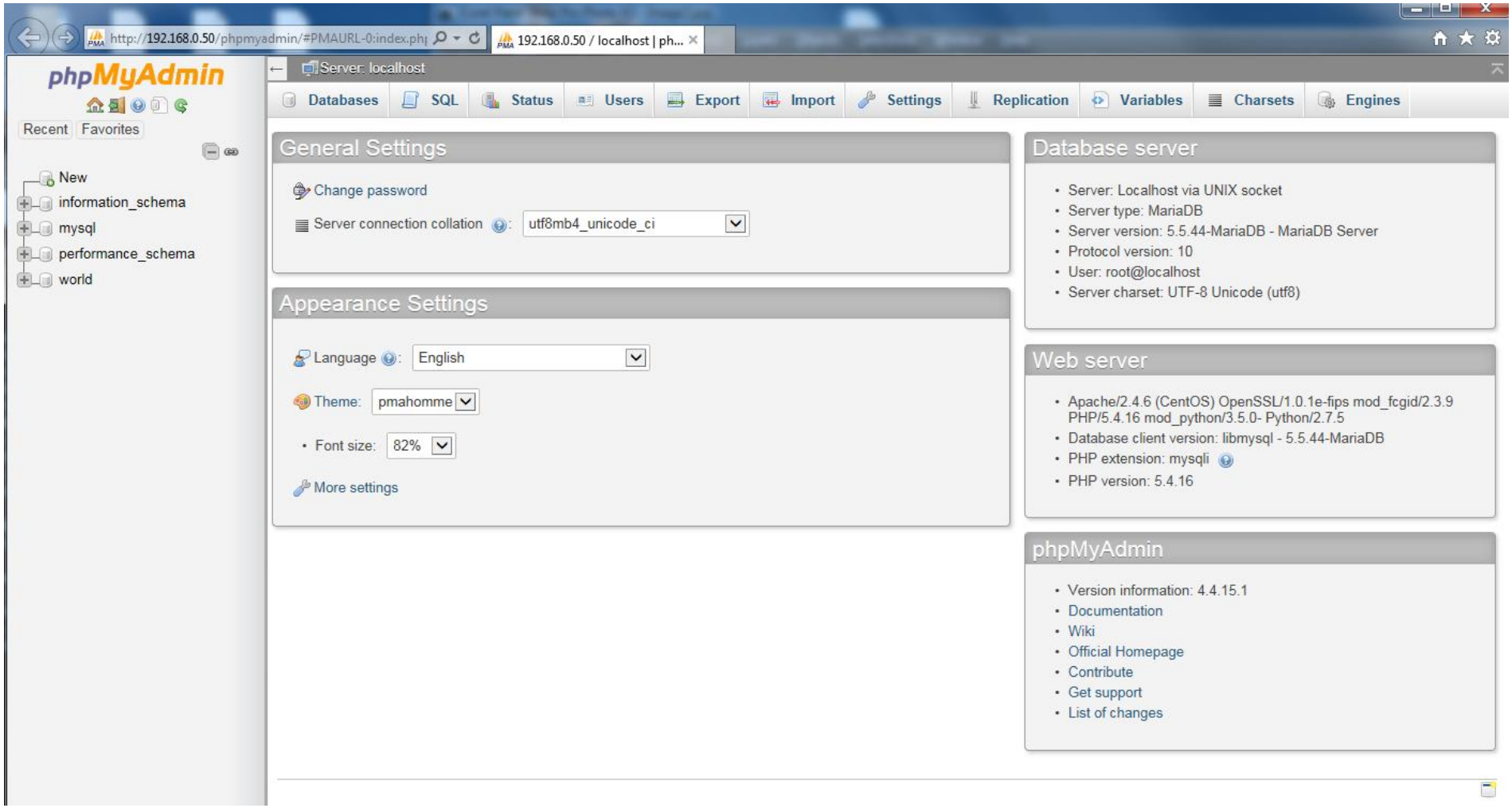
1. login → root:masterrc
2. ifconfig → 192.168.30.5
3. putty.exe → 192.168.30.5 → SSH → root:masterrc (remote login)
4. [alte comenzi linux dorite]
5. FTP → Winscp → SFTP → student:masterrc@192.168.30.5
6. MySql → http://192.168.30.5/phpmyadmin → root:masterrc
7. Apache Error Log →
7a. putty → nano /var/log/httpd/error_log
7b. http://192.168.30.5/logfile.php (nonstandard)
8. PHP info → http://192.168.30.5/info.php
9. daca serviciul DHCP duce la oprirea Apache: service httpd restart



PhpMyAdmin

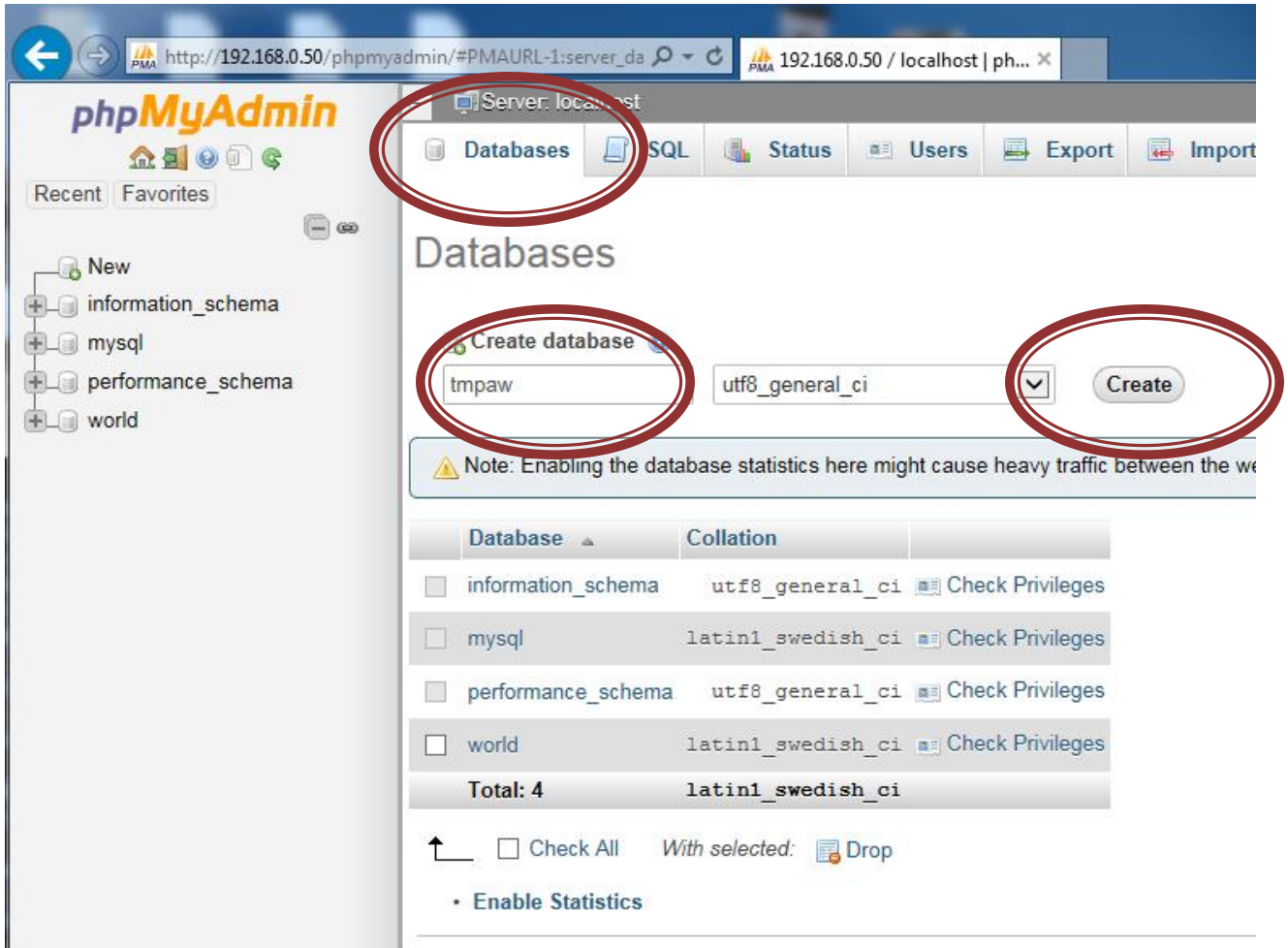
- http://192.168.30.5/phpmyadmin
  - root
  - parola administrator **MySql/MariaDB** (masterrc)

PhpMyAdmin


http://192.168.0.50/phpmyadmin/#PMAURL-0:index.php
192.168.0.50 / localhost | ph...
phpMyAdmin
Recent
Favorites
New
information_schema
mysql
performance_schema
world
Server: localhost
Databases
SQL
Status
Users
Export
Import
Settings
Replication
Variables
Charsets
Engines
General Settings
Change password
Server connection collation:
utf8mb4_unicode_ci
Appearance Settings
Language:
English
Theme:
pmahomme
Font size:
82%
More settings
Database server
Server: Localhost via UNIX socket
Server type: MariaDB
Server version: 5.5.44-MariaDB - MariaDB Server
Protocol version: 10
User: root@localhost
Server charset: UTF-8 Unicode (utf8)
Web server
Apache/2.4.6 (CentOS) OpenSSL/1.0.1e-fips mod_fcgid/2.3.9 PHP/5.4.16 mod_python/3.5.0- Python/2.7.5
Database client version: libmysql - 5.5.44-MariaDB
PHP extension: mysqli
PHP version: 5.4.16
phpMyAdmin
Version information: 4.4.15.1
Documentation
Wiki
Official Homepage
Contribute
Get support
List of changes

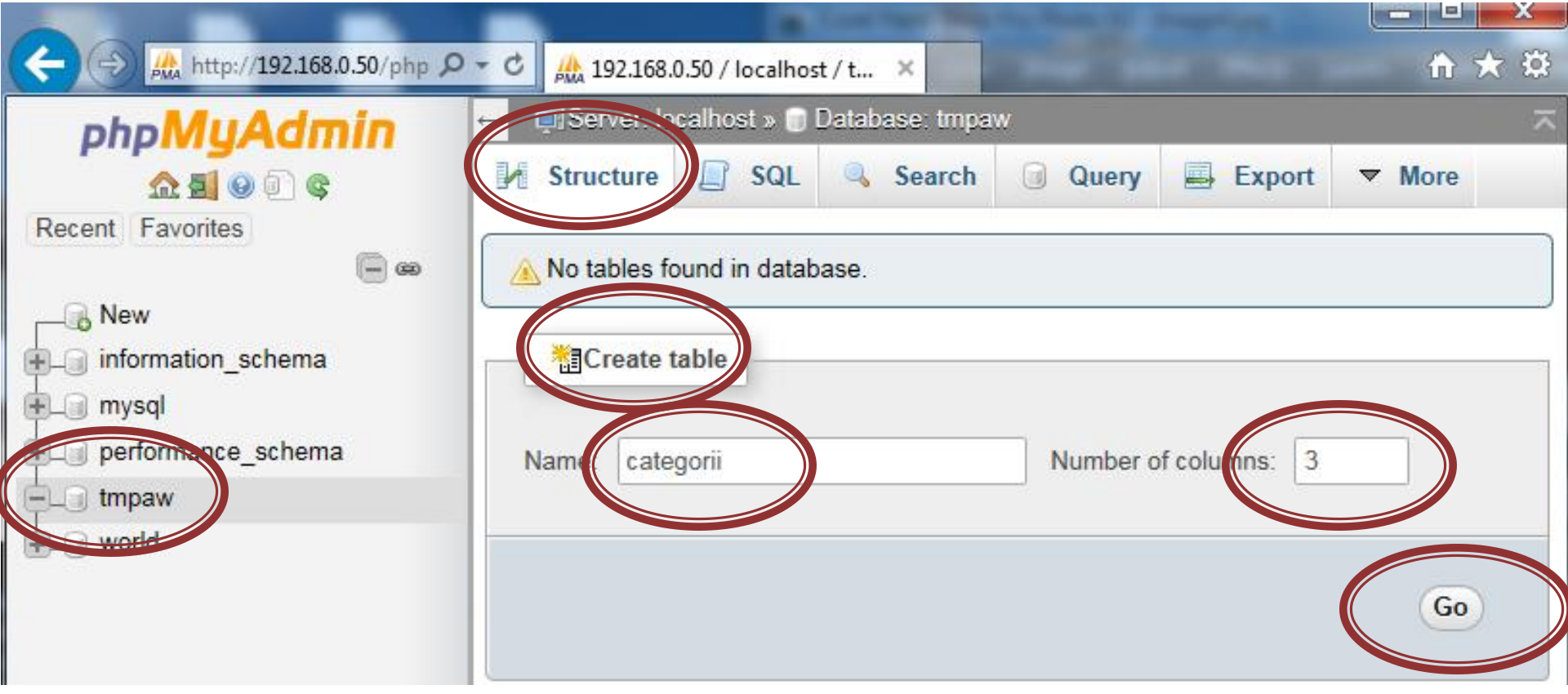
Creare Baza de Date

- Databases →"nume" →Create



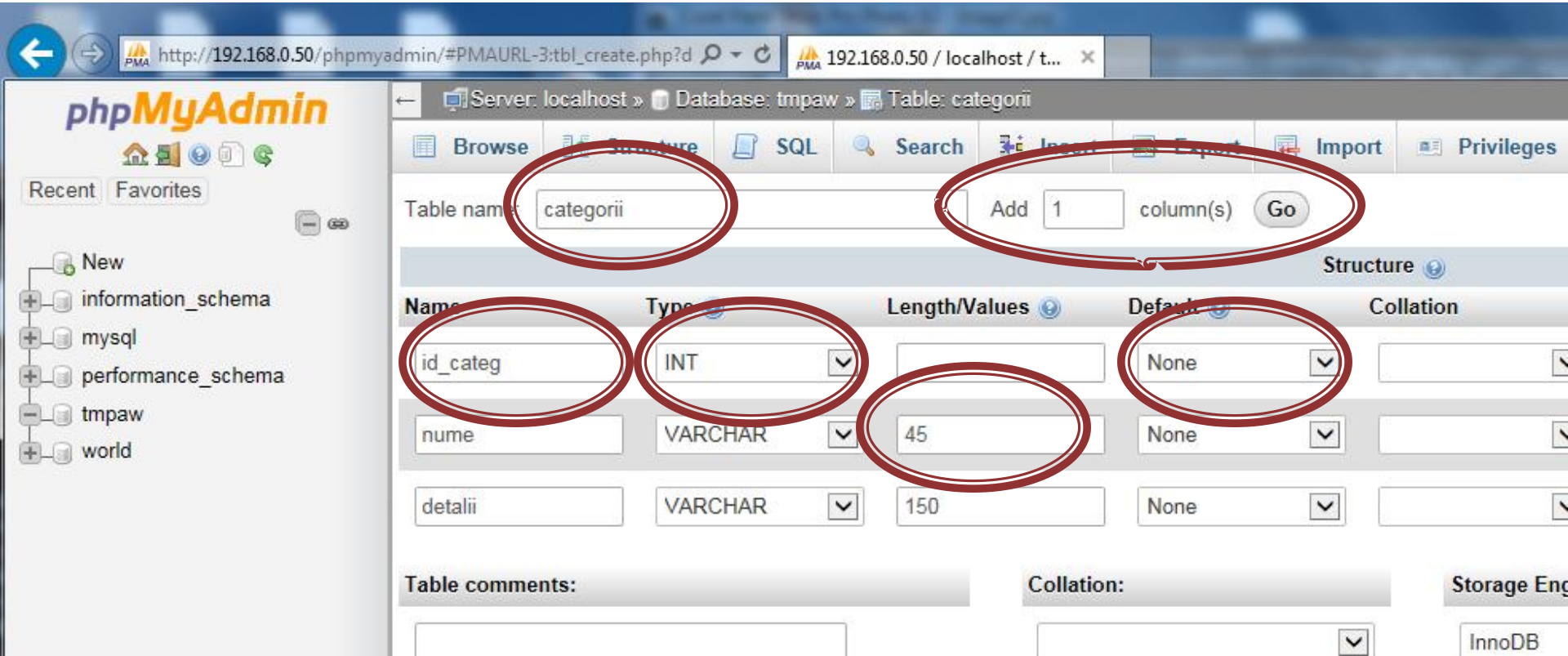
Creare tabele in baza de date

- Baza de date (in lista) → Structure → div Create Table → nume/coloane → Go



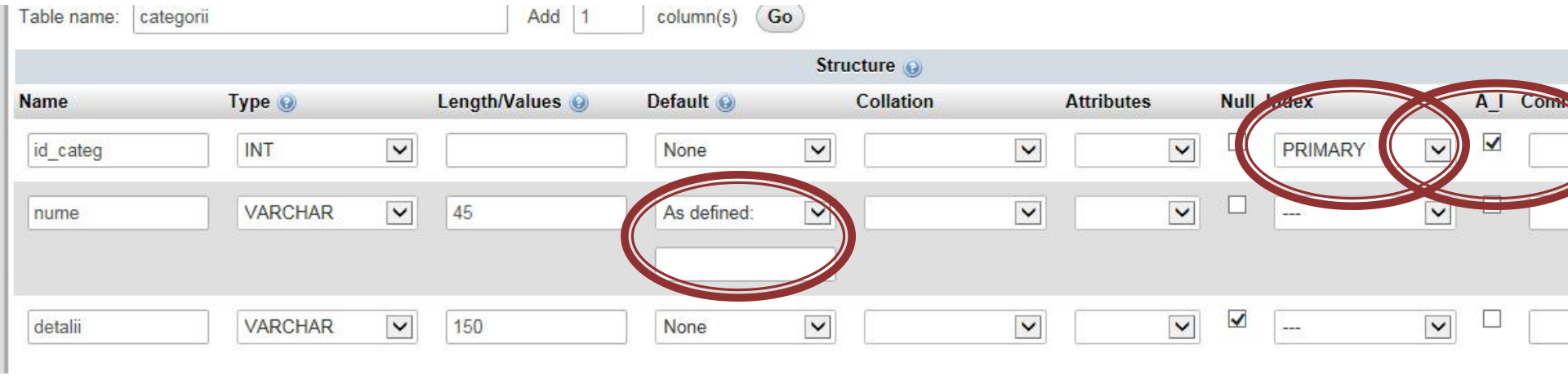
Introducere coloane, tabel categorii

- (eventual) Adaugare coloane / Stabilire nume
- Name / Type / Length / Default



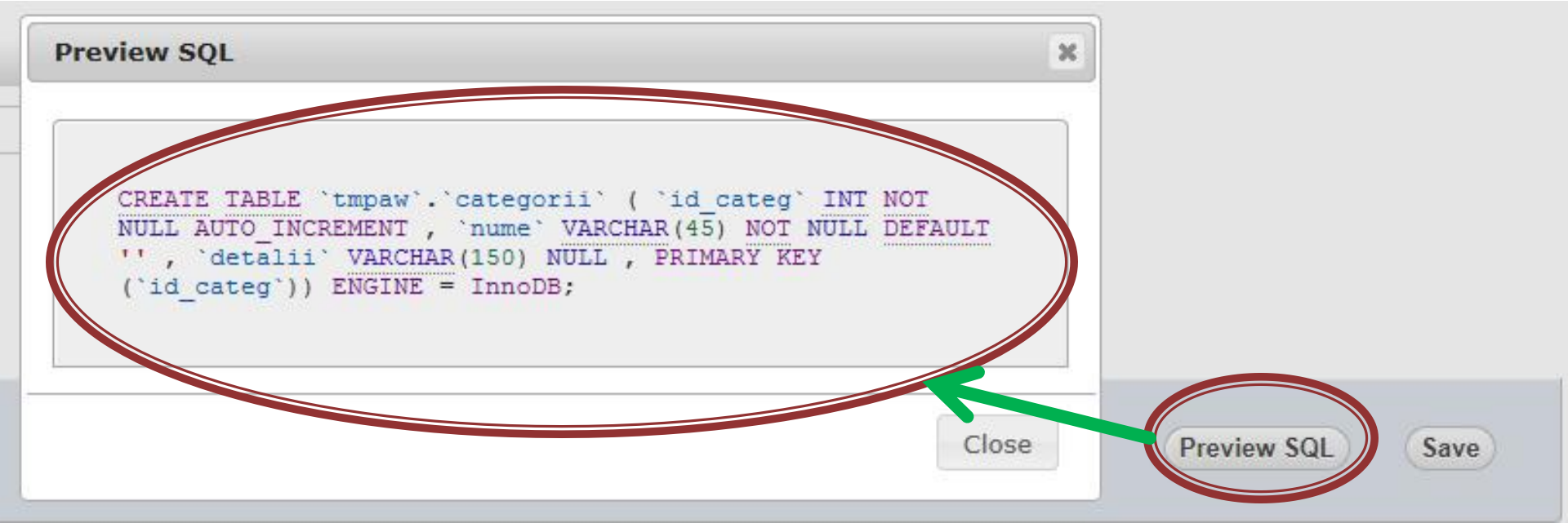
Introducere coloane

- (eventual) NOT NULL / Index / Auto Increment
  - in functie de "necesitatile" coloanei respective



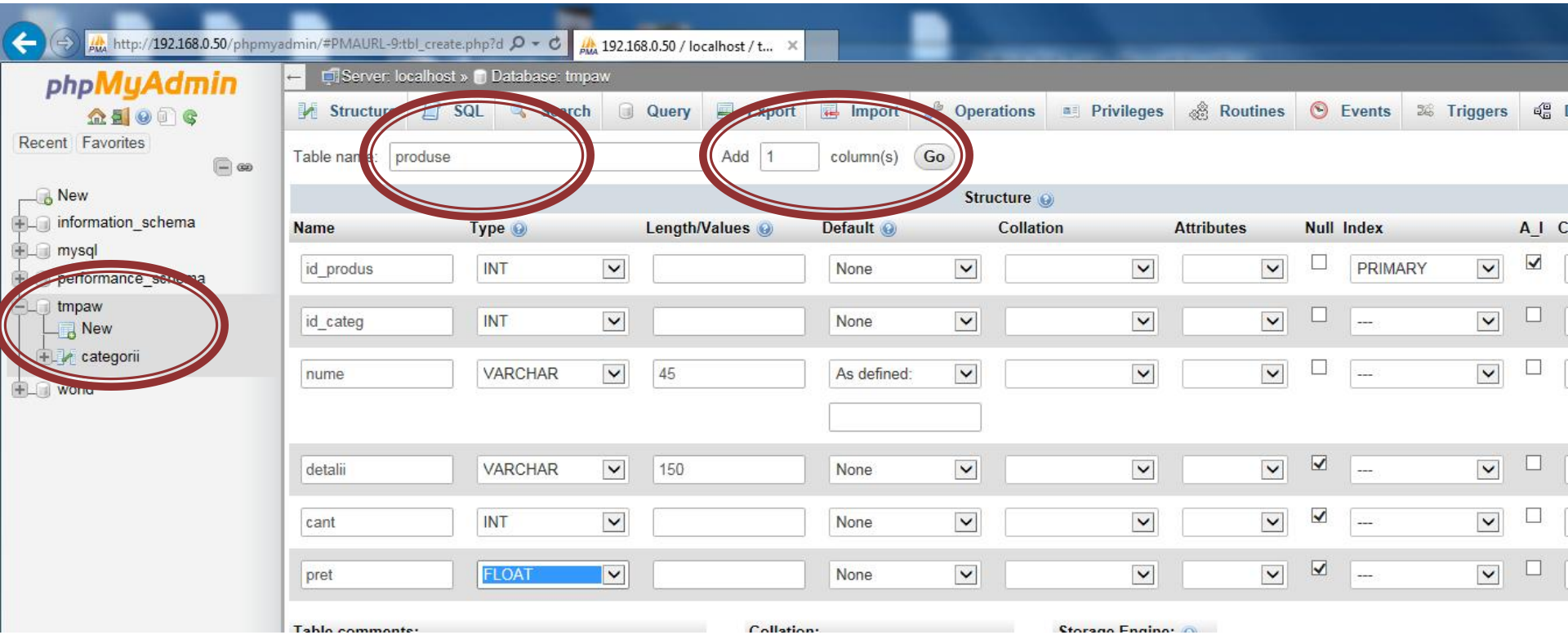
Preview SQL

- in aproape toate etapele in PhpMyAdmin
  - exemplu de cod SQL/schelet utilizabil (copy/paste) in aplicatia PHP
  - modificari de finete absente din interfata
    - copy → Sectiune "SQL" in interfata → paste → modificare



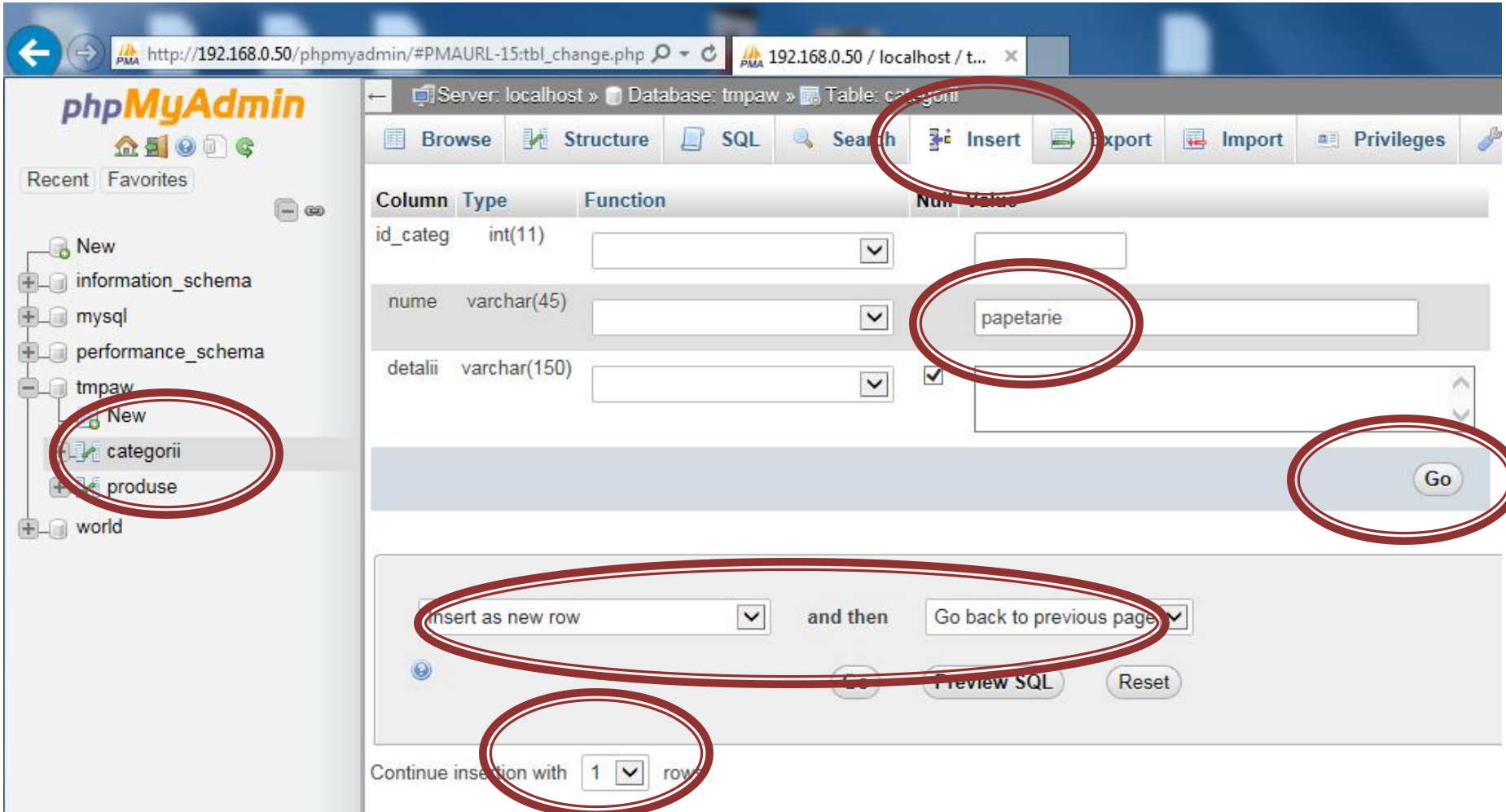
Introducere coloane, tabel produse

- New → Nume → Add Columns → …



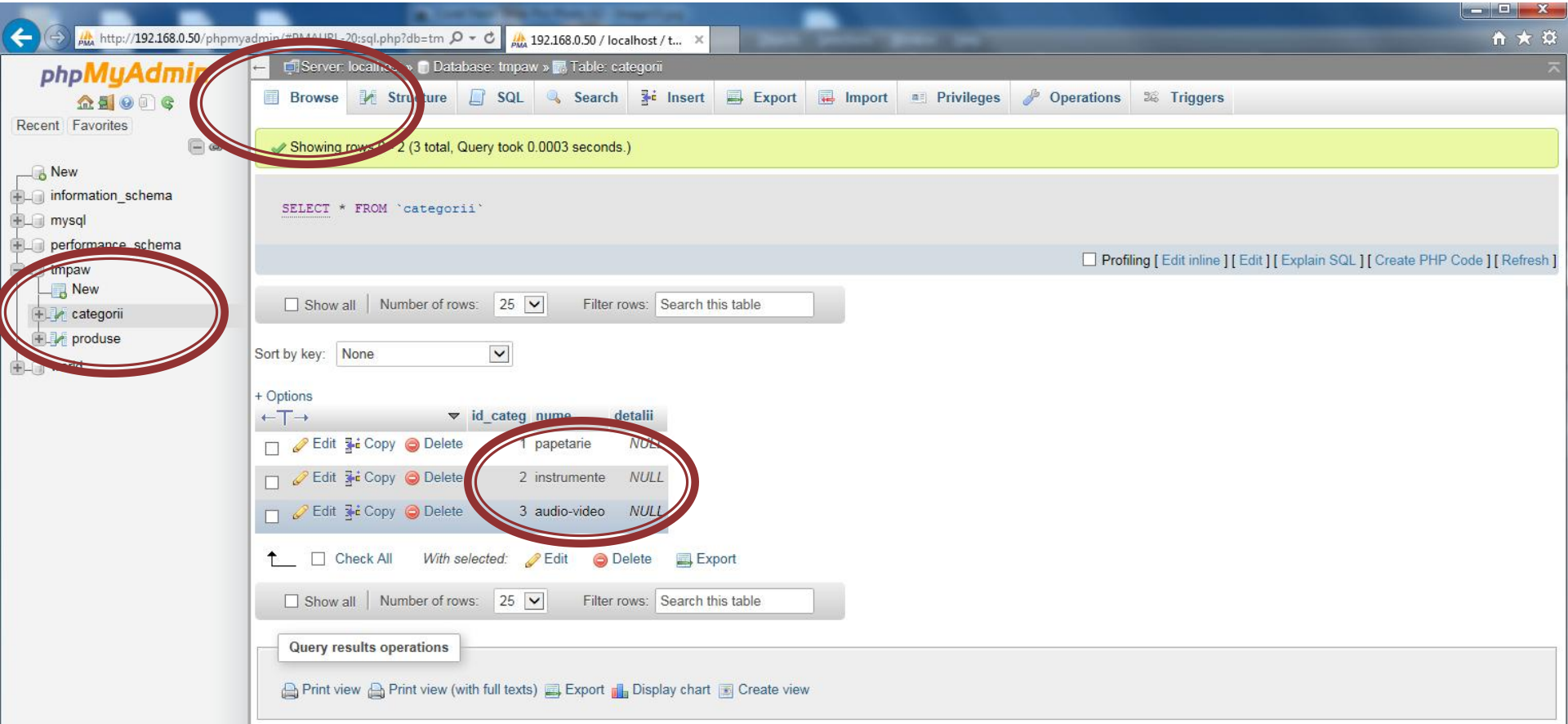
Introducere date initiale (interfata)

- Tabel → Insert → Completare → Go



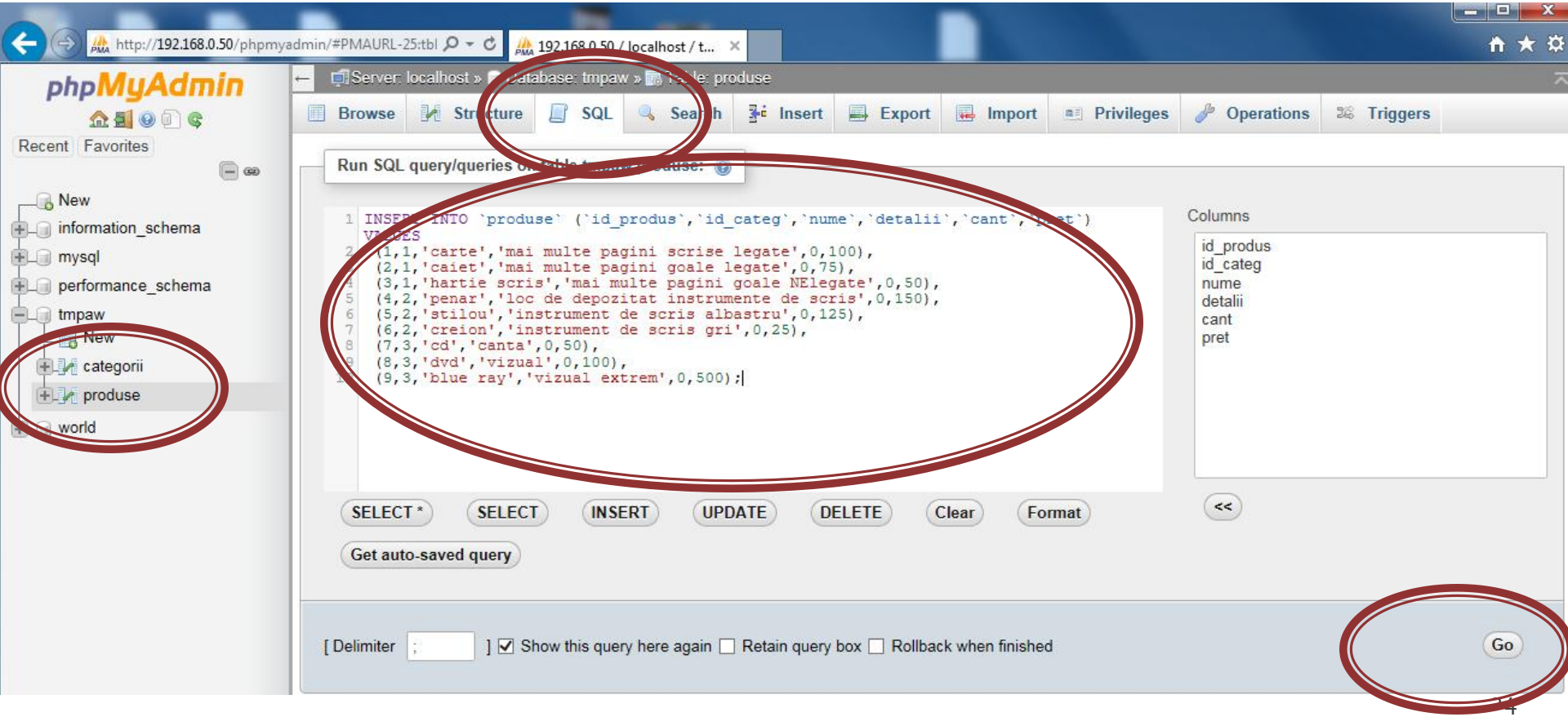
Vizualizare date existente

- Tabel → Browse → salt la pagina (numar de linii pe pagina)

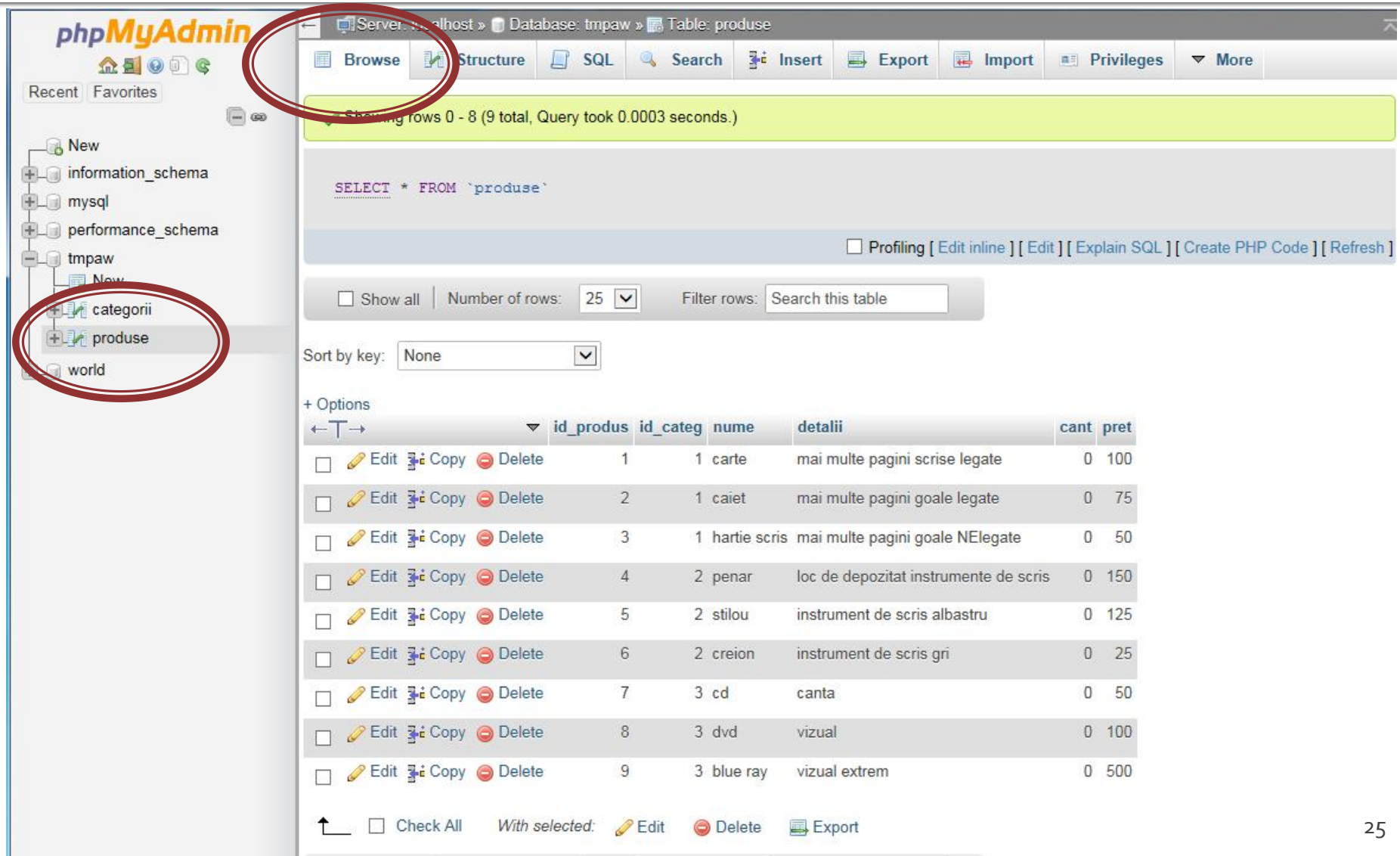


Introducere date initiale (SQL)

- Tabel → SQL → completare → Go

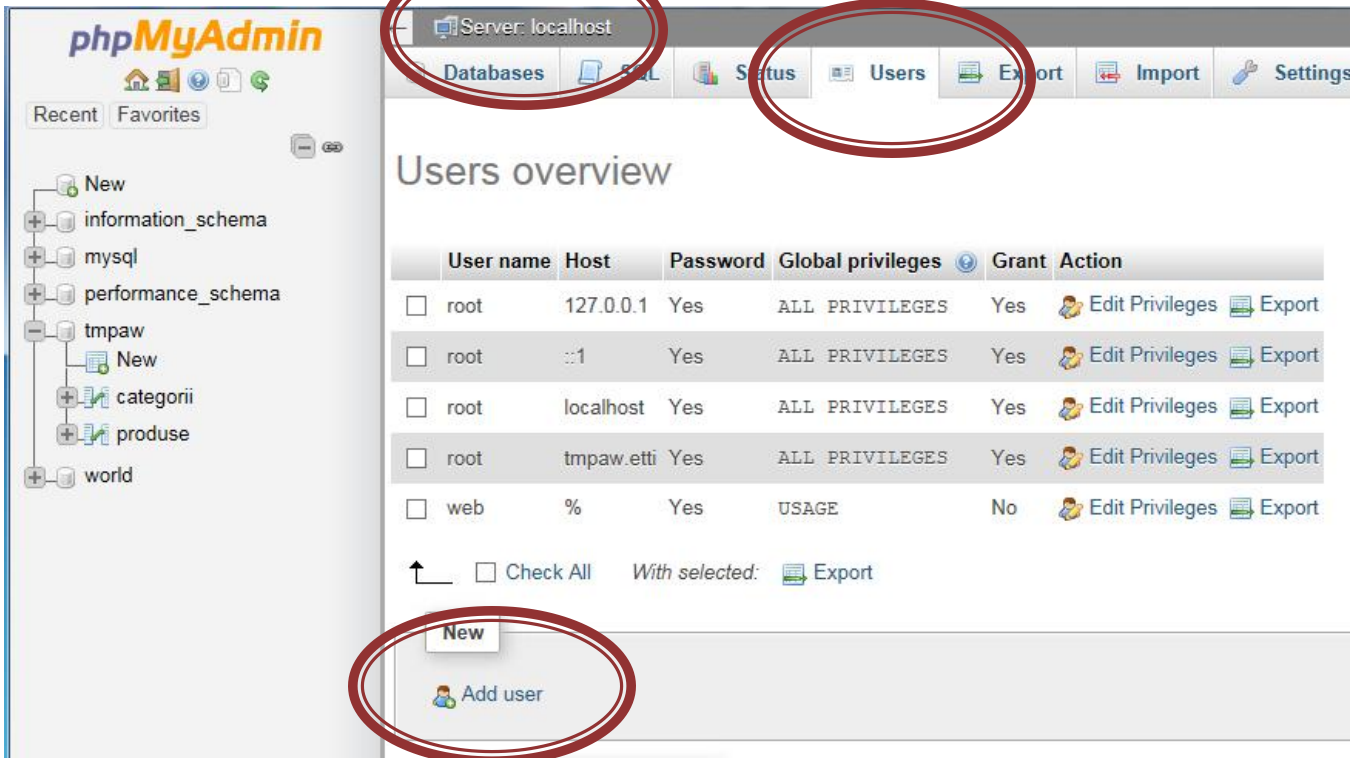


Tabel produse



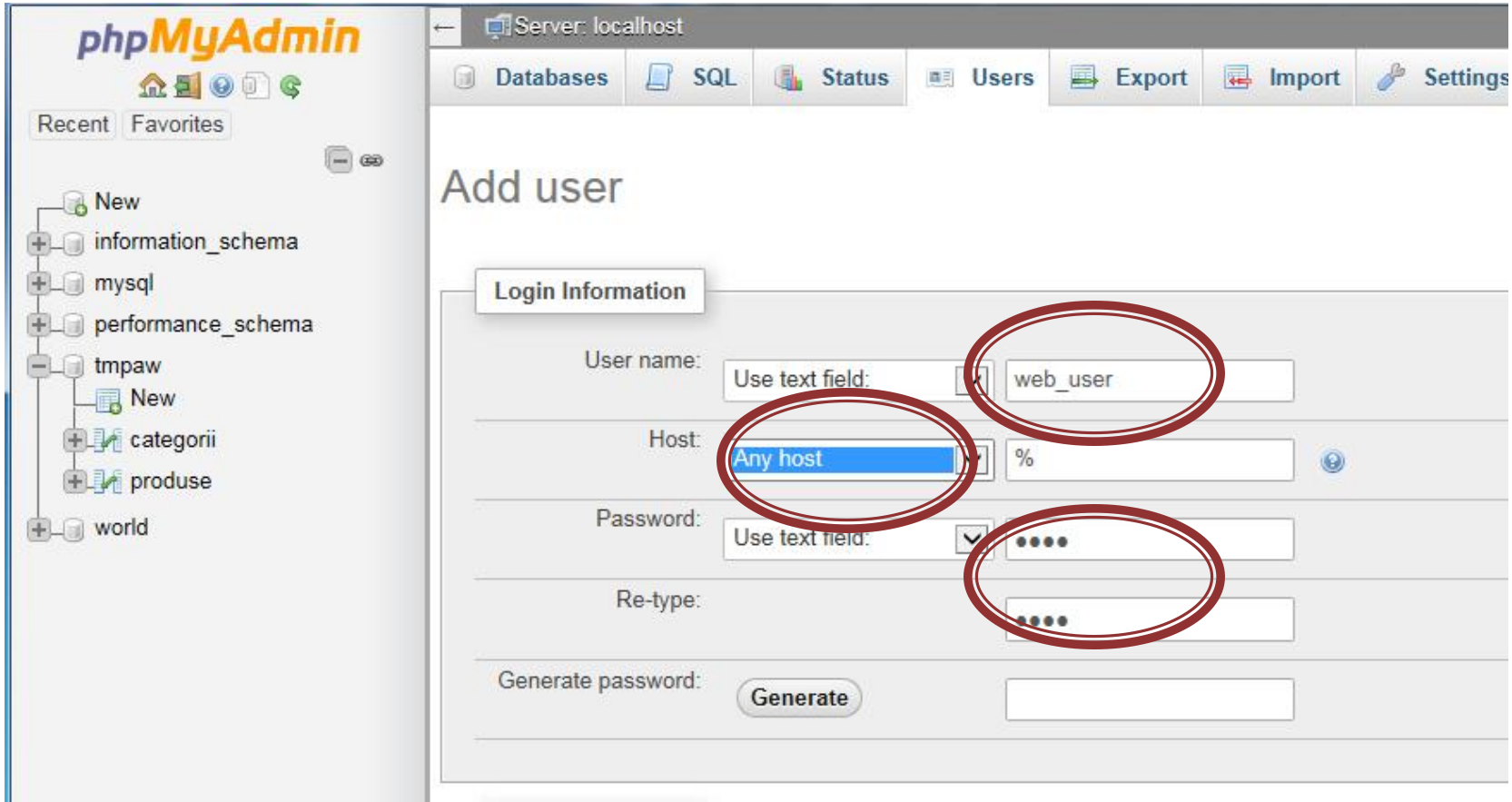
Adaugare utilizator

- Server → Users → Add user



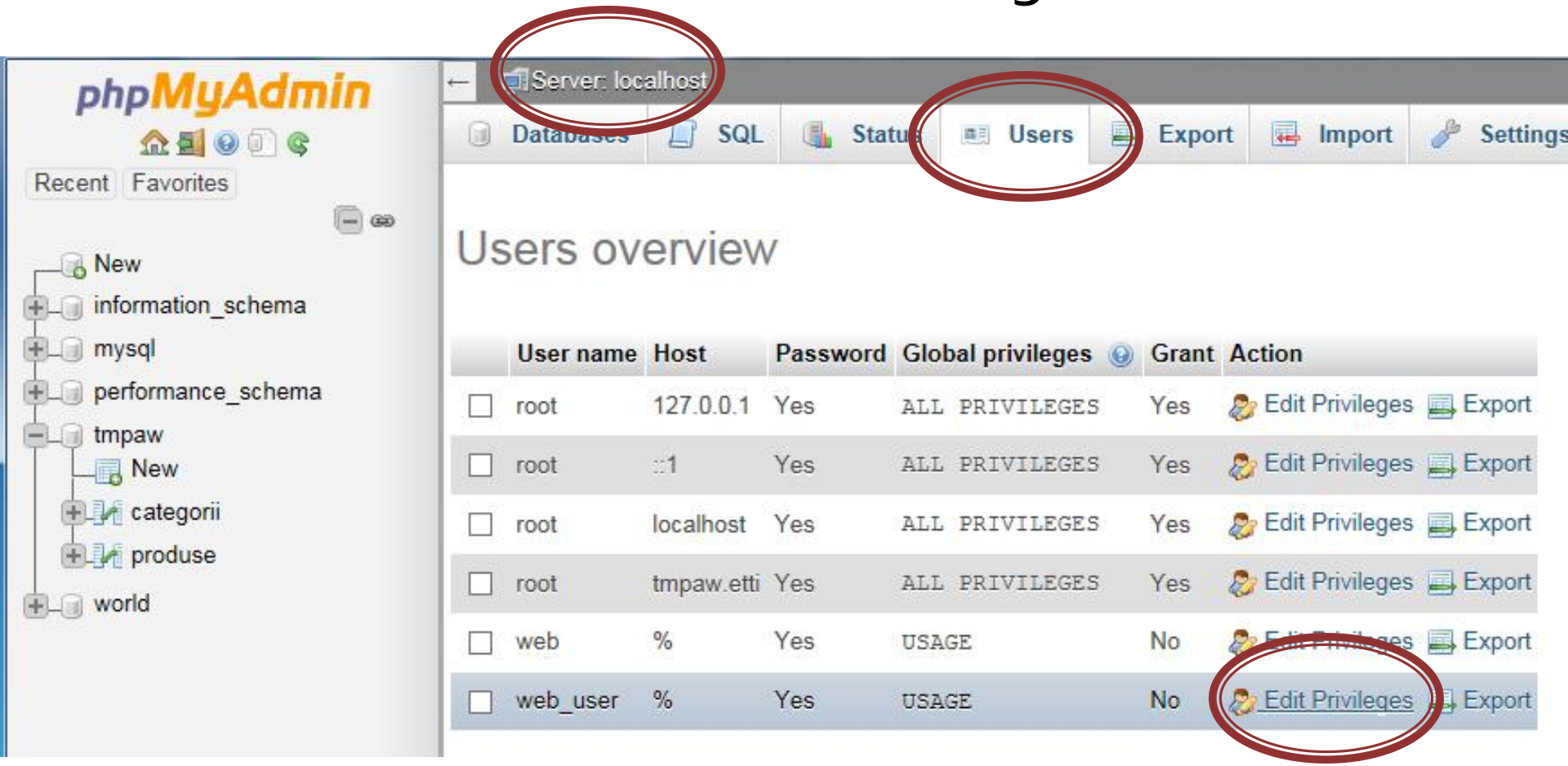
Adaugare utilizator

- Nu e recomandabil/**posibil** sa se utilizeze user-ul MySql "root" pentru aplicatii



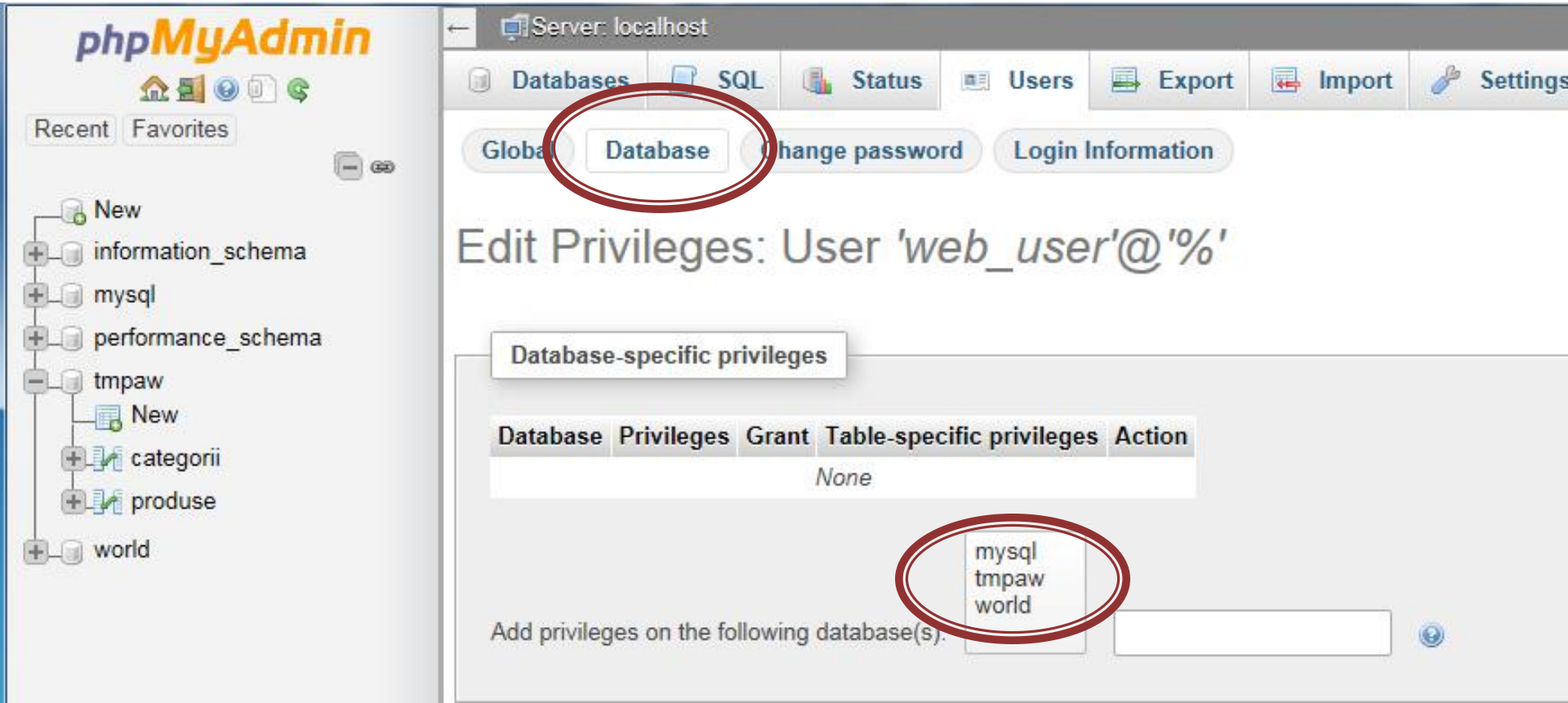
Drepturi de acces

- Server → Users → Edit Privileges



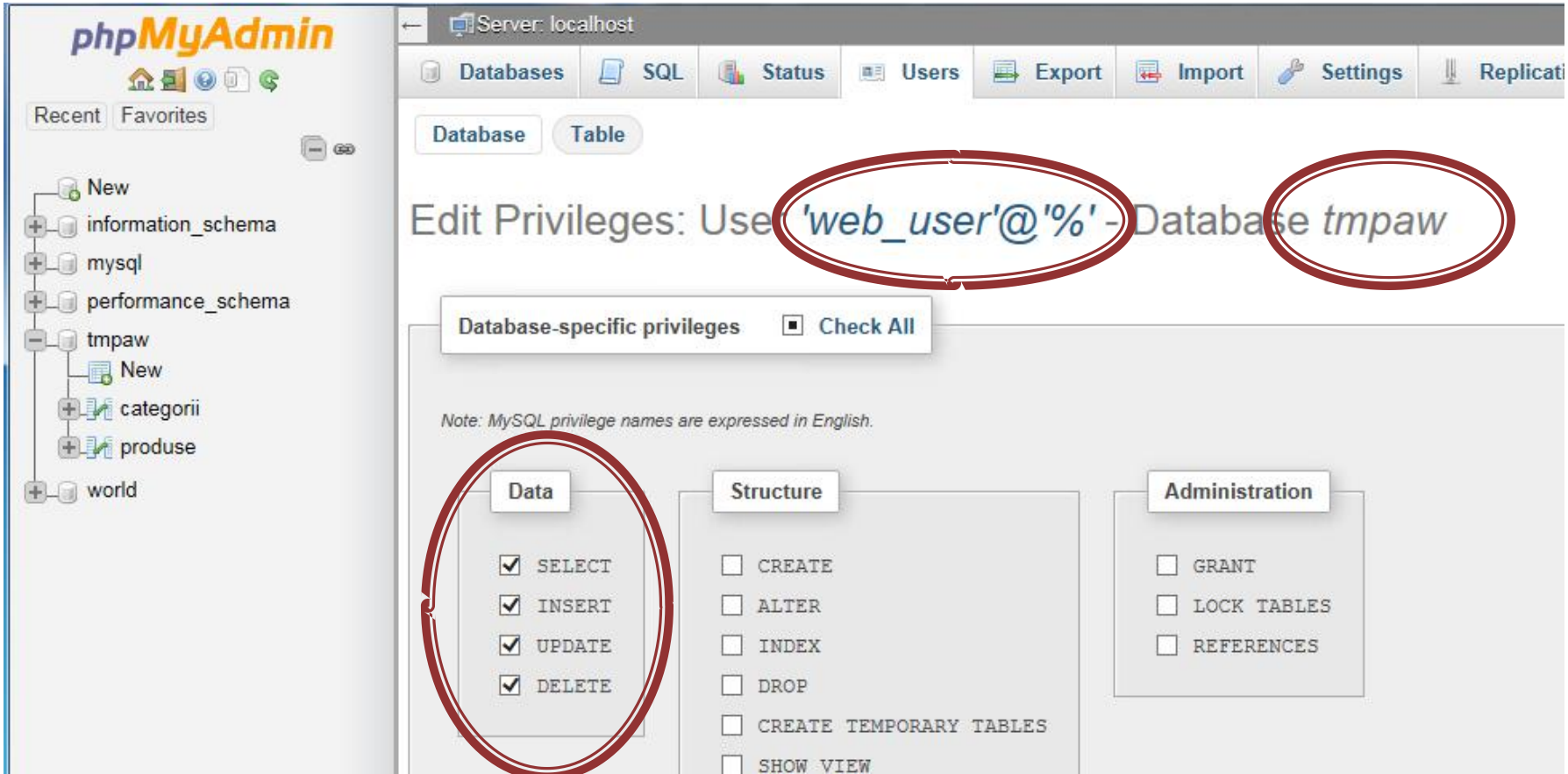
Drepturi de acces

- Database → nume → Go



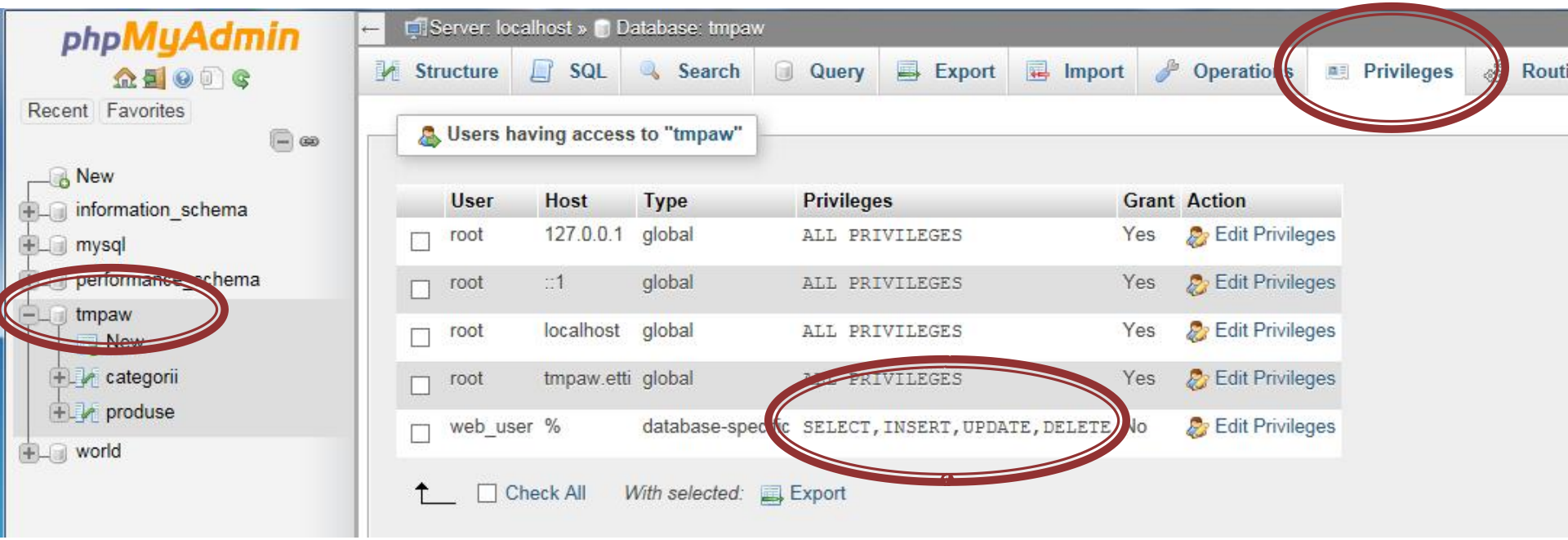
Drepturi de acces

- Se aloca drepturile SELECT + INSERT + UPDATE + DELETE asupra bazei de date create



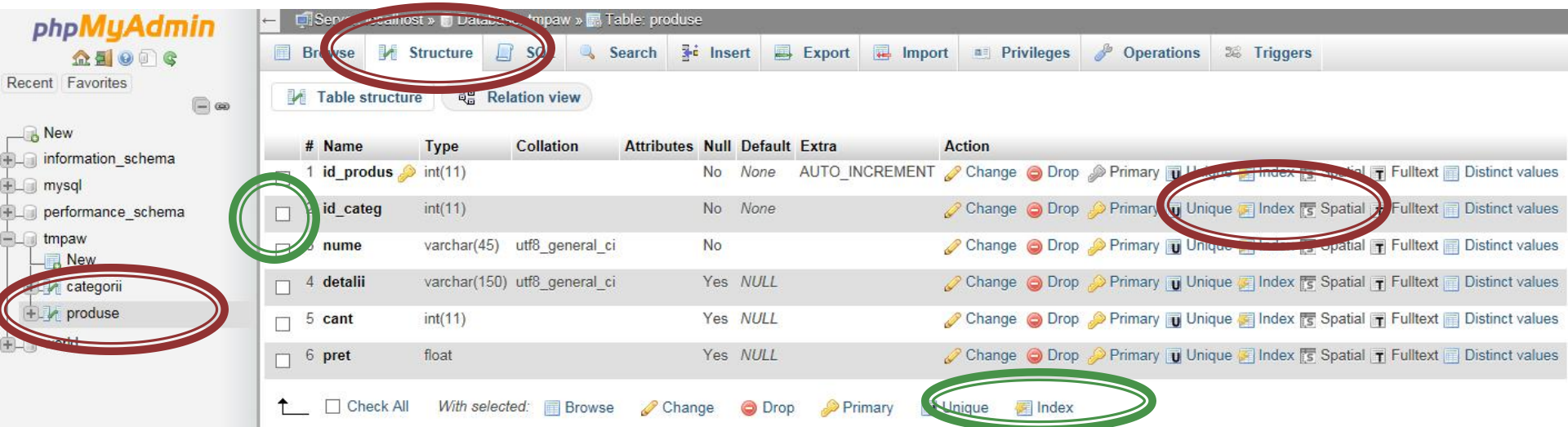
Drepturi de acces, verificare

- Nume → Privileges
- Marea majoritate a aplicatiilor **nu** au nevoie de drepturi de acces la structura/administrare



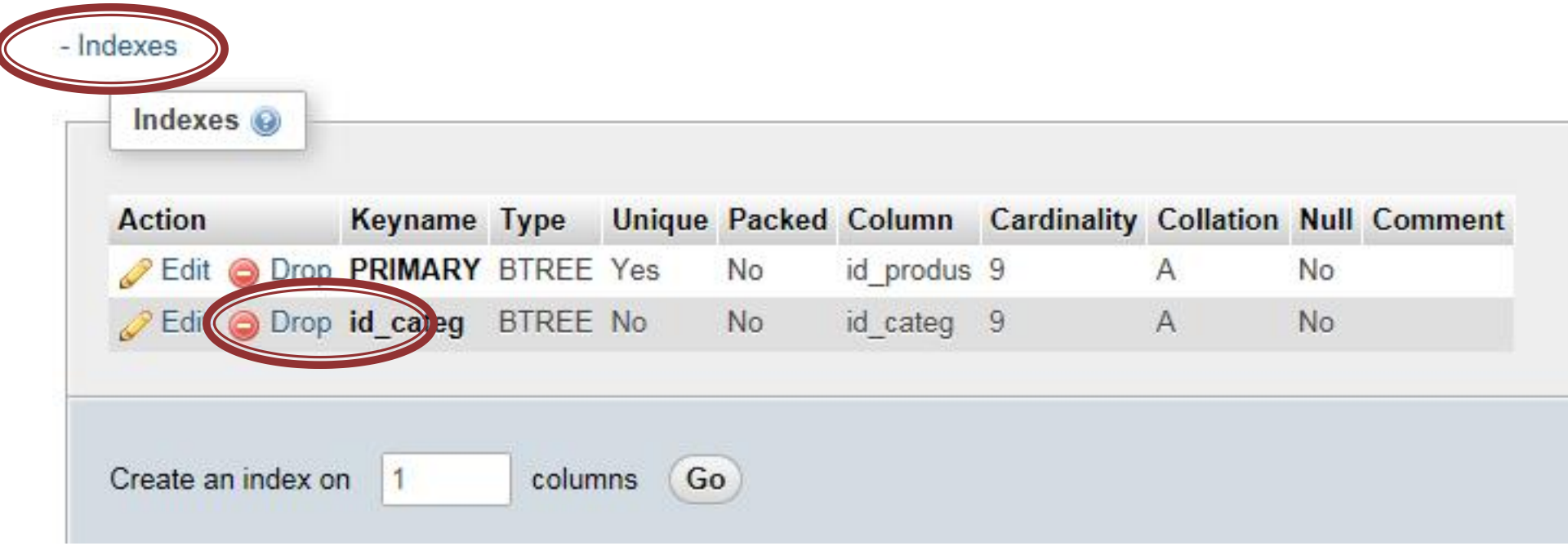
Index

- Adaugare index e esentiala pentru viteza
  - exemplu, produse grupate pe categorii, selectia produselor dintr-o categorie se face cu :
  - SELECT * FROM `produse` WHERE `id_categ` = 1
- Tabel → Structure → Index / Selectare + Index



Verificare/Stergere index

- Apasare +Indexes, se deschide lista de indecsi
- Apasare -Indexes, se inchide lista de indecsi

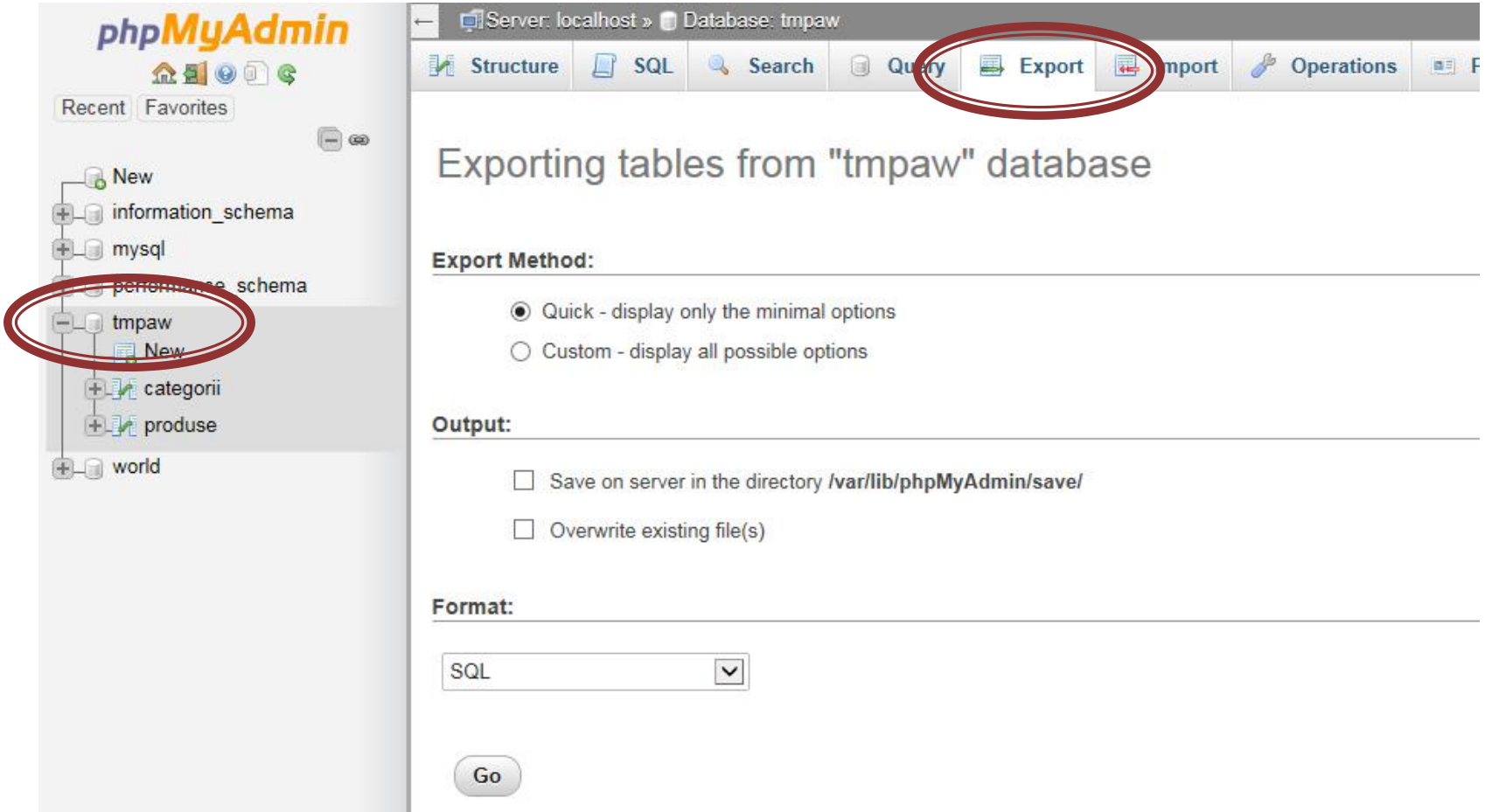


Backup, Restore

- Ca si in cazul Windows 2000 facilitatea de Backup realizeaza un script SQL care contine structura si datele exprimate sub forma de interogari SQL
- O deosebire intre PhpMyAdmin si aplicatiile specifice MySql (aceleasi de pe Windows 2000 sau MySql Workbench) este absenta liniilor de creare a bazei de date
  - CREATE DATABASE IF NOT EXISTS tmpaw;
  - USE tmpaw;
- La utilizarea PhpMyAdmin trebuie sa se creeze manual inaintea restaurarii baza de date

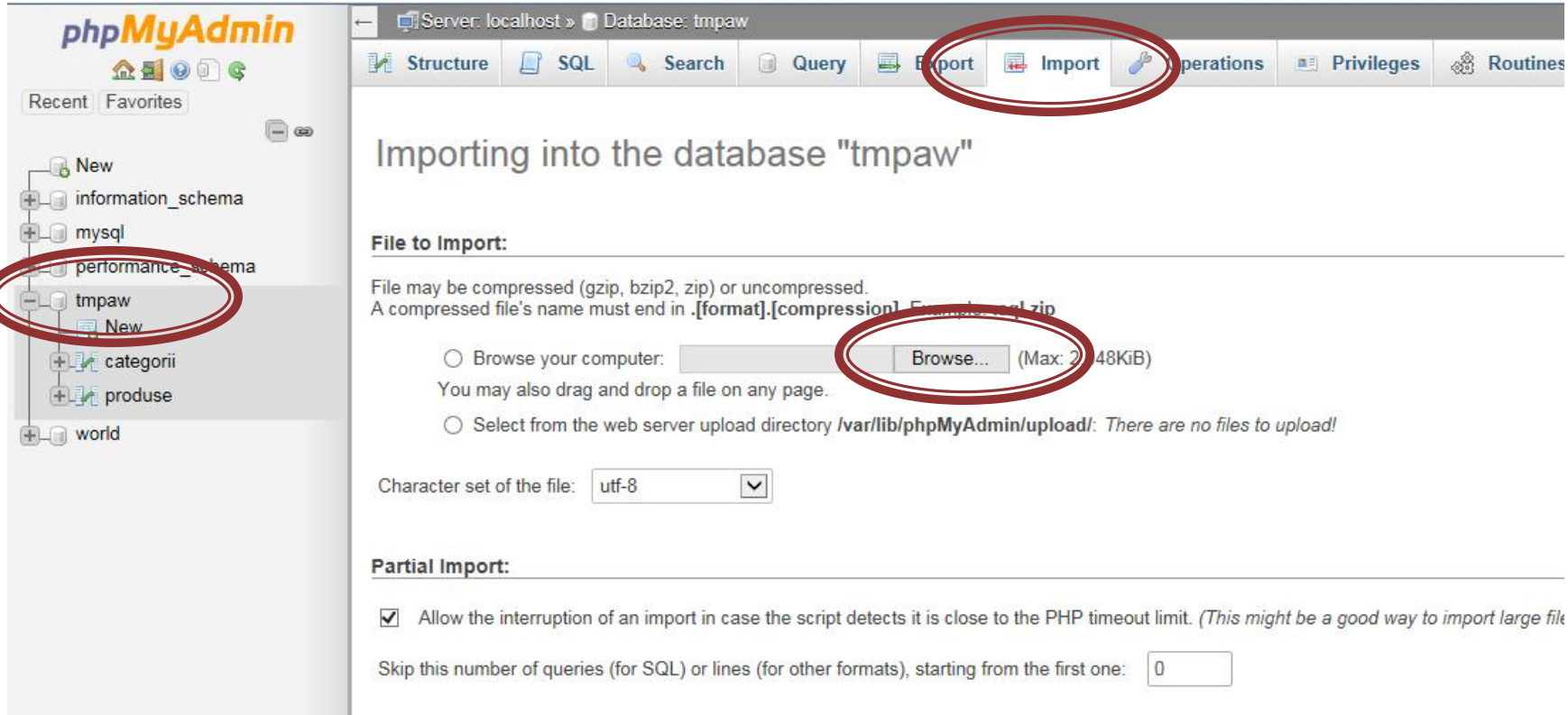
Backup

- Nume (tabel sau baza de date) → Export



Restore

- Se creaza in avans baza de date
- Nume → Import → Browse (alegere fisier backup)
- fisierele SQL pot fi compresate gzip, bzip2, zip



Contact

- Laboratorul de microunde si optoelectronica
- http://rf-opto.etti.tuiasi.ro
- rdamian@etti.tuiasi.ro