

Curs 7

2016/2017

Tehnici moderne de proiectare a aplicatiilor web

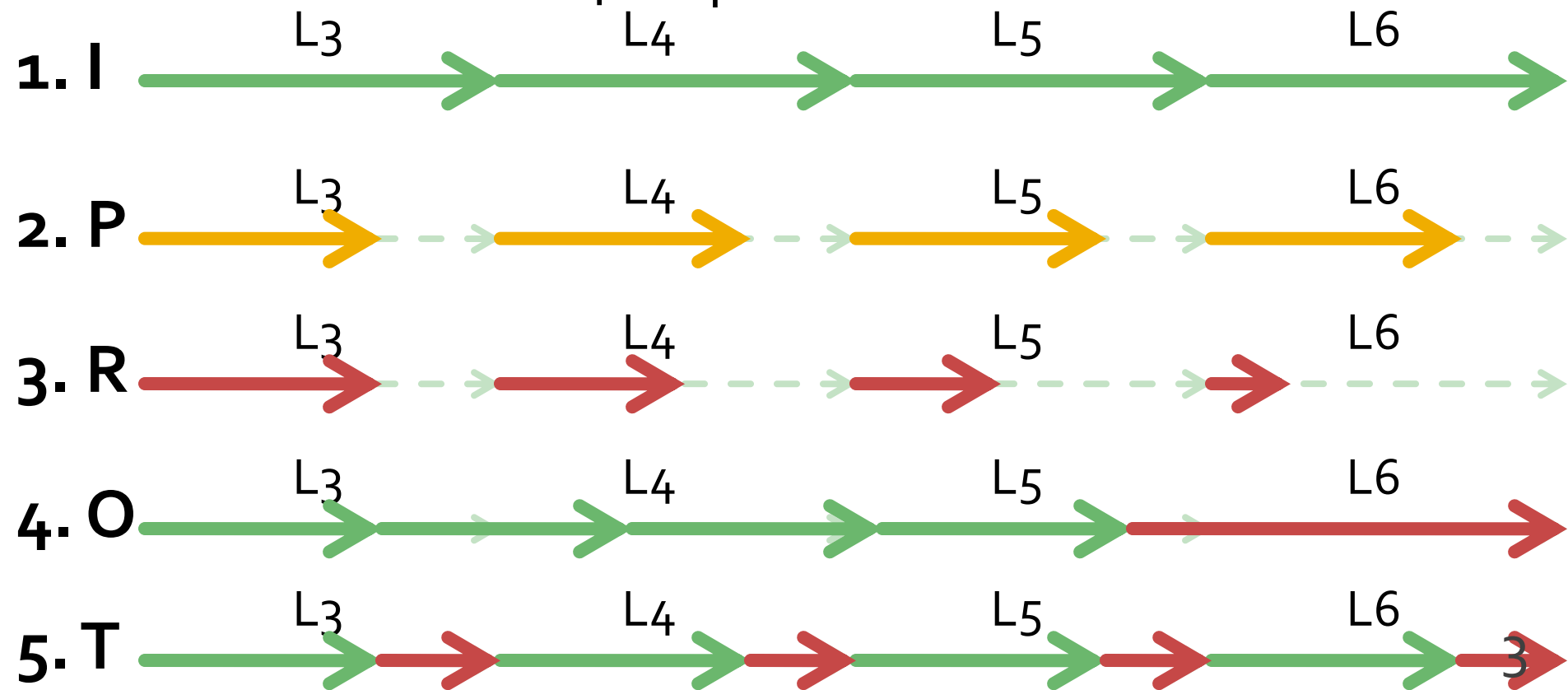
CURS

I.	HTML si XHTML (recapitulare)	1 oră
II	CSS	2 ore
III	Baze de date, punct de vedere practic	1 oră
IV	Limbajul de interogare SQL	4 ore
V	PHP - HyperText Preprocessor	8 ore
VI	XML - Extended Mark-up Language si aplicatii	4 ore
VII	Conlucrare intre PHP/MySql, PHP/XML, Javascript/HTML	2 ore
VIII	Exemple de aplicatii	6 ore
	Total	28 ore

! Important

- Laborator **asincron!**

- recomandat – 4 = Optim



Laborator 5

Rezultat

Categorii Produse

Alegeti categoria:

Nr.	Categorie	Total Produse
1	Papetarie	3
2	Instrumente	3
3	Audio-video	3
4	Calculatoare	3
5	Jucarii	2

Total produse: 14

Magazin online Firma X SRL

Realizati comanda

Nr.	Produs	Pret	Cantitate
1	Carti	100	<input type="text" value="1"/>
2	Caiete	50	<input type="text" value="2"/>
3	Penare	150	<input type="text" value="1"/>
4	Stilouri	125	<input type="text" value="0"/>
5	Creioane	25	<input type="text" value="0"/>

Trimite

Magazin online Firma X SRL

Rezultate comanda

Pret total (fara TVA): 350

Pret total (cu TVA): 416.5

Comanda receptionata la data: 17/03/2010 ora 08:24

Plan aplicatie

- Pe masura ce aplicatia paraseste un fir liniar de executie este necesara introducerea unui plan (graf) al aplicatiei
- Cumparator
 - citirea datelor de pe disc se realizeaza in **antet.php**, comun pentru toate fisierele

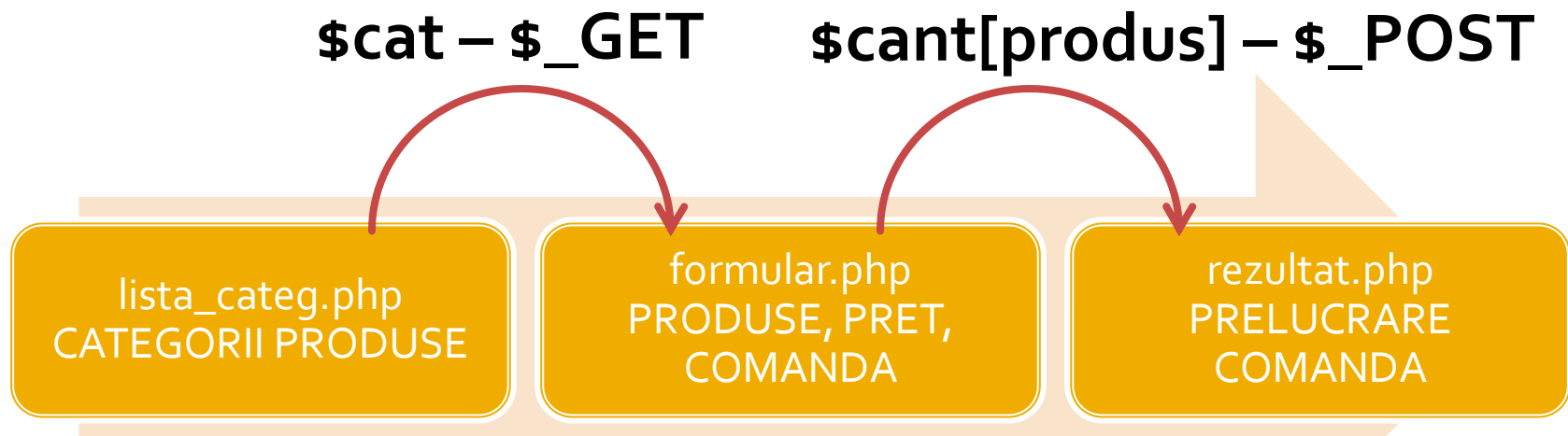
lista_categ.php
CATEGORII PRODUSE

formular.php
PRODUSE, PRET,
COMANDA

rezultat.php
PRELUCRARE
COMANDA

Plan aplicatie

- Planul aplicatiei trebuie sa cuprinda si informatii relative la:
 - **ce date** se transmit intre diferitele pagini
 - **cum** se transmit datele intre pagini

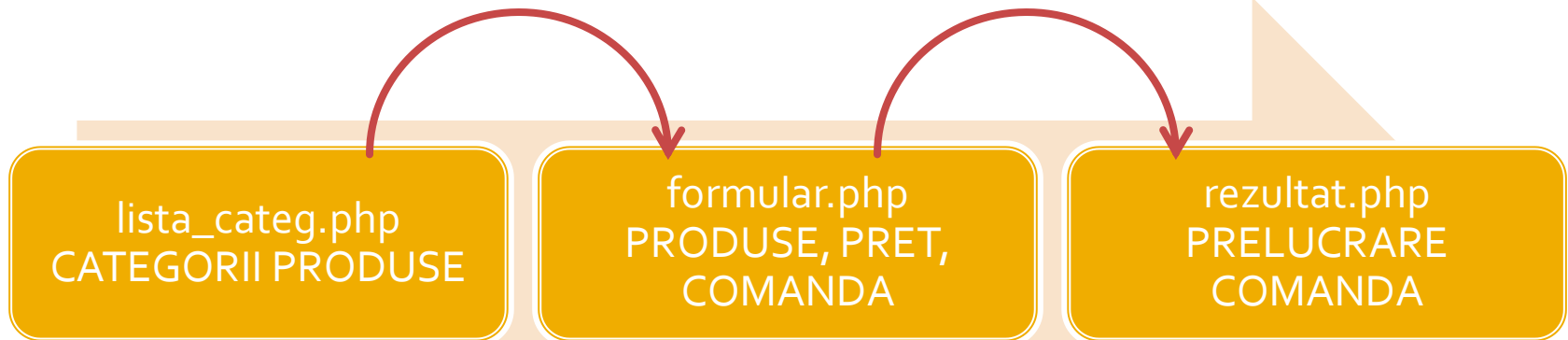


Plan aplicatie

- Planul aplicatiei – Exemplu
 - lista de categorii va contine “**link-uri active**” deci transmiterea unei singure variabile se face cu **\$_GET**
 - formularul de comanda transmite date multiple incluse intr-o forma deci transmiterea se face cu **\$_POST**
- Alegerea \$_GET/\$_POST are implicatii:
 - atat in pagina care transmite datele
 - cat si in pagina care le receptioneaza

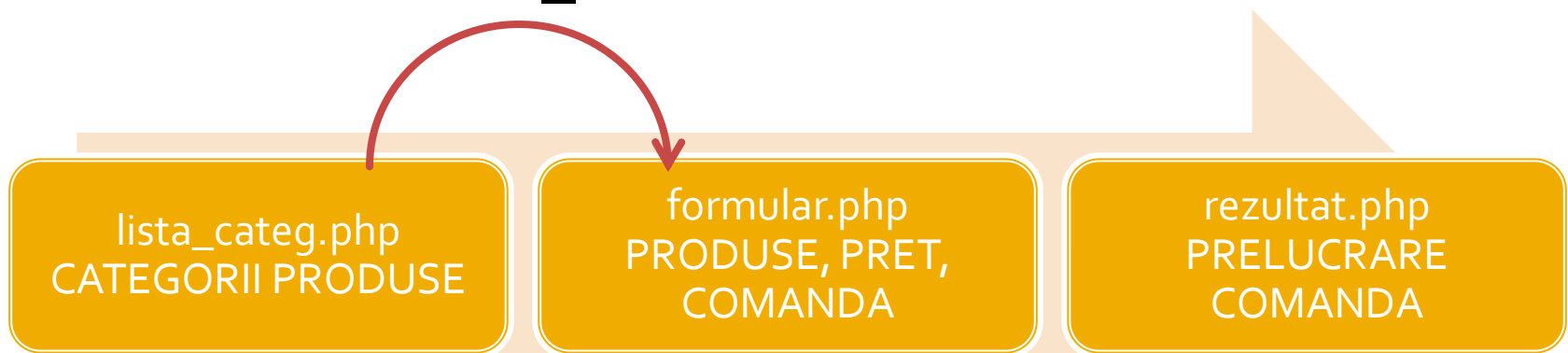
\$cat – \$_GET

\$cant[produs] – \$_POST



Link-uri active

- folosite pentru a transmite o **informatie**
- in `lista_categ.php`
 - `<a href="lista_prod.php?categ=<?php echo $cat;?>"> <?php echo $cat;?> `
- are efect in `formular.php`
 - `$_GET['categ']="valoarea $cat corespunzatoare"`
\$cat – \$_GET



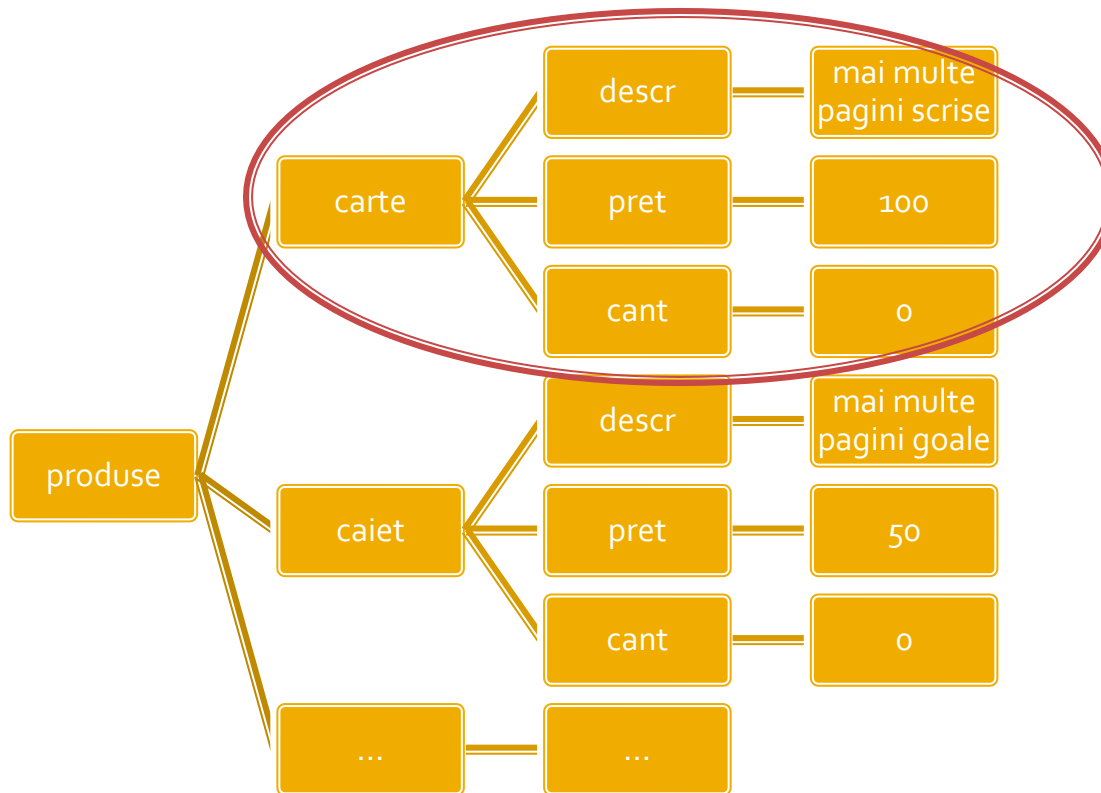
Laborator 5

- Sa se continue magazinul virtual cu:
 - produsele sunt grupate pe **categorii** de produse
 - sa prezinte utilizatorului o lista de categorii de produse pentru a alege
 - sa prezinte utilizatorului o lista de produse si preturi in categoria aleasa
 - lista de produse si preturi se citeste dintr-un **fisier**
 - se preia comanda si se calculeaza suma totala
- Optional
 - se creaza o pagina prin care vanzatorul poate **modifica** preturile si produsele

Laborator 5 – Mod de lucru

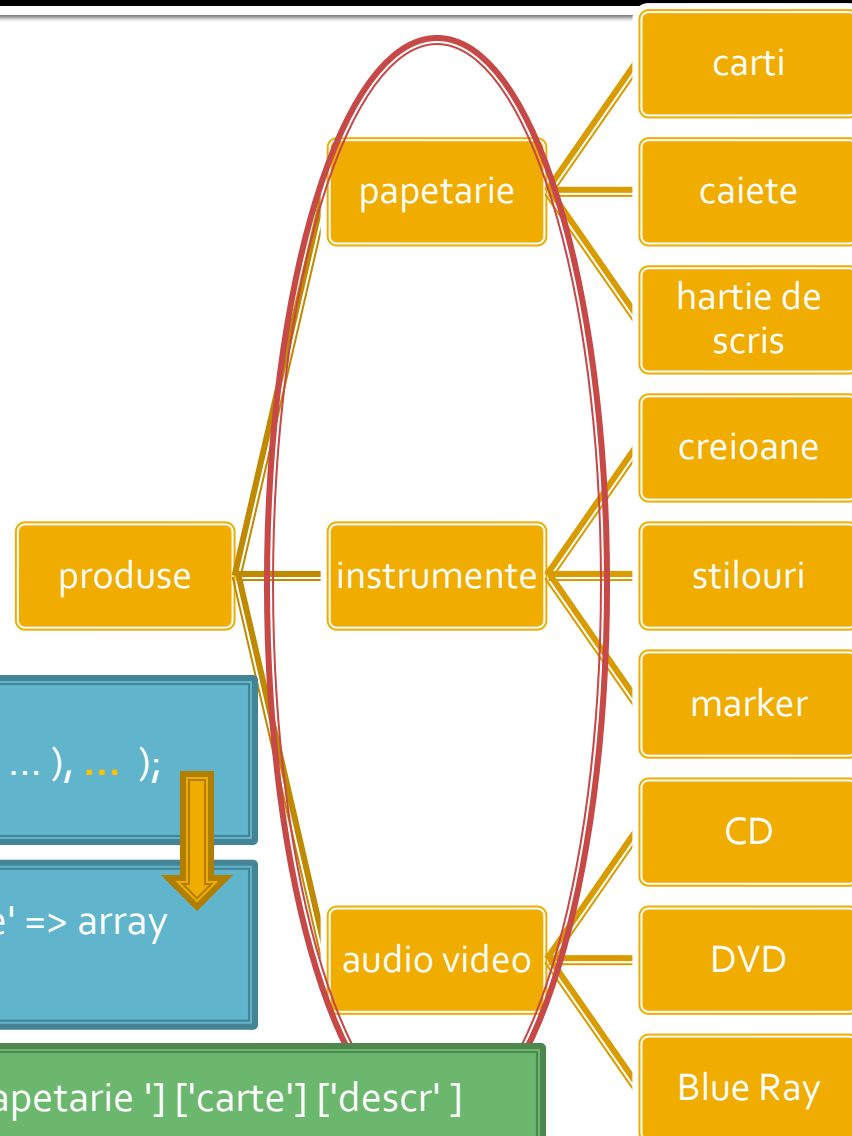
- 1. Se introduce in surse facilitatea template
- 2. Se modifica sursele pentru lucru cu matrici
- 3. Se modifica sursele pentru a citi datele de pe disc (C5 – fisier text)
 - **anterior** se creaza fisierul text sau:
 - **o singura data** se salveaza datele (C5 – S72)
- 4. Se introduce structura suplimentara, categorie
 - se **creaza pagina** de selectie a categoriei, din care se va merge in lista de produse (utilizare \$_GET – S103)
- 5. Lista de produse si preturi se citeste dintr-un fisier **XML**
- 6. Optional: Se creaza o pagina care sa permita modificarea fisierului text/XML
 - numai pret/descriere, fara adaugare/schimbare produse

Laborator 4 – Matrice produse



Laborator 5

- exemplu de grupare
- apare un nivel suplimentar de noduri in arbore
 - deci apare un indice suplimentar in matrice



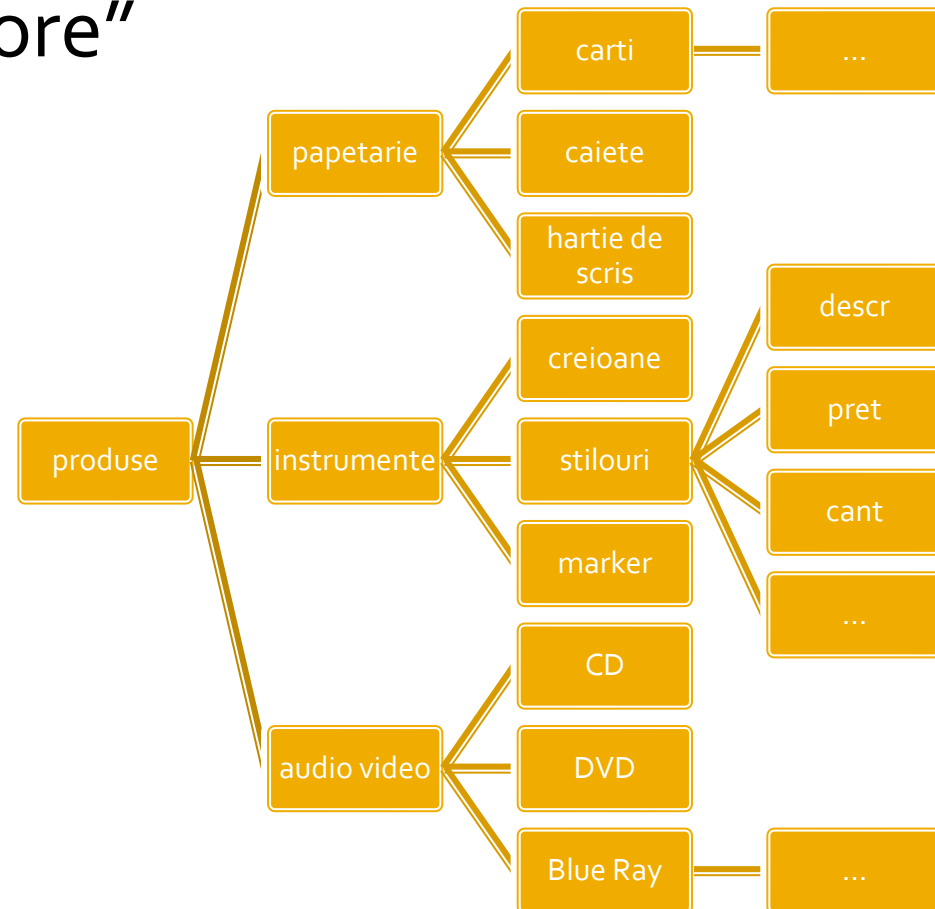
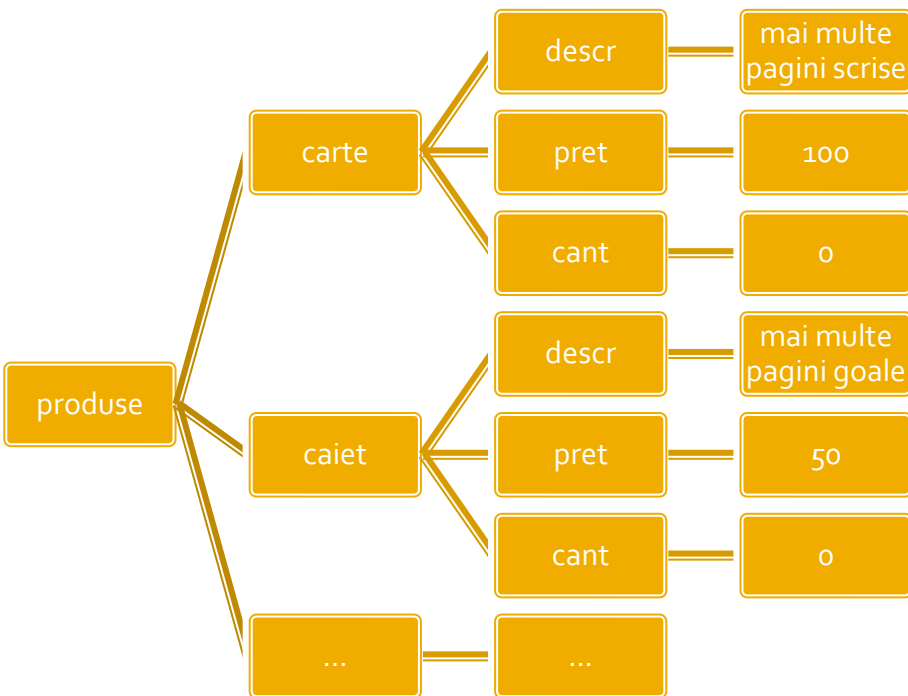
```
$produse = array ( 'carte' => array ("descr" => ... ), ... );
```

```
$produse = array ( 'papetarie' => array ( 'carte' => array ("descr" => ...), ... ) ... );
```

```
$produse['carte']['descr'] ↔ $produse ['papetarie ']['carte']['descr']
```

Matrici

- adaugare nivel in "arbore"



Rezolvare

- modificarea fisierului text cu introducerea categoriei ca prim parametru in fisier

carte	mai multe pagini scrise legate	100	0	
caiet	mai multe pagini goale legate	75	0	
penar	loc de depozitat instrumente de scris	150	0	
stilou	instrument de scris albastru	125	0	
papetarie	carte	mai multe pagini scrise legate	100	0
papetarie	caiet	mai multe pagini goale legate	75	0
instrumente	penar	loc de depozitat instrumente de scris	150	0
instrumente	stilou	instrument de scris albastru	125	0

Cod

- Codul ramane in mare parte acelasi
- Cateva modificari sunt necesare

```
$matr=file("produse.txt");
foreach ($matr as $linie)
{
    $valori=explode("\t",$linie,4);
    $produse[$valori[0]]=array ("descr" => $valori[1], "pret" => $valori[2], "cant" => $valori[3]);
}
```


```
$matr=file("produse.txt");
foreach ($matr as $linie)
{
    $valori=explode("\t",$linie,5);
    $produse[$valori[0]] [$valori[1]]=array ("descr" => $valori[2], "pret" => $valori[3], "cant" =>
$valori[4]);
}
```


Acces la date TXT

- Utilizare, cu doua bucle foreach

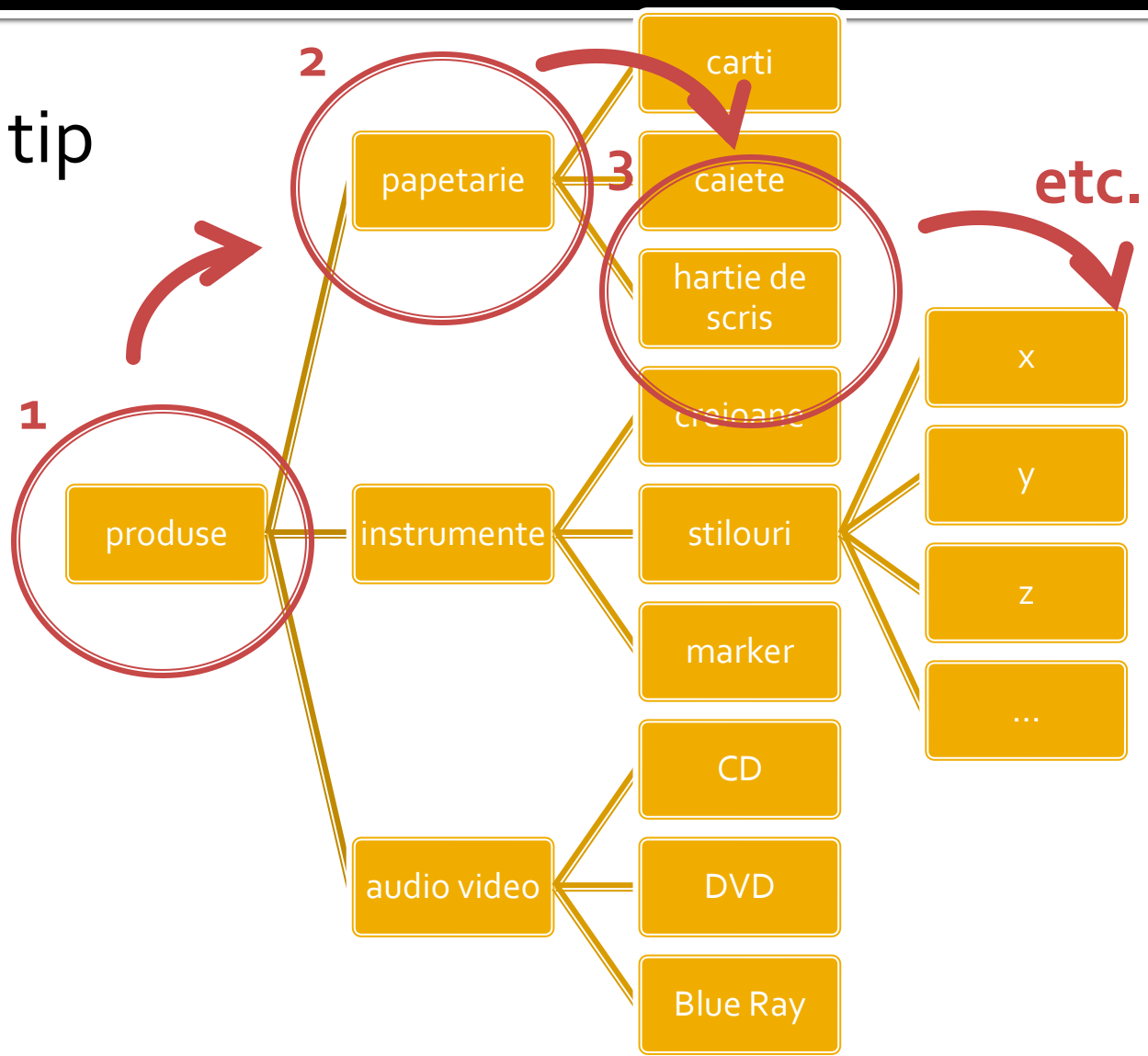
```
$index=1;
foreach ($produse as $prod => $detalii) //primul indice in $produse imi da produsul
    {?>
<tr><td><?php echo $index;?></td><td><?php echo ucfirst(strtolower($prod));?></td><td><?php echo
$detalii['descr'];?></td><td align="center"><?php echo $detalii['pret'];?></td></tr>
<?php $index++;
    }
```

```
$index=1;
foreach ($produse as $categ => $lista_categ) //primul indice in $produse imi da categoria
    foreach ($lista_categ as $prod => $detalii) //al doilea indice in $produse imi da produsul
        //din categoria stabilita cu primul indice
            {?>
<tr><td><?php echo $index;?></td><td><?php echo $categ;?></td><td><?php echo
ucfirst(strtolower($prod));?></td><td><?php echo $detalii['descr'];?></td><td align="center"><?php
echo $detalii['pret'];?></td></tr>
<?php $index++;
        }
```



Matrici

- structura tip "arbore"



Fisier XML


```
1 <?xml version="1.0" encoding="utf-8"?>
2 <produse user="magazin" password="parola">
3   <categorie nume="papetarie">
4     <produs>
5       <desc>mai multe pagini scrise legate</desc>
6       <nume>carte</nume>
7       <pret>100</pret>
8       <cant>0</cant>
9     </produs>
10    <produs>
11      <desc>mai multe pagini goale legate</desc>
12      <nume>caiet</nume>
13      <pret>75</pret>
14      <cant>0</cant>
15    </produs>
16    <produs>
17      <desc>mai multe pagini goale NElegate</desc>
18      <nume>hartie scris</nume>
19      <pret>50</pret>
20      <cant>0</cant>
21    </produs>
22  </categorie>
23  <categorie nume="instrumente">
24    <produs>
25      <desc>loc de depozitat instrumente de scris</desc>
26      <nume>penar</nume>
27      <pret>150</pret>
28      <cant>0</cant>
29    </produs>
30    <produs>
31      <desc>instrument de scris albastru</desc>
32      <nume>stilou</nume>
```

Acces la date XML

■ Citire, cu doua bucle foreach

```
$matr=file("produse.txt");  
foreach ($matr as $linie)  
{  
    $valori=explode("\t",$linie,5);  
    $produse[$valori[0]] [$valori[1]]=array ("descr" => $valori[2], "pret" => $valori[3], ...);  
}
```

```
$xml = simplexml_load_file("lista.xml");  
if ($xml)  
{  
    foreach ($xml->categorie as $categorie)  
    {  
        $produse[(string)$categorie["nume"]]=array();  
        foreach ($categorie->produs as $prod_cur)  
        {  
            $produse[(string)$categorie["nume"]][(string)$prod_cur->nume] = ...  
        }  
    }  
}
```



Laborator 6+7 MySQL in PHP

Laborator 6+7

- Sa se continue magazinul virtual cu:
 - produsele sunt grupate pe categorii de produse
 - sa prezinte utilizatorului o lista de grupe de produse pentru a alege
 - sa prezinte utilizatorului o lista de produse si preturi in grupa aleasa
 - lista de produse si preturi se citeste dintr-o baza de date **MySQL**
 - se preia comanda si se calculeaza suma totala
 - **se creaza o pagina prin care vanzatorul poate modifica preturile si produsele**

Utilizare template - recomandat

- sectiunile repetabile pot fi mutate intr-un fisier separat si introduse cu `require()`
- se identifica zonele comune

```
<html>
<head>
<title>Magazin online Firma X SRL</title>
</head>
<body bgcolor="#CCFFFF">
<table width="600" border="0" align="center">
<tr><td></td></tr>
<tr><td height="600" valign="top"
bgcolor="#FFFFCC">
Continut
</td></tr>
</table>
</body>
</html>
```

Utilizare template - recomandat

antet.php

```
<html>
<head>
<title>Magazin online Firma X
SRL</title>
</head>
<body bgcolor="#CCFFFF"><?php
define('PRET_CARTE',100);

//orice cod comun PHP

?><table width="600" border="0"
align="center">
<tr><td></td></tr>
<tr><td height="600" valign="top"
bgcolor="#FFFFCC">
<h1>Magazin online Firma X SRL</h1>
```

subsol.php

```
</td></tr>
</table>
</body>
</html>
```

```
<?php require('antet.php');?>
<h2>Lista Produse</h2>
<table border="1">
...
</table>
<?php require('subsol.php');?>
```


Utilizare template

- antet.php
 - citirea datelor si realizarea matricii \$produse se realizeaza aici
 - acest lucru permite sa se realizeze usor trecerea la alte tehnologii txt → XML → MySql
 - restul fisierelor pot ramane (in mare parte) nemodificate deoarece se bazeaza pe utilizarea matricii \$produse, indiferent cum e ea realizata
- subsol.php
 - se poate utiliza la realizarea interfetei pentru vanzator
 - se salveaza matricea \$produse in formatul necesar tehnologiei utilizate

Plan aplicatie – Cumparator

- Pe masura ce aplicatia paraseste un fir liniar de executie este necesara introducerea unui plan (graf) al aplicatiei
- Cumparator
 - citirea fisierului XML (accesarea bazei de date) se realizeaza in antet.php, comun pentru toate fisierele

lista_categ.php
CATEGORII PRODUSE

formular.php
PRODUSE, PRET,
COMANDA

rezultat.php
PRELUCRARE
COMANDA

Plan aplicatie – Vanzator

- Aparitia aplicatiei pentru vanzator
 - introduce un fir paralel de executie cu necesitatea alegerii initiale: cumparator/vanzator
 - aduce posibilitatea scrierii fisierului XML
 - diverse operatii de scriere
 - introducere categorie de produse
 - introducere produs nou intr-o categorie existenta
 - modificare produs existent
 - modificarea fisierului implica 2 actiuni:
 - colectare date
 - prelucrare

Fisier unic pentru colectare SI prelucrare date

- De multe ori se prefera aceasta varianta
- Permite pastrarea unitara a tuturor operatiilor pentru indeplinirea unei actiuni
 - acces mai simplu
 - usurinta la programare
 - evitarea erorilor: File does not exist: D:/Server/...
- Acelasi fisier e folosit initial pentru a colecta date si apoi, daca se detecteaza prezenta acestora, pentru prelucrarea lor

Fisier unic pentru colectare SI prelucrare date


- Fisierul de receptie pentru <form> va fi fisierul curent
- se recomanda utilizarea variabilei globale `$_SERVER['SCRIPT_NAME']`
 - flexibilitate la redenumirea fisierelor
- alternativ `$_SERVER['PHP_SELF']` nu este recomandata
 - probleme de securitate
- Sectiunea de colectare date se afiseaza numai in absenta datelor

```
<form action="<?php echo $_SERVER['SCRIPT_NAME'];?>" method="post">  
<p><input name="date_ok" type="submit" value="Trimite" /></p>  
</form>
```

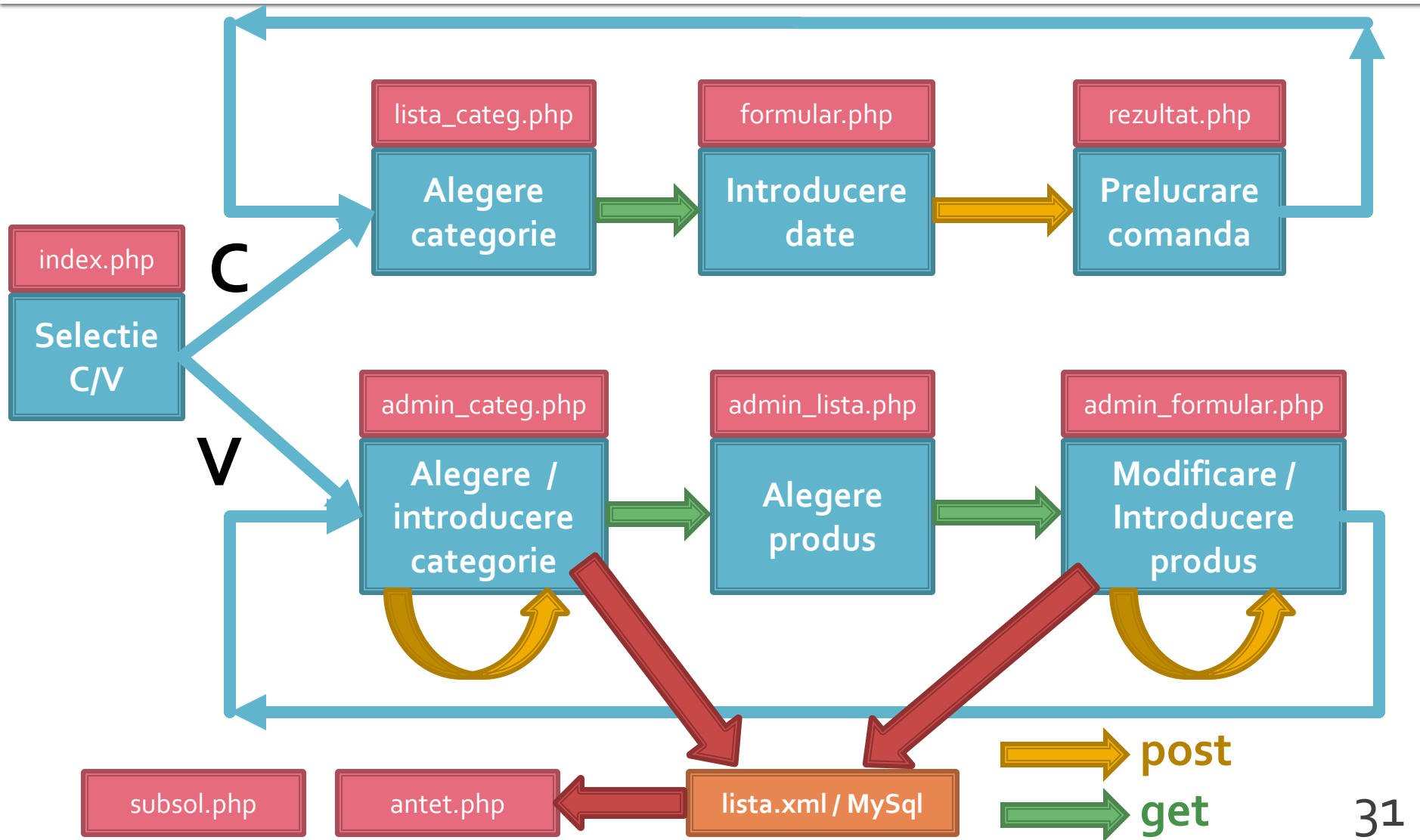
Fisier unic pentru colectare SI prelucrare date

- Detectia existentei datelor se face prin verificarea existentei (`isset($variabila)`) valorilor introduse
 - eventual pentru un plus de protectie se poate verifica si continutul lor

```
if (isset($_POST[" date_ok "]))
{ //date trimise
  if ($_POST[" date_ok "]=="Trimite" )
    { //date trimise de fisierul curent
      //prelucrare
    }
}
else
{
  //colectare date
  <form action="<?php echo $_SERVER['SCRIPT_NAME '];?>" method="post">
  <p><input name="date_ok" type="submit" value="Trimite" /></p></form>
}
```



Plan aplicatie



Rezultat (comparator)

Categorii Produse

Alegeti categoria:

Nr.	Categorie	Total Produse
1	Papetarie	3
2	Instrumente	3
3	Audio-video	3
4	Calculatoare	3
5	Jucarii	2

Total produse: 14

Magazin online Firma X SRL

Finalizati comanda

Nr.	Produs	Pret	Cantitate
1	Carti	100	<input type="text" value="1"/>
2	Caiete	50	<input type="text" value="2"/>
3	Penare	150	<input type="text" value="1"/>
4	Stilouri	125	<input type="text" value="0"/>
5	Creioane	25	<input type="text" value="0"/>

Magazin online Firma X SRL

Rezultate comanda

Pret total (fara TVA): 350

Pret total (cu TVA): 416.5

Comanda receptionata la data: 17/03/2010 ora 08:24

 post
 get

Rezultat (vanzator)

Magazin Firma X

[Inceput](#) | [Inapoi](#)

Magazin online Firma X SRL

Alegeti:

- [Cumparator](#)
- [Vanzator](#)

Categorii Produse

Alegeti categoria:

Nr.	Categorie	Total Produse
1	Papetarie	3
2	Instrumente	3
3	Audio-video	3
4	Calculatoare	3
5	Jucarii	2

Total produse: 14

Categorie noua de produse:

Lista produse in categoria Calculatoare

Nr.	Produs	Descriere	Pret	Cantitate	Actiuni
1	Laptop	calculator mic	2000	2	modifica
2	Desktop	calculator mare	1000	5	modifica
3	Imprimanta	prn	200	2	modifica
-	Produs nou				adauga

Produs in categoria Calculatoare

Produs	<input type="text" value="laptop"/>
Descriere	<input type="text" value="calculator mic"/>
Pret	<input type="text" value="2000"/>
Cantitate	<input type="text" value="2"/>

 post
 get

Laborator 6

- Sa se continue magazinul virtual cu:
 - produsele sunt grupate pe categorii de produse
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 - sa prezinte utilizatorului o lista de produse si preturi in grupa aleasa
 - lista de produse si preturi se citeste dintr-o baza de date **MySQL**
 - se preia comanda si se calculeaza suma totala
 - **se creaza paginile prin care vanzatorul poate modifica preturile, produsele, categoriile**

MySql

Accesul la metode externe de stocare eficiente a datelor

MySQL vs. XML

- XML - eXtensible Markup Language
- XML isi atinge limitarile atunci cand:
 - cantitatea de date este mare
 - prelucrarile datelor sunt complexe
- In general XML citeste in intregime fisierul care contine datele
 - memoria necesara script-urilor PHP poate creste pana in punctul atingerii ineficientei
- Prelucrarile trebuie facute in PHP
 - PHP este limbaj interpretat deci ineficient pentru prelucrari masive de date

MySql

- Baza de date – instrument pentru stocarea si manipularea informatiei eficient si efectiv
 - datele sunt protejate de corupere sau pierderi accidentale
 - nu se utilizeaza mai multe resurse decat minimul necesar
 - datele pot fi accesate cu performanta acceptabila
- Baze de date relationale
 - model relational (matematic eficient) – Codd ~1970

DBMS, RDBMS

- DBMS – database management system aplicatii incluse in baza de date pentru accesul la informatii
- RDBMS – Relational DBMS. Majoritatea sistemelor de baze de date tind la aceasta titulatura
 - ~300 de reguli trebuie respectate
 - nici un sistem actual nu implementeaza total aceste reguli

Relatii

- Toate sistemele de baze de date sunt caracterizate de:
 - toate informatiile sunt reprezentate intr-o aranjare ordonata **bidimensionala** numita **relatie**
 - toate valorile (attribute) stocate sunt scalare (in orice celula din tabel se stocheaza **o singura** valoare)
 - toate operatiile se aplica asupra unei intregi relatii si rezulta o intreaga relatie
- Terminologii (**MySql**)
 - tabel – **table** / recordset / **result set**
 - linie – record / **row**
 - coloana – field / **column**

Relatii, chei

- toate informatiile sunt reprezentate intr-o aranjare bidimensionala numita relatie
 - aranzarile bidimensionale nu sunt ordonate implicit
 - datele trebuie stocate pentru a implementa o relatie in asa fel incat fiecare linie sa fie unica
- cheie candidata
 - exista cel putin o combinatie de attribute (coloane) care pot identifica in mod unic o linie
 - aceste combinatii de attribute se numesc chei candidate

Chei

- Din toate combinatiile de coloane care pot fi utilizate pentru identificarea unica a unei linii se alege **macar** una utilizata intern de RDBMS pentru ordonarea datelor – **cheie primara**
 - Celelalte chei candidate devin **chei alternative** si pot fi folosite pentru eficientizarea prelucrarilor (crearea de “index” dupa aceste chei)
- In cazul in care nu exista o combinatie de coloane utilizabila ca si cheie cu utilitate practica se introduce artificial o cheie, cu numere intregi incrementate automat de DBMS (autoincrement)
 - de multe ori este recomandata o astfel de actiune, numerele intregi fiind mult mai usor de controlat, ordonat, cautat decat alte tipuri de date
 - cheile de tip autoincrement nu e **nevoie** sa contina informatie

Normalizare

- Normalizarea asigura:
 - stocarea eficienta a datelor
 - prelucrarea eficienta a datelor
 - integritatea datelor
- Trei nivele de normalizare
- Eliminarea datelor redundante

OrderID	CustomerID	OrderDate	Items	OrderTotal
1	CACTU	1/1/1999	3 Zaanse koeken, 1 Tarte au sucre	\$89.70
2	BSBEV	1/5/1999	4 Mozzarella di Giovanni	\$139.20
3	SUPRD	5/2/1999	3 Ravioli Angelo, 6 Tofu	\$198.06

Eliminarea datelor redundante

Order ID	SalesPerson	Hire Date	Phone	Company Name	Product Name	Quantity
10871	Dodsworth, Anne	15-Nov-1994	452	Bon app'	Alice Mutton	16
10747	Suyama, Michael	17-Oct-1993	428	Piccolo und mehr	Gorgonzola Telino	8
10258	Davolio, Nancy	01-May-1992	5467	Ernst Handel	Chef Anton's Gumbo Mix	65
11007	Callahan, Laura	05-Mar-1994	2344	Princesa Isabel Vinhos	Thüringer Rostbratwurst	10
10421	Callahan, Laura	05-Mar-1994	2344	Que Delicia	Perth Pasties	15
10558	Davolio, Nancy	01-May-1992	5467	Around the Horn	Perth Pasties	18
10431	Peacock, Margaret	03-May-1993	5176	Bottom-Dollar Markets	Alice Mutton	50
10659	King, Robert	02-Jan-1994	465	Queen Cozinha	Gorgonzola Telino	20
10273	Leverling, Janet	01-Apr-1992	3355	QUICK-Stop	Gorgonzola Telino	15
10382	Peacock, Margaret	03-May-1993	5176	Ernst Handel	Chef Anton's Gumbo Mix	32
10949	Fuller, Andrew	14-Aug-1992	3457	Bottom-Dollar Markets	Alice Mutton	6
10285	Davolio, Nancy	01-May-1992	5467	QUICK-Stop	Perth Pasties	36
10867	Suyama, Michael	17-Oct-1993	428	Lonesome Pine Restaut	Perth Pasties	3
10691	Fuller, Andrew	14-Aug-1992	3457	QUICK-Stop	Thüringer Rostbratwurst	40
10354	Callahan, Laura	05-Mar-1994	2344	Pericles Comidas clásic	Thüringer Rostbratwurst	4
10698	Peacock, Margaret	03-May-1993	5176	Ernst Handel	Thüringer Rostbratwurst	12
10962	Callahan, Laura	05-Mar-1994	2344	QUICK-Stop	Perth Pasties	20
10465	Davolio, Nancy	01-May-1992	5467	Vaffeljernet	Thüringer Rostbratwurst	18
10549	Buchanan, Steven	17-Oct-1993	3453	QUICK-Stop	Gorgonzola Telino	55

Eliminarea datelor redundante

Customers Relation

Customer ID	Company Name	Phone
ALFKI	Alfreds Futterkiste	030-0074321
ANATR	Ana Trujillo Emparedados y helados	(5) 555-4729
ANTON	Antonio Moreno Taquería	(5) 555-3932
AROUT	Around the Horn	(171) 555-7788
BERGS	Berglunds snabbköp	0921-12 34 65
BLAUS	Blauer See Delikatessen	0621-08460
BLONP	Blondel père et fils	88.60.15.31
BOLID	Bólido Comidas preparadas	(91) 555 22 82
BONAP	Bon app'	91.24.45.40
BOTTM	Bottom-Dollar Markets	(604) 555-4729
BSBEV	B's Beverages	(171) 555-1212
CACTU	Cactus Comidas para llevar	(1) 135-5555
CENTC	Centro comercial Moctezuma	(5) 555-3392

Invoices Relation

Order ID	Company Name	Phone
10643	Alfreds Futterkiste	030-0074321
10692	Alfreds Futterkiste	030-0074321
10702	Alfreds Futterkiste	030-0074321
10835	Alfreds Futterkiste	030-0074321
10952	Alfreds Futterkiste	030-0074321
11011	Alfreds Futterkiste	030-0074321
10308	Ana Trujillo Emparedados y helados	(5) 555-4729
10625	Ana Trujillo Emparedados y helados	(5) 555-4729
10759	Ana Trujillo Emparedados y helados	(5) 555-4729
10926	Ana Trujillo Emparedados y helados	(5) 555-4729
10365	Antonio Moreno Taquería	(5) 555-3932
10507	Antonio Moreno Taquería	(5) 555-3932
10535	Antonio Moreno Taquería	(5) 555-3932
10573	Antonio Moreno Taquería	(5) 555-3932
10677	Antonio Moreno Taquería	(5) 555-3932

When was she hired?

Order ID	SalesPerson	Hire Date	Phone	Company Name	Product Name
10871	Dodsworth, Anne	15-Nov-1994	452	Bon app'	Alice Mutton
10747	Suyama, Michael	17-Oct-1993	428	Piccolo und mehr	Gorgonzola Telino
10258	Davolio, Nancy	01-May-1992	5467	Ernst Handel	Chef Anton's Gumbo Mix
11007	Callahan, Laura	05-Mar-1994	2344	Princesa Isabel Vinhos	Thüringer Rostbratwurst
10421	Callahan, Laura	05-Mar-1994	2344	Gue Delicia	Perth Pasties
10558	Davolio, Nancy	01-May-1992	5467	Around the Horn	Perth Pasties
10431	Peacock, Margaret	03-May-1993	5176	Bottom-Dollar Markets	Alice Mutton

Product ID	Product Name	Unit Price
1	Chai	\$18.00
2	Chang	\$19.00
3	Aniseed Syrup	\$10.00
4	Chef Anton's Cajun Seasoning	\$22.00
5	Chef Anton's Gumbo Mix	\$21.35
6	Grandma's Boysenberry Spread	\$25.00
7	Uncle Bob's Organic Dried Pears	\$30.00
8	Northwoods Cranberry Sauce	\$40.00
9	Mishi Kobe Niku	\$97.00
10	Ikura	\$31.00
11	Queso Cabrales	\$21.00
12	Queso Manchego La Pastora	\$38.00
13	Konbu	\$6.00
14	Tofu	\$23.25

These are not the same value

Order ID	Product Name	Unit Price	Quantity	Unit Price
10248	Mozzarella di Giovanni	\$34.80	5	\$174.00
10248	Queso Cabrales	\$21.00	12	\$168.00
10248	Singaporean Hokkien Fried Mee	\$14.00	10	\$98.00
10249	Manjimup Dried Apples	\$53.00	40	\$1,696.00
10249	Tofu	\$23.25	9	\$167.40

Prima forma normala

- toate valorile sunt scalare

OrderID	CustomerID	OrderDate	Items	OrderTotal
1	CACTU	1/1/1999	3 Zaanse koeken, 1 Tarte au sucre	\$89.70
2	BSBEV	1/5/1999	4 Mozzarella di Giovanni	\$139.20
3	SUPRD	5/2/1999	3 Ravioli Angelo, 6 Tofu	\$198.06

- nu toate rezolvarile sunt eficiente

OrderID	CustomerID	Item1	Qty1	Item2	Qty2	Item3	Qty3
1	ANTON	Queso Cabrales	4	Tofu	3	Ravioli Angelo	1
2	BLAUS	Chai	2		0		

Product	Year	TargetJan	ActualJan	TargetFeb	ActualFeb
Aniseed Syrup	2004	\$1,000.00	\$1,300.00	\$0.00	\$0.00
Chai	2004	\$4,000.00	\$2,000.00	\$0.00	\$0.00
Chang	2004	\$3,000.00	\$8,022.00	\$0.00	\$0.00

A doua forma normala

- O relatie este in a **doua** forma normala cand este in **prima** forma normala si suplimentar attributele (valorile de pe coloana) depind de **intreaga cheie** candidata aleasa

Product Name	SupplierName	Category Name	SupplierPhoneNumber
Chai	Exotic Liquids	Beverages	(171) 555-2222
Chang	Exotic Liquids	Beverages	(171) 555-2222
Guaraná Fantástica	Refrescos Americanas LTDA	Beverages	(11) 555 4640
Sasquatch Ale	Bigfoot Breweries	Beverages	(503) 555-9931
Steeleye Stout	Bigfoot Breweries	Beverages	(503) 555-9931
Côte de Blaye	Aux joyeux ecclésiastiques	Beverages	(1) 03.83.00.68
Chartreuse verte	Aux joyeux ecclésiastiques	Beverages	(1) 03.83.00.68
Ipoh Coffee	Leka Trading	Beverages	555-8787
Laughing Lumberjack Lager	Bigfoot Breweries	Beverages	(503) 555-9931
Outback Lager	Paylova, Ltd.	Beverages	(03) 444-2343

A doua forma normala

Product ID	Product Name	Category
1	Chai	Beverages
2	Chang	Beverages
3	Aniseed Syrup	Condiments
4	Chef Anton's Cajun Seasoning	Condiments
5	Chef Anton's Gumbo Mix	Condiments
6	Grandma's Boysenberry Spread	Condiments
7	Uncle Bob's Organic Dried Pears	Produce

Supplier ID	SupplierName	SupplierPhoneNumber
1	Exotic Liquids	(171) 555-2222
2	New Orleans Cajun Delights	(100) 555-4822
3	Grandma Kelly's Homestead	(313) 555-5735
4	Tokyo Traders	(03) 3555-5011
5	Cooperativa de Quesos 'Las Cabras'	(98) 598 76 54
6	Mayumi's	(06) 431-7877
7	Pavlova, Ltd.	(03) 444-2343
8	Specialty Biscuits, Ltd.	(161) 555-4448
9	PB Knäckebröd AB	031-987 65 43

A treia forma normala

- O relatie este in a **treia** forma normala cand este in a **doua** forma normala si suplimentar attributele (valorile de pe coloana) care nu fac parte din cheie sunt **mutual independente**

Company Name	Address	City	Region	Postal Code
Exotic Liquids	49 Gilbert St.	London		EC1 4SD
New Orleans Cajun Delights	P.O. Box 78934	New Orleans	LA	70117
Grandma Kelly's Homestead	707 Oxford Rd.	Ann Arbor	MI	48104
Tokyo Traders	9-8 Sekimai	Tokyo		100
Cooperativa de Quesos 'Las Cabras'	Calle del Rosal 4	Oviedo	Asturias	33007
Mayumi's	92 Setsuko	Osaka		545
Pavlova, Ltd.	74 Rose St.	Melbourne	Victoria	3058

A treia forma normala

Company Name	Address	City
Exotic Liquids	49 Gilbert St.	London
New Orleans Cajun Delights	P.O. Box 78934	New Orleans
Grandma Kelly's Homestead	707 Oxford Rd.	Ann Arbor
Tokyo Traders	9-8 Sekimai	Tokyo
Cooperativa de Quesos 'Las Cabras'	Calle del Rosal 4	Oviedo
Mayumi's	92 Setsuko	Osaka
Pavlova, Ltd.	74 Rose St.	Melbourne

City	Region	Postal Code
Melbourne	Victoria	3058
Ste-Hyacinthe	Québec	J2S 7S8
Montréal	Québec	H1J 1C3
Bend	OR	97101
Sydney	NSW	2042
Ann Arbor	MI	48104
Boston	MA	02134
New Orleans	LA	70117
Oviedo	Asturias	33007

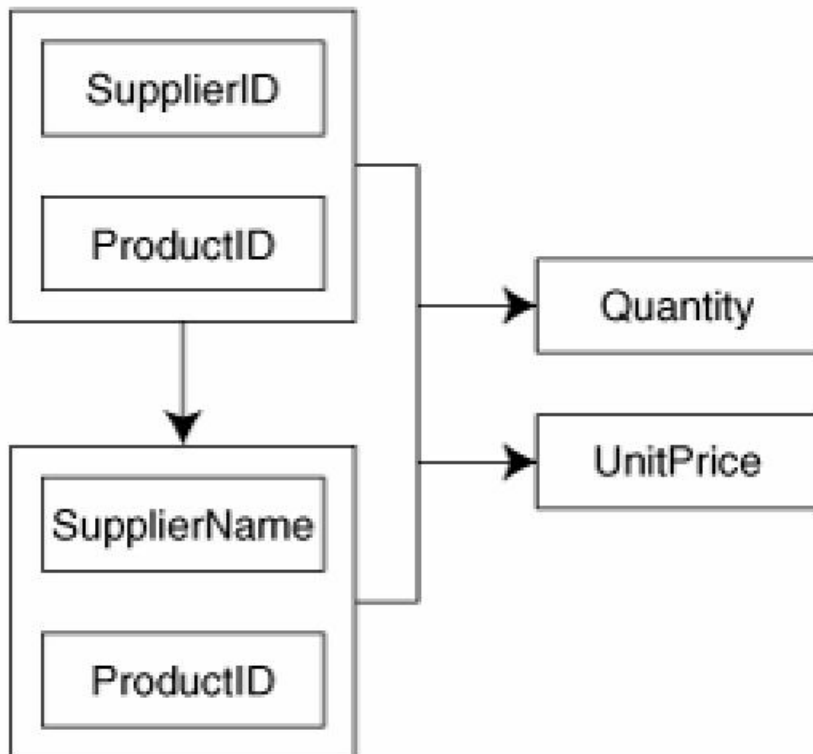
Normalizare suplimentara

- Se tine cont si de eliminarea datelor redundante. Anumite redundante pot fi eliminate prin introducerea de relatii suplimentare
- Forma normala Boyce/Codd cere sa nu existe dependenta functionala intre cheile candidate



Supplier ID	SupplierName	Product	Quantity	Unit Price
5	Cooperativa de Quesos 'Las Cabras'	Queso Cabrales	12	\$14.00
20	Leka Trading	Singaporean Hokkien Fried Mee	10	\$9.80
14	Formaggi Fortini s.r.l.	Mozzarella di Giovanni	5	\$34.80
24	G'day, Mate	Manjimup Dried Apples	40	\$42.40
6	Mayumi's	Tofu	9	\$18.60
24	G'day, Mate	Manjimup Dried Apples	35	\$42.40
19	New England Seafood Cannery	Jack's New England Clam Chowder	10	\$7.70
2	New Orleans Cajun Delights	Louisiana Fiery Hot Pepper Sauce	15	\$16.80

Normalizare suplimentara



Supplier ID	SupplierName
1	Exotic Liquids
2	New Orleans Cajun Delights
3	Grandma Kelly's Homestead
4	Tokyo Traders
5	Cooperativa de Quesos 'Las Cabras'
6	Mayumi's

SupplierID	ProductID	Quantity	UnitPrice
2	65	15	\$21.05
24	53	15	\$32.80
8	20	40	\$81.00
22	47	16	\$9.50
6	14	9	\$23.25
28	59	30	\$55.00
28	60	40	\$34.00
21	46	15	\$12.00

MySql – Recapitulare rapida

Relatii in Bazele de date

Relatii in Bazele de date

- Respectarea formelor normale ale bazelor de date aduce nenumarate avantaje
- Efectul secundar este dat de necesitatea separarii datelor intre mai multe tabele
- In exemplul utilizat avem doua concepte diferite din punct de vedere logic
 - produs
 - categorie de produs

Relatii in Bazele de date

- Normalizarea bazei de date impune crearea a cel puțin doua tabele
 - produse
 - categorii
- Cele doua tabele nu sunt independente
- Intre ele exista o legatura data de functionalitatea dorita pentru aplicatie: **un produs va apartine unei anumite categorii de produse**

Relatii in Bazele de date

- Legaturile intre tabele pot fi
 - One to One
 - One to Many
 - Many to Many
 - Unare (auto referinta)

One to One

- Fiecare tabel poate avea corespondenta **o singura linie (row) sau nici una** de cealalta parte a relatiei
- echivalent cu o relatie “bijectiva”
- analogie cu casatorie:
 - o persoana poate fi casatorita sau nu
 - daca este casatorita va fi casatorita cu o singura persoana din tabelul cu persoane de sex opus
 - persoana respectiva va fi caracterizata de aceeasi relatie “one to one” – primeste simultan un singur corespondent in tabelul initial

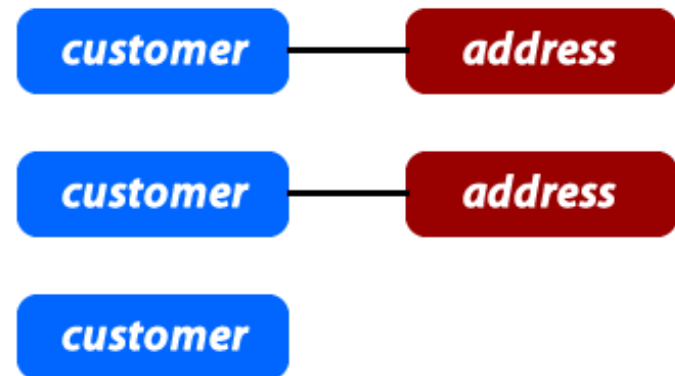
One to One

- de multe ori legaturile "one to one" se bazeaza pe reguli externe
- de obicei se poate realiza usor si eficient gruparea ambelor tabele in unul singur

CUSTOMERS		
customer_id	customer_name	address_id
101	John Doe	301
102	Bruce Wayne	302

ADDRESSES	
address_id	address
301	12 Main St., Houston TX 77001
302	1007 Mountain Dr., Gotham NY 10286

CUSTOMERS		
customer_id	customer_name	customer_address
101	John Doe	12 Main St., Houston TX 77001
102	Bruce Wayne	1007 Mountain Dr., Gotham NY 10286



One to Many

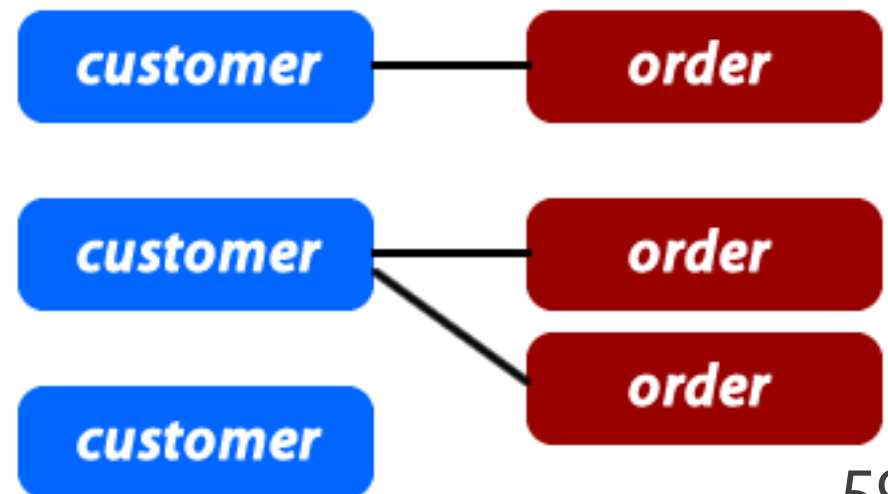
- O linie dintr-un tabel (row), identificata prin cheia primara, poate avea: **nici una, una sau mai multe linii corespondente** in celalalt tabel. In acesta o linie poate fi legata cu o **singura** linie din tabelul primar.
- Analogie cu relatii parinte/copil:
 - fiecare om are o singura mama
 - fiecare femeie poate avea nici unul, unul sau mai multi copii

One to Many, Many to One

- de obicei aceste legaturi se implementeaza prin introducerea cheii primare din tabelul **One** in calitate de coloana in tabelul **Many** (cheie externa – foreign key)

CUSTOMERS	
customer_id	customer_name
101	John Doe
102	Bruce Wayne

ORDERS			
order_id	customer_id	order_date	amount
555	101	12/24/09	\$156.78
556	102	12/25/09	\$99.99
557	101	12/26/09	\$75.00



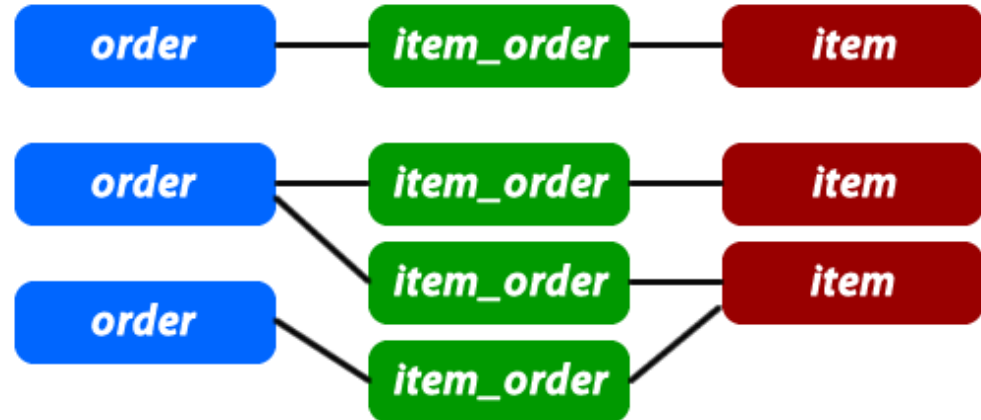
Many to Many

- Fiecare linie (row) din **ambele tabele** implicate in legatura poate fi legat cu **oricate (niciuna, una sau mai multe) linii** din tabelul corespondent.
- Analogie cu relatii de rudenie (veri de exemplu), tabel 1 – barbati, tabel 2 – femei :
 - fiecare barbat poate fi ruda cu una sau mai multe femei
 - la randul ei fiecare femeie poate fi ruda cu unul sau mai multi barbati

Many to Many

- de obicei aceste legaturi se implementeaza prin introducerea unui tabel **suplimentar** (numit tabel **asociat** sau de **legatura**) care sa memoreze legaturile

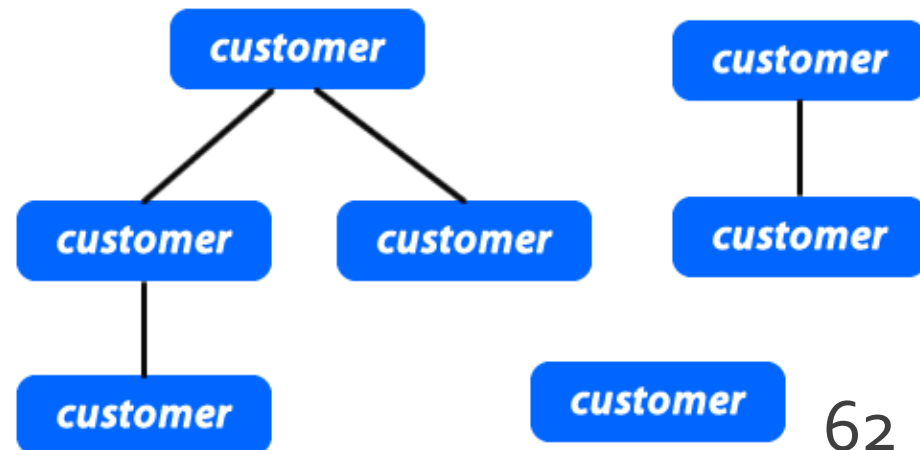
ORDERS				
order_id	customer_id	order_date	amount	
555	101	12/24/09	\$156.78	
556	102	12/25/09	\$99.99	
ITEMS				
item_id	item_name	item_description		
201	Tickle Me Elmo	It wants to be tickled		
202	District 9 DVD	Awesome sci-fi movie		
203	Batarang	It is very sharp		
ITEMS_ORDERS				
order_id	item_id			
555	201			
555	202			
556	202			
556	203			



Self Referencing (unare)

- Un caz particular de legatura "one to many" in care legatura e in interiorul aceluiasi tabel
- rezolvarea este similara, introducerea unei coloane suplimentara, cu referinta la cheia primara din tabel
- analogie cu relatii parinte copil cand ambele persoane se regasesc in acelasi tabel

CUSTOMERS		
customer_id	customer_name	referrer_customer_id
101	John Doe	0
102	Bruce Wayne	101
103	James Smith	101



Relatii in Bazele de date

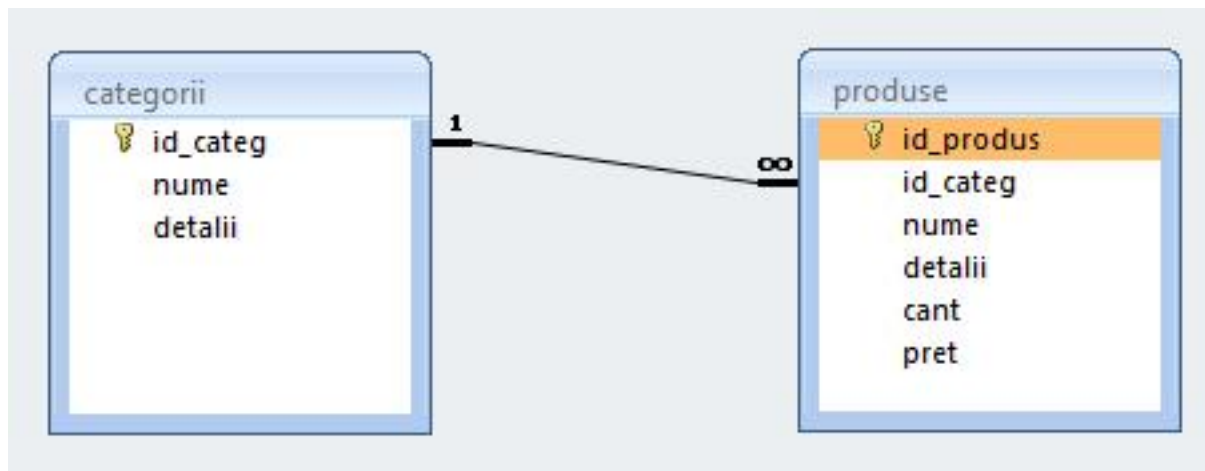
- Respectarea formelor normale ale bazelor de date aduce nenumarate avantaje
- Efectul secundar este dat de necesitatea separarii datelor intre mai multe tabele
- In exemplul utilizat avem doua concepte diferite din punct de vedere logic
 - produs
 - categorie de produs

Relatii in Bazele de date

- In exemplul utilizat avem doua concepte diferite din punct de vedere logic
 - **produs**
 - **categorie** de produs
- Cele doua tabele nu sunt independente
- Intre ele exista o legatura data de functionalitatea dorita pentru aplicatie: **un produs va apartine unei anumite categorii de produse**

Relatii in Bazele de date

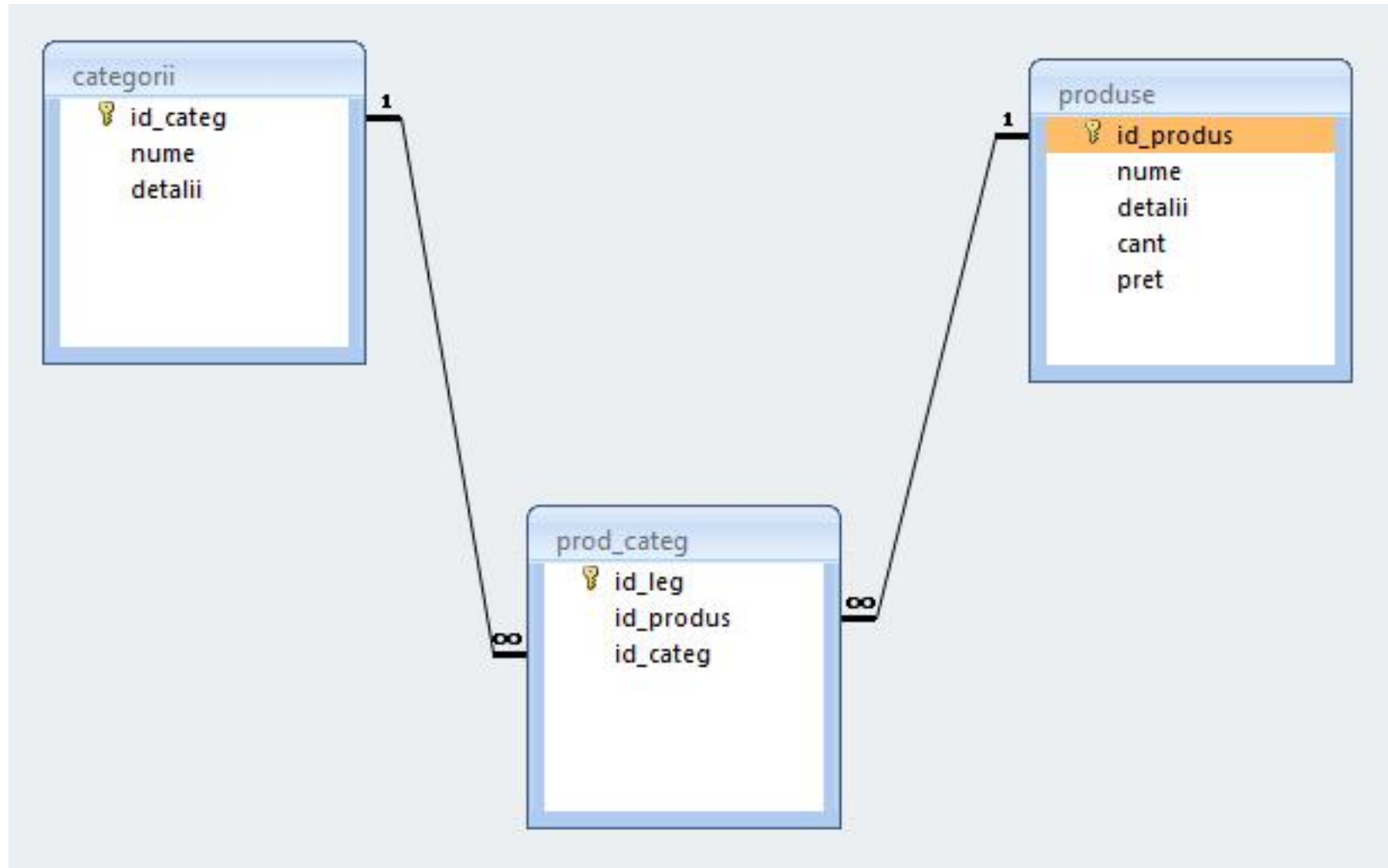
- Legaturile implementata
 - One to Many
 - in tabelul "produse" apare cheia externa (foreign key): "id_categ"



Relatii in Bazele de date

- Daca se doreste o situatie cand un produs poate apartine **mai multor categorii** (o carte cu CD poate fi inclusa si in "papetarie" si in "audio-video")
 - relatia devine de tipul **Many to Many**
 - e necesara introducerea unui tabel de legatura cu coloanele "id_leg" (cheie primara), "id_categorie" si "id_produs" (chei externe)

Relatii in Bazele de date



Relatii

- **Nu** trebuie evitate relatiile
 - Many to Many
 - One to Many
- Prelucrarea cade in sarcina server-ului de baze de date (**RDBMS**)
 - JOIN – **esential** in aplicatii cu baze de date

MySQL – eficienta

- eficienta unei aplicatii web
 - 100% - **toate prelucrarile "mutate" in RDBMS**
 - PHP **doar** afisarea datelor
- eficienta unei aplicatii MySQL
 - 25% **alegerea corecta a tipurilor de date**
 - 25% **crearea indecsilor necesari in aplicatii**
 - 25% **normalizarea corecta a bazei de date**
 - 20% **cresterea complexitatii interogarilor pentru a "muta" prelucrarile pe server-ul de baze de date**
 - 5% **scrierea corecta a interogarilor**

Acces la server-ul MySql din PHP

Acces la server-ul MySQL din PHP

- Bibliotecile corespunzatoare trebuie activate in php.ini – vezi laboratorul 1.
 - mysql
 - mysqli (improved accesul la functionalitati ulterioare MySQL 4.1)
- O baza de date existenta poate fi accesata daca exista un utilizator cunoscut in PHP cu drepturi de acces corespunzatoare – vezi laboratorul 1.
- O baza de date poate fi creata si din PHP dar nu e metoda recomandata daca nu e necesara
 - cod dificil de implementat pentru o singura utilizare
 - necesita existenta unui utilizatori cu drepturi mai mari pentru crearea bazei de date si alocarea de drepturi unui utilizator restrans

Funcții PHP de acces MySQL

- `mysql_query`
 - trimiterea unei interogari SQL spre server
 - resource `mysql_query` (string query [, resource link_identifier])
 - rezultatul
 - SELECT, SHOW, DESCRIBE sau EXPLAIN – resursa (tabel)
 - UPDATE, DELETE, DROP, etc – true/false
- `mysql_fetch_assoc`
 - returneaza o **matrice asociativa** corespunzatoare liniei de la indexul intern (indecsi de tip sir corespunzatori denumirii coloanelor – field – din tabelul de date) si incrementeaza indexul intern sau **false** daca nu mai sunt linii
 - array `mysql_fetch_assoc` (resource result)

Funcții PHP de acces MySQL

Parcurgerea resurselor rezultat

- `mysql_fetch_assoc`
 - returnează o **matrice asociativă** corespunzătoare liniei de la indexul intern (indecsi de tip șir corespunzatori denumirii coloanelor – field – din tabelul de date) și incrementează indexul intern sau **false** dacă nu mai sunt linii
 - array `mysql_fetch_assoc` (resource result)
- `mysql_fetch_row`
 - returnează o matrice cu indecsi întregi
 - array `mysql_fetch_row` (resource result)

Funcții PHP de acces MySQL

Parcurgerea resurselor rezultat

- `mysql_fetch_array`
 - grupează funcționalitatea `mysql_fetch_assoc` și `mysql_fetch_row`
 - array `mysql_fetch_array` (resource result [, int result_type])
 - MYSQL_ASSOC, MYSQL_NUM, MYSQL_BOTH (implicit)
- `mysql_data_seek`
 - muta indexul intern la valoarea indicată
 - bool `mysql_data_seek` (resource result, int row_number)

Resurse MySQL

- Resursele reprezinta o combinatie intre
 - date structurate (valori + structura) rezultate in urma unor interogari SQL
 - functii de acces la aceste date/structuri
- Analogie cu POO
 - o "clasa speciala" creata in urma interogarii cu functii predefinite de acces la datele respective

Resurse MySQL

Structura

Index intern	Col 1 (tip date)	Col 2 (tip date)
1			
2			
...			

Date

Index intern	Col 1	Col 2
1	Val 11	Val 12	...
2	Val 21	Val 22	...
...

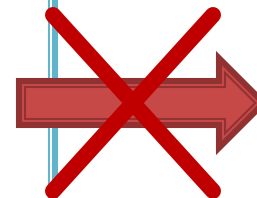
Functii de acces la structura



Functii de acces la date



Acces direct



Resurse MySQL

- Functiile de acces la structura sunt rareori utilizate
 - majoritatea aplicatiilor sunt concepute pe structura fixa, si cunosc structura datelor primite
 - exceptie: aplicatii generale, ex.: PhpMyAdmin
- Majoritatea functiilor de acces la date sunt caracterizate de acces secvential
 - se citesc in intregime valorile stocate pe o linie
 - simultan se avanseaza indexul intern pe urmatoarea pozitie, pregatindu-se urmatoarea citire

Resurse MySQL

- Functiile sunt optimizate pentru utilizarea lor intr-o structura de control **do {} while()**, sau **while() {}** de control
 - returneaza FALSE cand "s-a ajuns la capat"
- tipic se realizeaza o citire (mysql_fetch_assoc) urmata de o bucla **do {} while()**
 - pentru a se putea introduce cod de detectie probleme rulat o singura data

Exemplu de utilizare

```
$hostname = "localhost";  
$database = "world";  
$username = "web";  
$password = "ceva";  
$conex= mysql_connect($hostname, $username, $password);  
mysql_select_db($database, $conex);
```

```
$query = "SELECT `Code`, `Name`, `Population` FROM `country` AS c ";  
$result = mysql_query($ query, $conex) or die(mysql_error());  
$row_result = mysql_fetch_assoc($ result );  
$totalRows_result = mysql_num_rows($ result );
```

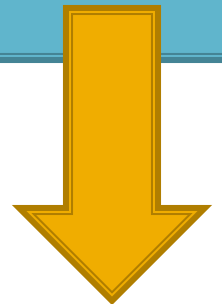
Exemplu de utilizare

```
<?php
do {?>
<tr>
    <td><?php echo $index; ?>&nbsp;  </td>
    <td><?php echo $ row_result ['Code']; ?>&nbsp;  </td>
    <td><?php echo $ row_result ['Name']; ?>&nbsp;  </td>
    <td><?php echo $ row_result ['Population']; ?>&nbsp;  </td>
</tr>
<?php
    $index++;
}
while ($ row_result = mysql_fetch_assoc($ result )); ?>
```


Modificari laborator cu date stocate text

- Codul aplicatiei ramane in mare parte acelasi
- Se modifica doar citirea valorilor pentru popularea matricii \$produse ("antet.php")

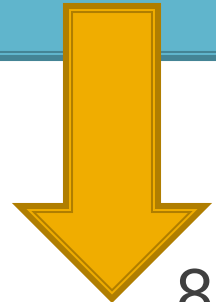
```
$matr=file("produse.txt");  
foreach ($matr as $linie)  
    {  
        $valori=explode("\t",$linie,5);  
        $produse[$valori[0]] [$valori[1]]=array ("descr" => $valori[2], "pret" => $valori[3], "cant" =>  
$valori[4]);  
    }
```



Modificari laborator cu date stocate XML

XML

```
$xml = simplexml_load_file("lista.xml");
if ($xml)
{
foreach ($xml->categorie as $categorie)
    {
    $produse[(string)$categorie["nume"]]=array();
    foreach ($categorie->produs as $prod_cur)
        {
        $produse[(string)$categorie["nume"]][(string)$prod_cur->nume]=array
("descr" => (string)$prod_cur->desc, "pret" => (string)$prod_cur->pret,
"cant" => (string)$prod_cur->cant);
        }
    }
}
```



Modificari laborator cu date stocate

MySQL

```
$hostname = "localhost";
$database = "tmpaw";
$username = "web";
$password = "test";
$conex= mysql_connect($hostname, $username, $password);
mysql_select_db($database, $conex);
$query = "SELECT * FROM `categorii` AS c";
$result_c = mysql_query($query, $conex) or die(mysql_error());
$row_result_c = mysql_fetch_assoc($result_c);
$totalRows_result = mysql_num_rows($result_c);
do {
    $query = "SELECT * FROM `produse` AS p WHERE `id_categ` = ".$row_result_c['id_categ'];
    $result_p = mysql_query($query, $conex) or die(mysql_error());
    $row_result_p = mysql_fetch_assoc($result_p);
    $totalRows_result = mysql_num_rows($result_p);
    $produse[$row_result_c['nume']] = array();
    do {
        $produse[$row_result_c['nume']][$row_result_p['nume']] = array ("descr" =>
$row_result_p['detalii'], "pret" => $row_result_p['pret'], "cant" => $row_result_p['cant']);
    }
    while ($row_result_p = mysql_fetch_assoc($result_p));
}
while ($row_result_c = mysql_fetch_assoc($result_c));
```

MySQL – eficienta

- eficienta unei aplicatii web
 - 100% - **toate prelucrarile "mutate" in RDBMS**
 - PHP **doar** afisarea datelor
- eficienta unei aplicatii MySQL
 - 25% **alegerea corecta a tipurilor de date**
 - 25% **crearea indecsilor necesari in aplicatii**
 - 25% **normalizarea corecta a bazei de date**
 - 20% **cresterea complexitatii interogarilor pentru a "muta" prelucrarile pe server-ul de baze de date**
 - 5% **scrierea corecta a interogarilor**

Optimizare

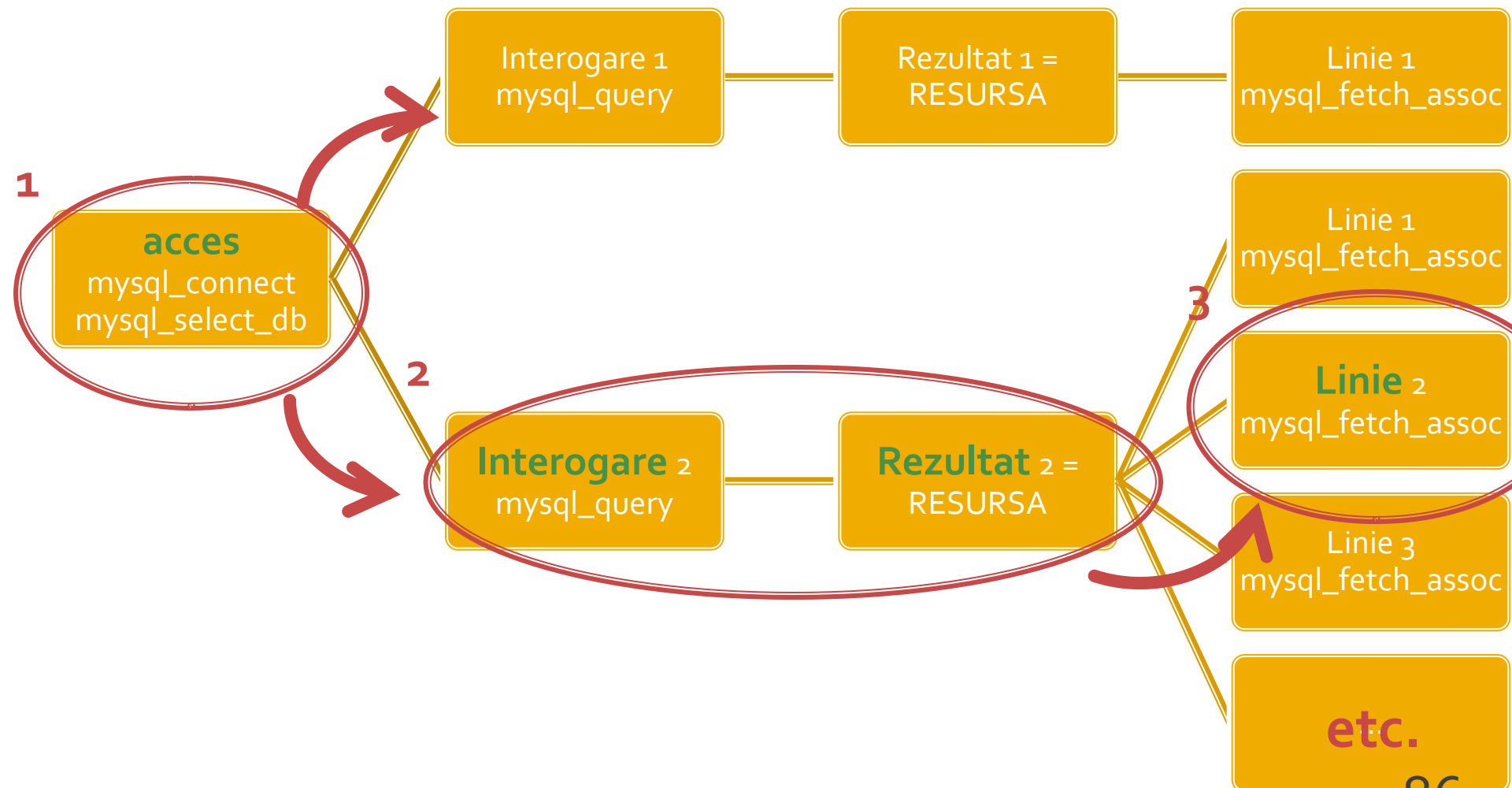
- o singura interogare SQL, unirea tabelelor lasata in baza server-ului MySql

```
$hostname = "localhost";
$database = "tmpaw";
$username = "web";
$password = "test";
$conex= mysql_connect($hostname, $username, $password);
mysql_select_db($database, $conex);

$query = "SELECT p.*, c.`nume` AS `nume_categ` FROM `produse` AS p
        LEFT JOIN `categorii` AS c ON (c.`id_categ` = p.`id_categ`)";
$result = mysql_query($query, $conex) or die(mysql_error());
$row_result = mysql_fetch_assoc($result);
$totalRows_result = mysql_num_rows($result);

do{
    $produse[$row_result['nume_categ']][$row_result['nume']] = array ("descr" => $row_result['detalii'], "pret"
=> $row_result['pret'], "cant" => $row_result['cant']);
}
while ($row_result = mysql_fetch_assoc($result));
```

Funcții de acces la server-ul MySQL



!! IMPORTANT

PHP > 5.5

PHP 5.5

- Incapand cu versiunea 5.5 a PHP extensia mysql este declarata **depreciata**
 - orice utilizare a unei functii genereaza eroare de tip **E_DEPRECATED**
 - se preconizeaza ca in PHP > 6 aceasta extensie va fi eliminata total
- Alternativele de utilizare sunt
 - extensia mysqli (MySQL Improved)
 - extensia PDO (PHP Data Objects)

Extensia mysqli

- Inafara securitatii sporite ofera acces la facilitatile curente ale server-ului MySQL
 - accesul la interogari predefinite (Prepared Statements) (viteza, securitate)
 - server side
 - client side
 - proceduri stocate pe server (viteza, securitate)
 - interogari multiple
 - tranzactii (integritate)

Extensia mysqli

- Doua modalitati de utilizare
 - procedurala (similar mysql)
 - POO (similar PDO)
- Utilizarea procedurala (aproape) similara cu utilizarea extensiei originale mysql
 - tranzitie facila
 - tranzitie cu mici diferente de parametri

mysqli – Procedural

```
<?php
$mysqli = mysqli_connect("example.com", "user", "password", "database");
$res = mysqli_query($mysqli, "SELECT 'Please do not use the mysql extension ' AS _msg FROM DUAL");
$row = mysqli_fetch_assoc($res);
echo $row['_msg'];

$mysqli = mysqli_connect("example.com", "user", "password");
mysqli_select_db("test");
$res = mysqli_query("SELECT ' for new developments.' AS _msg FROM DUAL", $mysqli);
$row = mysqli_fetch_assoc($res);
echo $row['_msg'];
?>
```

- toate functiile mysql au un echivalent mysqli
- majoritatea functiilor au aceeasi parametri in aceeasi ordine
- sunt totusi functii cu mici diferente (Ex: **mysqli_connect**, **mysqli_query**)

mysqli – Programare orientata obiect

```
<?php
$var = new mysqli("example.com", "user", "password", "database");
$res = $var->query ($mysqli, "SELECT 'Please do not use the mysql extension ' AS _msg FROM DUAL");
$row = $res->fetch_assoc();
echo $row['_msg'];

$mysqli = mysqli_connect("example.com", "user", "password");
mysqli_select_db("test");
$res = mysqli_query("SELECT ' for new developments.' AS _msg FROM DUAL", $mysqli);
$row = mysqli_fetch_assoc($res);
echo $row['_msg'];
?>
```

Resurse MySQL – mysqli

Structura

Index intern	Col 1 (tip date)	Col 2 (tip date)
1			
2			
...			

Date

Index intern	Col 1	Col 2
1	Val 11	Val 12	...
2	Val 21	Val 22	...
...

Metode

Constructor	query	fetch_assoc
-------------	-------	-------------	------

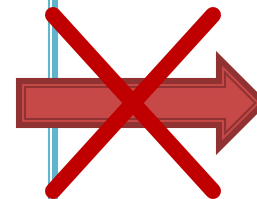
Functii de acces la structura



Functii de acces la date



Acces direct



Metode atasate resursei



MySql – Server Windows 2000

Mini – Indrumar practic Lucru cu bazele de date

Realizarea bazei de date

- Se recomanda utilizarea utilitarului **MySQL Query Browser** sau un altul echivalent pentru crearea scheletului de baza de date (detalii – laborator 1)
- Se initializeaza aplicatia cu drepturi depline (“root” si parola)
 - se creaza o noua baza de date:
 - in lista “Schemata” – Right click – Create New Schema
 - se activeaza ca baza de date curenta noua “schema” – Dublu click pe numele ales

Introducere tabele

- Introducere tabel – Click dreapta pe numele bazei de date aleasa – Create New Table
- se defineste structura tabelului
 - nume coloane
 - tip de date
 - NOT NULL – daca se accepta ca acea coloana sa ramana fara date (NULL) sau nu
 - AUTOINC – daca acea coloana va fi de tip intreg si va fi incrementata automat de server (util pentru crearea cheilor primare)
 - Default value – valoarea implicita care va fi inserata daca la introducerea unei linii noi nu se mentioneaza valoare pentru acea coloana (legat de optiunea NOT NULL)

Tabel Categorii

The screenshot shows the MySQL Table Editor interface for a table named 'categorii' in the 'tmpaw' database. The table has three columns: 'id_categ' (INT(10), UNSIGNED, ZEROFILL, NULL), 'nume' (VARCHAR(45), BINARY, NULL), and 'detalii' (VARCHAR(150), BINARY, NULL). A primary index is defined on the 'id_categ' column, with index settings: Index Name: PRIMARY, Index Kind: PRIMARY, and Index Type: BTREE.

Table Name: categorii Database: tmpaw Comment: InnoDB free: 11264 kB

Column Name	Datatype	NOT NULL	AUTO INC	Flags	Default Value	Comment
id_categ	INT(10)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	
nume	VARCHAR(45)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY		
detalii	VARCHAR(150)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	NULL	

Index Settings:

Index Name: PRIMARY
Index Kind: PRIMARY
Index Type: BTREE

Index Columns: id_categ

Buttons: Apply Changes, Discard Changes, Close

Tabel Prognose

The screenshot shows the MySQL Table Editor interface for a table named 'produse' in the 'tmpaw' database. The table has a comment 'InnoDB free: 11264 kB'. The 'Columns and Indices' tab is active, displaying a table with the following columns:


Column Name	Datatype	NOT NULL	AUTO INC	Flags	Default Value	Comment
id_producs	INT(10)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	
id_categ	INT(10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL		
nume	VARCHAR(45)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> BINARY		
detalii	VARCHAR(150)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	NULL	
cant	INT(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	
pret	FLOAT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	

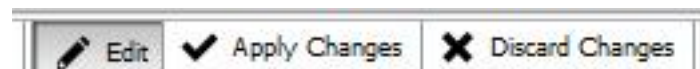
The 'Indices' tab is also active, showing a PRIMARY index with the following settings:

- Index Name: PRIMARY
- Index Kind: PRIMARY
- Index Type: BTREE
- Index Columns: id_producs

The 'Apply Changes' button is highlighted in blue.

Introducere date initiale

- Dublu click pe tabel → In zona “SQL Query Area” se completeaza interogarea de selectie totala
 - SELECT * FROM produse p;
- Executia interogarii SQL
 - Meniu → Query → Execute
 - Bara de butoane 
- Lista rezultata
 - initial vida
 - poate fi editata – butoanele “Edit”, “Apply Changes”, “Discard Changes” din partea de jos a listei



Introducere date initiale

The screenshot shows the MySQL Query Browser interface. The SQL Query Area contains the query: `1 SELECT * FROM produse p;`. The result set is displayed in a table with the following columns: `id_produs`, `id_categ`, `nume`, `detalii`, `cant`, and `pret`. The data rows are as follows:

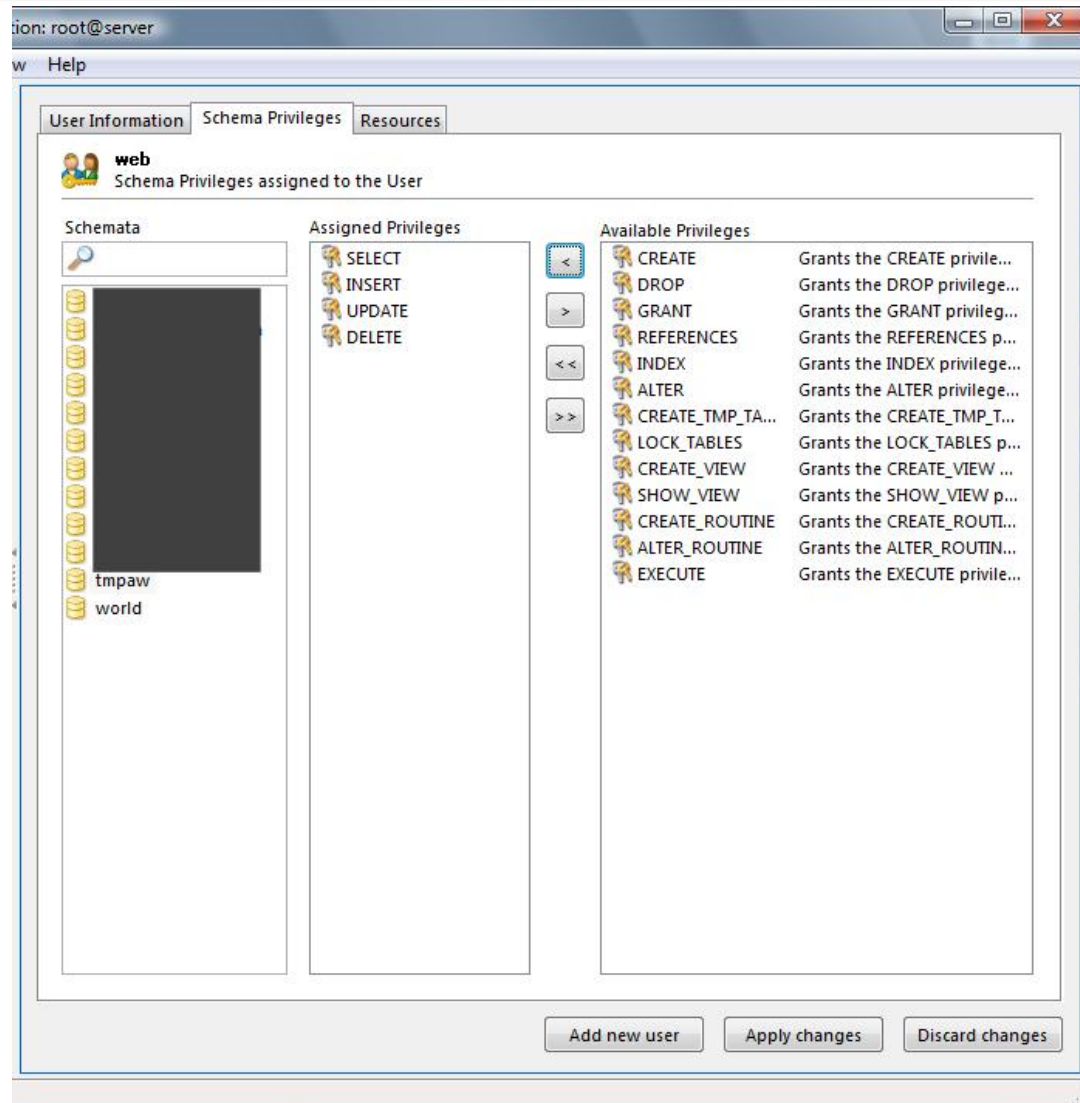
id_produs	id_categ	nume	detalii	cant	pret
1	1	carte	mai multe pagini scrise legate	0	100
2	1	caiet	mai multe pagini goale legate	0	75
3	1	hartie scris	mai multe pagini goale NElegate	0	50
4	2	penar	loc de depozitat instrumente de scris	0	150
5	2	stilou	instrument de scris albastru	0	125
6	2	creion	instrument de scris gri	0	25
ALL	3	cd	canta	0	50
ALL	3	dvd	vizual	0	100
ALL	3	blue ray	vizual extrem	0	500

The interface also includes a menu bar (File, Edit, View, Query, Script, Tools, Window, Help), a toolbar with various query execution icons, and a right-hand pane with 'Schemata', 'Bookmarks', and 'History' tabs. The 'Schemata' tab shows a tree view of the database structure, including the 'tmpaw' database with 'categorii' and 'produse' tables. The 'Syntax' tab is also visible at the bottom right.

Backup, Restore, drepturi de acces

- Se recomanda utilizarea utilitarului **MySQL Administrator** sau un altul echivalent (detalii – laborator 1)
- Se initializeaza aplicatia cu drepturi depline (“root” si parola)
- Se creaza un utilizator limitat (detalii – laborator 1)
- Se aloca drepturile “SELECT” + “INSERT” + “UPDATE” asupra bazei de date create (sau mai multe daca aplicatia o cere)

Drepturi de acces



Backup

The screenshot shows the MySQL Administrator interface for configuring a backup project. The window title is "MySQL Administrator - Connection: root@server". The main area is titled "Backup Project" and has three tabs: "Backup Project", "Advanced Options", and "Schedule".

General

Project Name: Name for this backup project.

Schemata

The Schemata list on the left includes: school, tmpaw, and world. The tmpaw schema is selected.


Backup Content

Data directory	Obj...	Rows	Data ...	Last update
<input checked="" type="checkbox"/> tmpaw				
<input checked="" type="checkbox"/> categorii	Inno...	3	16384	
<input checked="" type="checkbox"/> produse	Inno...	9	16384	

At the bottom of the window, there are three buttons: "New Project", "Save Project", and "Execute Backup Now".

Yellow arrows indicate the workflow: from the "Backup" icon in the left sidebar to the "tmpaw" schema in the Schemata list, then to the "Backup Content" table, and finally to the "Execute Backup Now" button.

Restaurarea bazei de date

- Din **MySql Administrator**
 - Sectiunea Restore → "Open Backup File"
- Din **MySql Query Browser**
 - Meniu → File → Open Script
 - Executie script SQL
 - Meniu → Script → Execute
 - Bara de butoane 
- Scriptul SQL rezultat contine comenzile/interogariile SQL necesare pentru crearea bazei de date si popularea ei cu date

Script SQL Backup - utilitate

- Poate fi folosit ca un model extrem de bun pentru comenzile necesare pentru crearea programatica (din PHP de exemplu) a bazei de date

```
CREATE DATABASE IF NOT EXISTS tmpaw;  
USE tmpaw;
```

```
DROP TABLE IF EXISTS `categorii`;  
CREATE TABLE `categorii` (  
  `id_categ` int(10) unsigned NOT NULL auto_increment,  
  `nume` varchar(45) NOT NULL,  
  `detalii` varchar(150) default NULL,  
  PRIMARY KEY (`id_categ`)  
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

```
INSERT INTO `categorii` (`id_categ`,`nume`,`detalii`) VALUES  
(1,'papetarie',NULL),  
(2,'instrumente',NULL),  
(3,'audio-video',NULL);
```

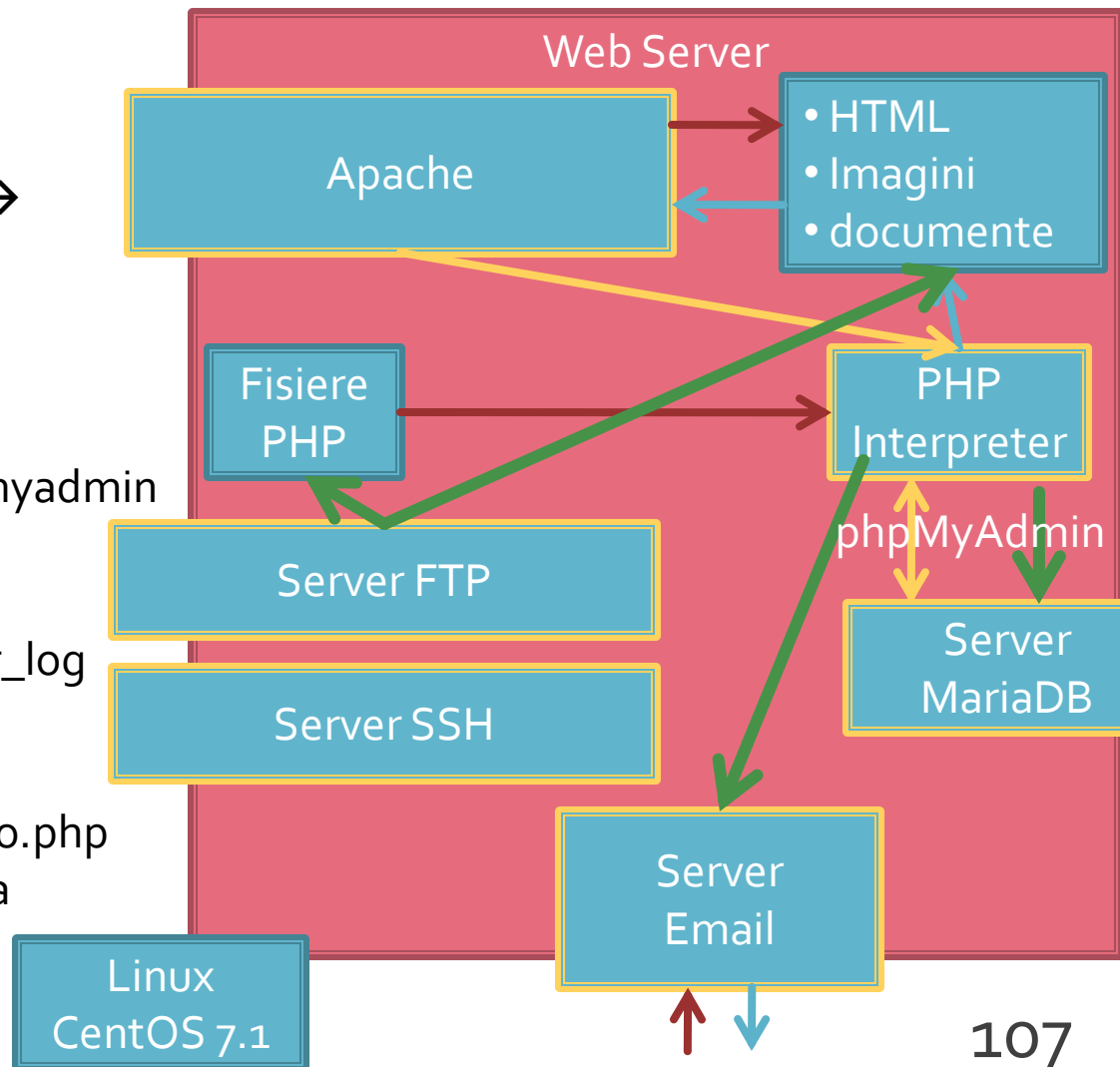
MySql – Server Centos 7.1

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)



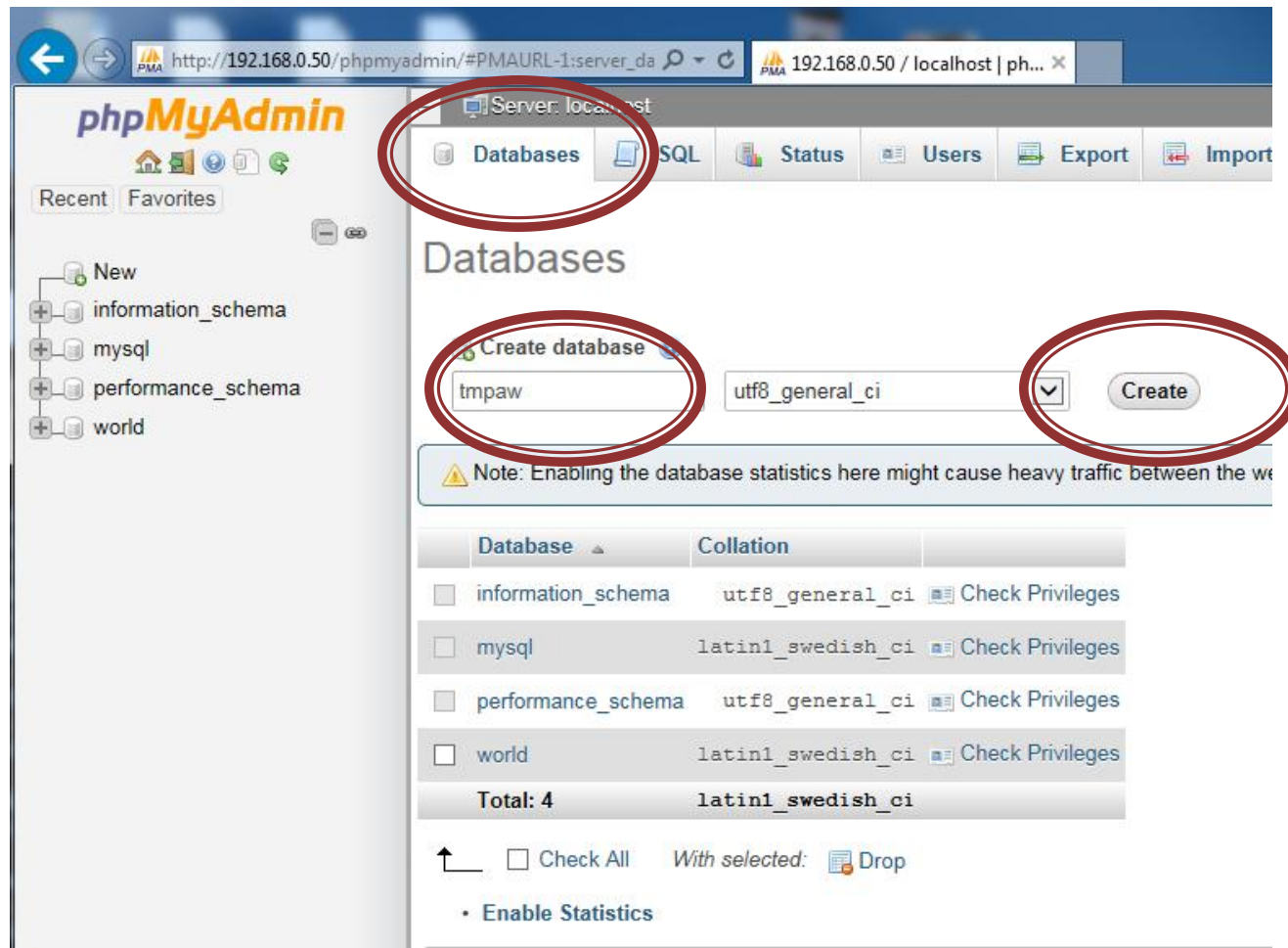
PhpMyAdmin

The screenshot displays the phpMyAdmin web interface in a browser window. The address bar shows the URL `http://192.168.0.50/phpmyadmin/#PMAURL-0:index.php`. The interface includes a navigation menu on the left with options like 'Databases', 'SQL', 'Status', 'Users', 'Export', 'Import', 'Settings', 'Replication', 'Variables', 'Charsets', and 'Engines'. The main content area is divided into several panels:

- General Settings:** Includes a 'Change password' link and a 'Server connection collation' dropdown menu set to 'utf8mb4_unicode_ci'.
- Appearance Settings:** Includes a 'Language' dropdown set to 'English', a 'Theme' dropdown set to 'pmahomme', and a 'Font size' dropdown set to '82%'. A 'More settings' link is also present.
- Database server:** Lists server details: 'Server: Localhost via UNIX socket', 'Server type: MariaDB', 'Server version: 5.5.44-MariaDB - MariaDB Server', 'Protocol version: 10', 'User: root@localhost', and 'Server charset: UTF-8 Unicode (utf8)'.
- Web server:** Lists web server details: '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', and 'PHP version: 5.4.16'.
- phpMyAdmin:** Lists version information: 'Version information: 4.4.15.1', and links for 'Documentation', 'Wiki', 'Official Homepage', 'Contribute', 'Get support', and 'List of changes'.

Creare Baza de Date

- Databases → "nume" → Create



The screenshot shows the phpMyAdmin interface. The 'Databases' tab is selected and circled in red. Below it, the 'Create database' form is visible, with the database name 'tmpaw' entered in the text field, circled in red. The 'Collation' dropdown menu is set to 'utf8_general_ci' and is also circled in red. The 'Create' button is circled in red. A table below the form lists existing databases and their collations.

Database	Collation	
<input type="checkbox"/> information_schema	utf8_general_ci	Check Privileges
<input type="checkbox"/> mysql	latin1_swedish_ci	Check Privileges
<input type="checkbox"/> performance_schema	utf8_general_ci	Check Privileges
<input type="checkbox"/> world	latin1_swedish_ci	Check Privileges
Total: 4	latin1_swedish_ci	

↑ Check All With selected: [Drop](#)

• [Enable Statistics](#)

Creare tabelle in baza de date

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

The screenshot displays the phpMyAdmin web interface. The browser address bar shows the URL `http://192.168.0.50/php`. The main content area shows the 'Database: tmpaw' view. The 'Structure' tab is selected, and a 'Create table' dialog is open. The 'Name' field contains 'categorii' and the 'Number of columns' field contains '3'. The 'Go' button is visible at the bottom right. The left sidebar shows a tree view of databases, with 'tmpaw' selected. The top navigation bar includes 'Structure', 'SQL', 'Search', 'Query', 'Export', and 'More' buttons. A warning message 'No tables found in database.' is displayed above the 'Create table' dialog.

Introducere coloane, tabel categorii

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

The screenshot shows the phpMyAdmin interface for creating a table named 'categorii' in the 'tmpaw' database. The table name 'categorii' is circled in red. The 'Add 1 column(s) Go' button is also circled in red. The table structure is displayed below, with columns 'id_categ', 'nume', and 'detalii' listed. The 'id_categ' column is of type 'INT' and has a 'None' default value, all circled in red. The 'nume' column is of type 'VARCHAR' with a length of '45' and a 'None' default value, also circled in red. The 'detalii' column is of type 'VARCHAR' with a length of '150' and a 'None' default value. The interface includes a sidebar with 'Recent' and 'Favorites' sections, and a top navigation bar with 'Browse', 'Structure', 'SQL', 'Search', 'Import', and 'Privileges' options.

Name	Type	Length/Values	Default	Collation
id_categ	INT		None	
nume	VARCHAR	45	None	
detalii	VARCHAR	150	None	

Introducere coloane

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

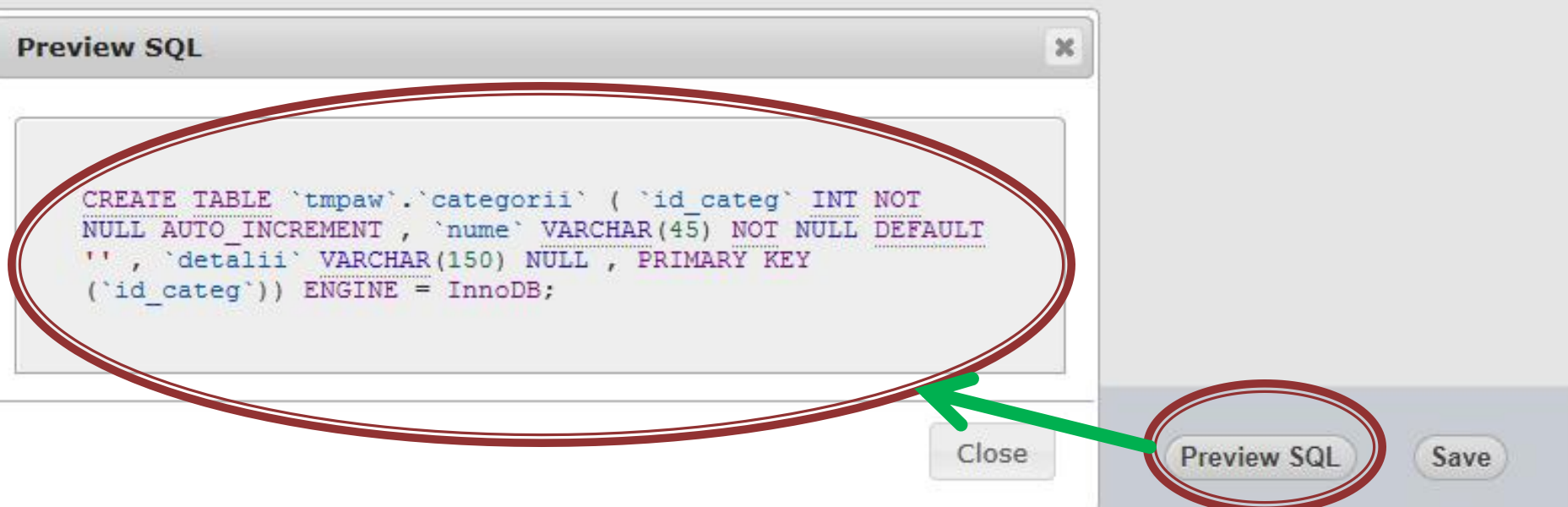
Table name: Add column(s)

Structure

Name	Type	Length/Values	Default	Collation	Attributes	Null	Index	A_I	Comments
id_categ	INT		None			<input type="checkbox"/>	PRIMARY	<input checked="" type="checkbox"/>	
nume	VARCHAR	45	As defined:			<input type="checkbox"/>	---	<input type="checkbox"/>	
detalii	VARCHAR	150	None			<input checked="" type="checkbox"/>	---	<input type="checkbox"/>	

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 → ...

The screenshot shows the phpMyAdmin interface for a database named 'tmpaw'. The 'Table name' field contains 'produse'. The 'Add' button is highlighted with a red circle, and the 'Go' button is also highlighted with a red circle. The 'Structure' tab is active, showing a table with columns: id_produc, id_categ, nume, detalii, cant, and pret. The 'Type' dropdown for the 'pret' column is set to 'FLOAT'. The left sidebar shows the database structure, with 'New' and 'categorii' highlighted with red circles.

Name	Type	Length/Values	Default	Collation	Attributes	Null	Index	A_I	C
id_produc	INT		None			<input type="checkbox"/>	PRIMARY	<input checked="" type="checkbox"/>	
id_categ	INT		None			<input type="checkbox"/>	---	<input type="checkbox"/>	
nume	VARCHAR	45	As defined:			<input type="checkbox"/>	---	<input type="checkbox"/>	
detalii	VARCHAR	150	None			<input checked="" type="checkbox"/>	---	<input type="checkbox"/>	
cant	INT		None			<input checked="" type="checkbox"/>	---	<input type="checkbox"/>	
pret	FLOAT		None			<input checked="" type="checkbox"/>	---	<input type="checkbox"/>	

Introducere date initiale (interfata)

- Tabel → Insert → Completare → Go

The screenshot displays the phpMyAdmin interface for a MySQL database named 'tmpaw'. The current table is 'categorii'. The 'Insert' tab is selected, and the 'Insert as new row' option is chosen. The 'and then' dropdown is set to 'Go back to previous page'. The 'Continue insertion with' dropdown is set to '1 row'. The 'Go' button is highlighted.

Column	Type	Function	Null	Value
id_categ	int(11)			
nume	varchar(45)			papetarie
detalii	varchar(150)		☑	

Continue insertion with row

Vizualizare date existente

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

The screenshot shows the phpMyAdmin interface for a database named 'tmpaw'. The 'categoriasii' table is selected, and the 'Browse' view is active. The table contains 3 rows of data. The 'Browse' button in the top navigation bar, the 'categoriasii' table name in the breadcrumb, and the table data itself are circled in red.

Showing rows: 2 (3 total, Query took 0.0003 seconds.)

```
SELECT * FROM `categoriasii`
```

Number of rows: 25 | Filter rows: Search this table

Sort by key: None

	id_categ	nume	detalii
<input type="checkbox"/>	1	papetarie	NULL
<input type="checkbox"/>	2	instrumente	NULL
<input type="checkbox"/>	3	audio-video	NULL

Number of rows: 25 | Filter rows: Search this table

Query results operations

Print view | Print view (with full texts) | Export | Display chart | Create view

Introducere date initiale (SQL)

- Tabel → SQL → completare → Go

The screenshot shows the phpMyAdmin interface for a MySQL database named 'tmpaw'. The 'produse' table is selected in the left sidebar. The 'SQL' tab is active, and the following query is entered in the editor:

```
1 INSERT INTO `produse` (`id_produc`, `id_categ`, `nume`, `detalii`, `cant`, `pret`)
2 VALUES
3 (1,1,'carte','mai multe pagini scrise legate',0,100),
4 (2,1,'caiet','mai multe pagini goale legate',0,75),
5 (3,1,'hartie scris','mai multe pagini goale NElegate',0,50),
6 (4,2,'penar','loc de depozitat instrumente de scris',0,150),
7 (5,2,'stilou','instrument de scris albastru',0,125),
8 (6,2,'creion','instrument de scris gri',0,25),
9 (7,3,'cd','canta',0,50),
10 (8,3,'dvd','vizual',0,100),
11 (9,3,'blue ray','vizual extrem',0,500);
```

The 'Columns' list on the right shows: id_produc, id_categ, nume, detalii, cant, pret. The 'Go' button at the bottom right is highlighted with a red circle.

Tabel produse

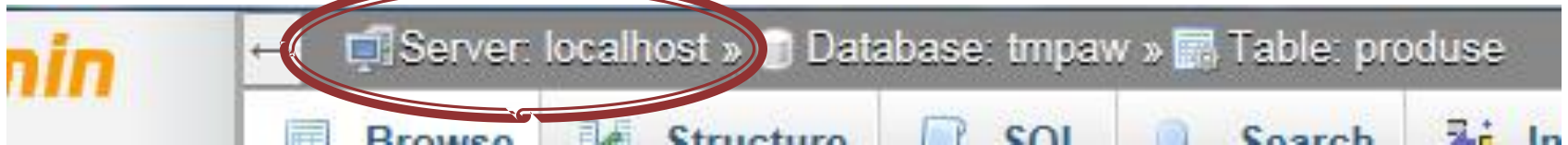
The screenshot shows the phpMyAdmin interface for a database named 'tmpaw'. The 'Structure' tab is selected, displaying the table 'produse'. The table structure is as follows:

id_produs	id_categ	nume	detalii	cant	pret
1	1	carte	mai multe pagini scrise legate	0	100
2	1	caiet	mai multe pagini goale legate	0	75
3	1	hartie scris	mai multe pagini goale NElegate	0	50
4	2	penar	loc de depozitat instrumente de scris	0	150
5	2	stilou	instrument de scris albastru	0	125
6	2	creion	instrument de scris gri	0	25
7	3	cd	canta	0	50
8	3	dvd	vizual	0	100
9	3	blue ray	vizual extrem	0	500

The interface also shows the SQL query: `SELECT * FROM `produse`` and the number of rows: 25. The 'produse' table is highlighted in the left sidebar, and the 'Structure' tab is circled in red.

Adaugare utilizator

- Server → Users → Add user

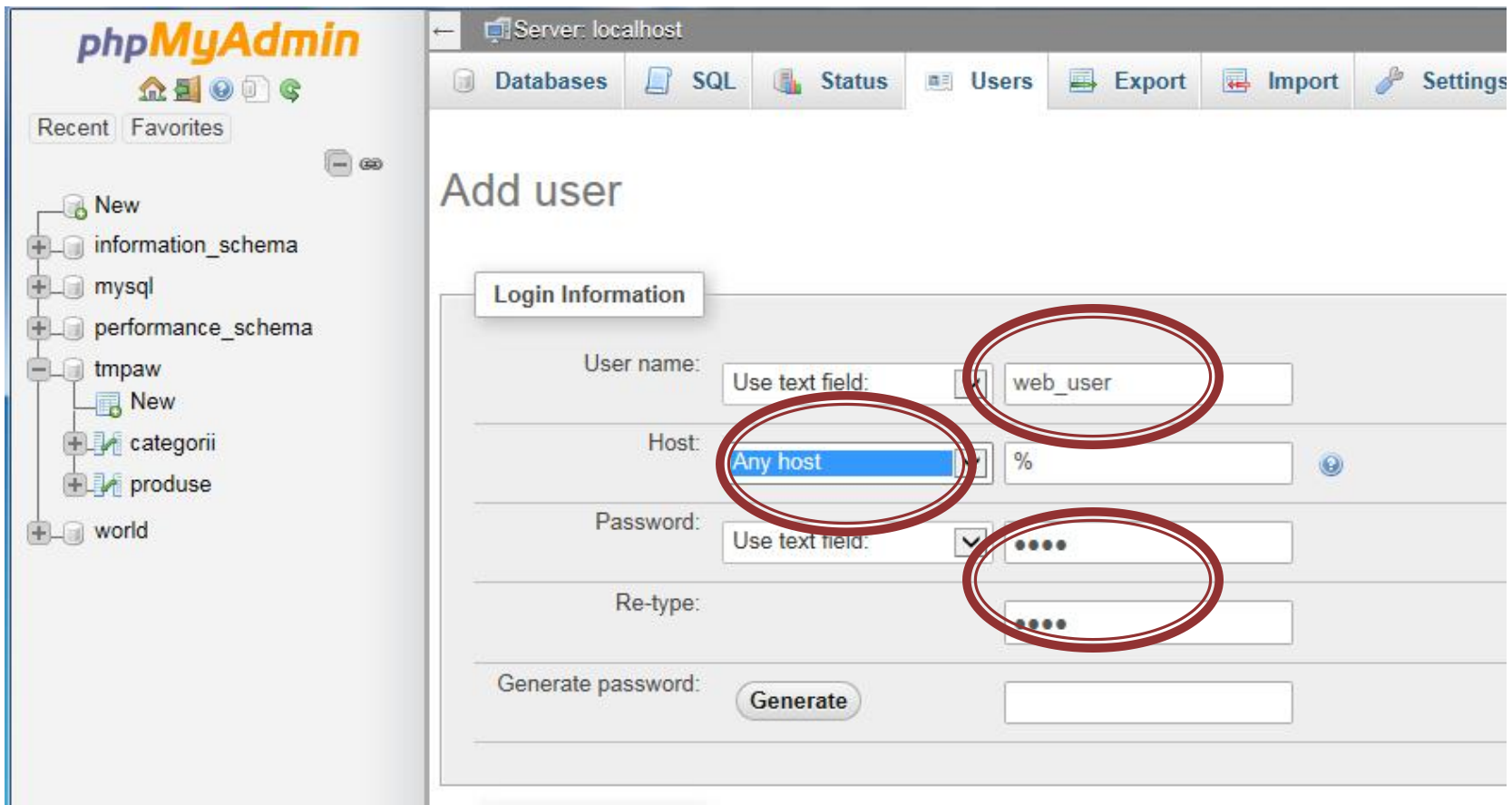


A screenshot of the phpMyAdmin 'Users overview' page. The navigation bar at the top shows 'Server: localhost' circled in red. Below it, the 'Users' menu item is also circled in red. The main content area displays a table of users with columns for 'User name', 'Host', 'Password', 'Global privileges', 'Grant', and 'Action'. At the bottom, a 'New' button is circled in red, with an 'Add user' link below it.

	User name	Host	Password	Global privileges	Grant	Action
<input type="checkbox"/>	root	127.0.0.1	Yes	ALL PRIVILEGES	Yes	Edit Privileges Export
<input type="checkbox"/>	root	:::1	Yes	ALL PRIVILEGES	Yes	Edit Privileges Export
<input type="checkbox"/>	root	localhost	Yes	ALL PRIVILEGES	Yes	Edit Privileges Export
<input type="checkbox"/>	root	tmpaw.etti	Yes	ALL PRIVILEGES	Yes	Edit Privileges Export
<input type="checkbox"/>	web	%	Yes	USAGE	No	Edit Privileges Export

Adaugare utilizator

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



The screenshot shows the phpMyAdmin interface for adding a new user. The 'Login Information' section is visible, with the following fields:

- User name: web_user
- Host: Any host
- Password: [masked]
- Re-type: [masked]

Red circles highlight the 'User name', 'Host', 'Password', and 'Re-type' fields, indicating the fields to be filled out for a new user.

Drepturi de acces

- Server → Users → Edit Privileges

The screenshot shows the phpMyAdmin interface. The breadcrumb 'Server: localhost' is circled in red. The 'Users' menu item in the top navigation bar is also circled in red. The 'Users overview' table is displayed below, with the 'Edit Privileges' link for the 'web_user' user circled in red.

	User name	Host	Password	Global privileges	Grant	Action
<input type="checkbox"/>	root	127.0.0.1	Yes	ALL PRIVILEGES	Yes	Edit Privileges Export
<input type="checkbox"/>	root	:::1	Yes	ALL PRIVILEGES	Yes	Edit Privileges Export
<input type="checkbox"/>	root	localhost	Yes	ALL PRIVILEGES	Yes	Edit Privileges Export
<input type="checkbox"/>	root	tmpaw.etti	Yes	ALL PRIVILEGES	Yes	Edit Privileges Export
<input type="checkbox"/>	web	%	Yes	USAGE	No	Edit Privileges Export
<input type="checkbox"/>	web_user	%	Yes	USAGE	No	Edit Privileges Export

Drepturi de acces

- Database → nume → Go

The screenshot shows the phpMyAdmin interface for a MySQL server on localhost. The 'Database' tab is selected and circled in red. The main content area is titled 'Edit Privileges: User 'web_user'@'%' and shows a section for 'Database-specific privileges'. A table lists the databases 'mysql', 'tmpaw', and 'world', which are also circled in red. Below the table, there is a text input field for adding privileges on the following database(s).

Server: localhost

Databases SQL Status Users Export Import Settings

Global Database Change password Login Information

Edit Privileges: User 'web_user'@'%'

Database-specific privileges

Database	Privileges	Grant	Table-specific privileges	Action
None				
mysql				
tmpaw				
world				

Add privileges on the following database(s):

Drepturi de acces

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

The screenshot shows the phpMyAdmin interface for editing privileges. The user 'web_user'@'%' is selected for the database 'tmpaw'. The 'Data' section is checked, indicating that SELECT, INSERT, UPDATE, and DELETE privileges are granted. The 'Structure' and 'Administration' sections are unchecked.

Server: localhost

Databases SQL Status Users Export Import Settings Replicati

Database Table

Edit Privileges: User `'web_user'@'%'` - Database `tmpaw`

Database-specific privileges Check All

Note: MySQL privilege names are expressed in English.

Data	Structure	Administration
<input checked="" type="checkbox"/> SELECT	<input type="checkbox"/> CREATE	<input type="checkbox"/> GRANT
<input checked="" type="checkbox"/> INSERT	<input type="checkbox"/> ALTER	<input type="checkbox"/> LOCK TABLES
<input checked="" type="checkbox"/> UPDATE	<input type="checkbox"/> INDEX	<input type="checkbox"/> REFERENCES
<input checked="" type="checkbox"/> DELETE	<input type="checkbox"/> DROP	
	<input type="checkbox"/> CREATE TEMPORARY TABLES	
	<input type="checkbox"/> SHOW VIEW	

Drepturi de acces, verificare

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

Server: localhost » Database: tmpaw

Structure SQL Search Query Export Import Operations **Privileges** Routes

Users having access to "tmpaw"

User	Host	Type	Privileges	Grant	Action	
<input type="checkbox"/>	root	127.0.0.1	global	ALL PRIVILEGES	Yes	Edit Privileges
<input type="checkbox"/>	root	:::1	global	ALL PRIVILEGES	Yes	Edit Privileges
<input type="checkbox"/>	root	localhost	global	ALL PRIVILEGES	Yes	Edit Privileges
<input type="checkbox"/>	root	tmpaw.etti	global	ALL PRIVILEGES	Yes	Edit Privileges
<input type="checkbox"/>	web_user	%	database-specific	SELECT, INSERT, UPDATE, DELETE	No	Edit Privileges

↑ Check All With selected: Export

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

The screenshot shows the phpMyAdmin interface for a database named 'tmpaw'. The 'Table: produse' structure is displayed. The table has six columns: id_produs, id_categ, nume, detalii, cant, and pret. The 'id_categ' column is highlighted with a green circle, and the 'Index' icon for this column is also circled in green. The 'Structure' tab is selected in the top navigation bar, and the 'Index' icon in the bottom toolbar is also circled in green. The 'id_categ' column is marked as a Primary key.





#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id_produs	int(11)			No	None	AUTO_INCREMENT	Change Drop Primary Unique Index Spatial Fulltext Distinct values
2	id_categ	int(11)			No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
3	nume	varchar(45)	utf8_general_ci		No			Change Drop Primary Unique Index Spatial Fulltext Distinct values
4	detalii	varchar(150)	utf8_general_ci		Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Distinct values
5	cant	int(11)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Distinct values
6	pret	float			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Distinct values

Verificare/Stergere index

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

- Indexes

Indexes ⓘ

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
 Edit  Drop PRIMARY		BTREE	Yes	No	id_produ	9	A	No	
 Edit  Drop id_categ		BTREE	No	No	id_categ	9	A	No	

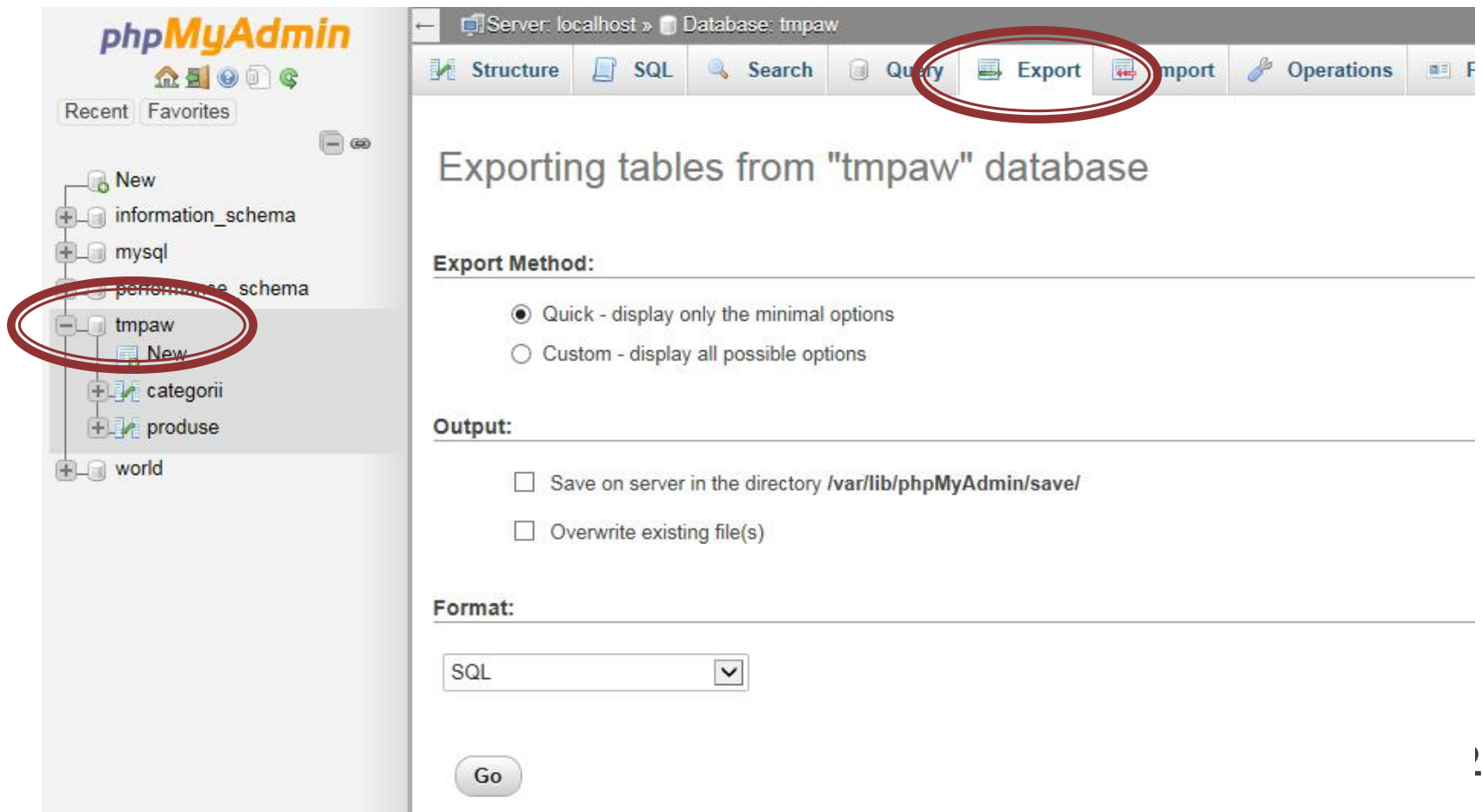
Create an index on columns

Backup, Restore

- Ca și în cazul Windows 2000 facilitatea de Backup realizează un script SQL care conține structura și datele exprimate sub forma de interogări SQL
- O deosebire între PhpMyAdmin și aplicațiile specifice MySQL (aceleși de pe Windows 2000 sau MySQL Workbench) este absența liniilor de creare a bazei de date
 - CREATE DATABASE IF NOT EXISTS tmpaw;
 - USE tmpaw;
- La utilizarea PhpMyAdmin trebuie să se creeze manual înaintea restaurării baza de date

Backup

- Nume (tabel sau baza de date) → Export



The screenshot displays the phpMyAdmin interface. On the left sidebar, the 'tmpaw' database is selected and circled in red. The main panel shows the 'Export' tab selected in the top navigation bar, also circled in red. The main content area is titled 'Exporting tables from "tmpaw" database' and contains the following options:

- Export Method:**
 - Quick - display only the minimal options
 - Custom - display all possible options
- Output:**
 - Save on server in the directory `/var/lib/phpMyAdmin/save/`
 - Overwrite existing file(s)
- Format:**
 - SQL (selected in the dropdown menu)

A 'Go' button is located at the bottom of the form.

Restore

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

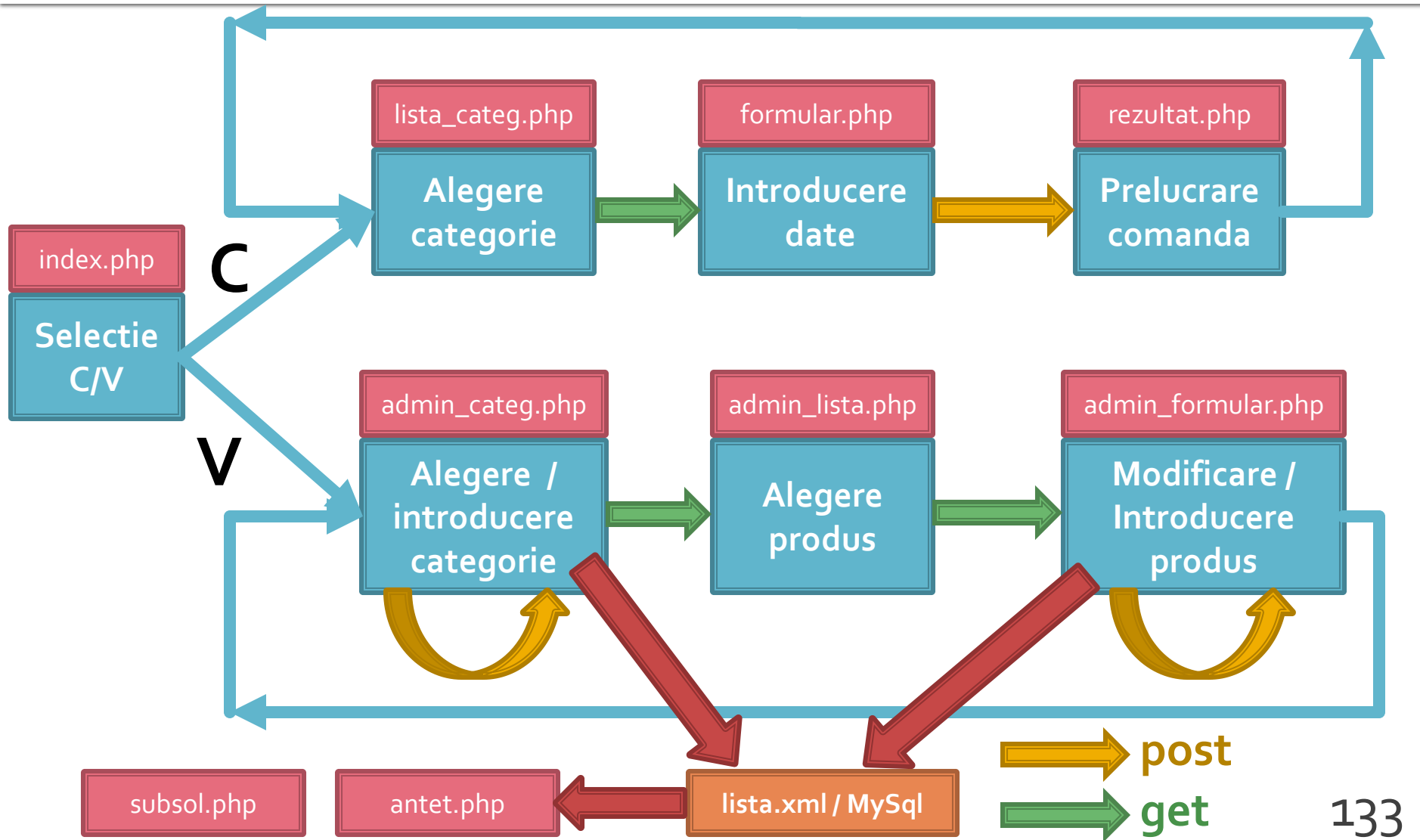
The screenshot shows the phpMyAdmin interface. On the left sidebar, the database 'tmpaw' is selected and circled in red. The main content area is titled 'Importing into the database "tmpaw"'. The 'Import' button in the top navigation bar is also circled in red. Under the 'File to Import:' section, the 'Browse...' button is circled in red. The 'Character set of the file:' is set to 'utf-8'. The 'Partial Import:' section has a checked checkbox for 'Allow the interruption of an import in case the script detects it is close to the PHP timeout limit.' and a text input field for 'Skip this number of queries (for SQL) or lines (for other formats), starting from the first one:' with the value '0'.

Laborator 6

Laborator 6+7

- Sa se continue magazinul virtual cu:
 - produsele sunt grupate pe categorii de produse
 - sa prezinte utilizatorului o lista de grupe de produse pentru a alege
 - sa prezinte utilizatorului o lista de produse si preturi in grupa aleasa
 - lista de produse si preturi se citeste dintr-o baza de date **MySQL**
 - se preia comanda si se calculeaza suma totala
 - **se creaza o pagina prin care vanzatorul poate modifica preturile si produsele**

Plan aplicatie



Rezultat (comparator)

Categorii Produse

Alegeti categoria:

Nr.	Categorie	Total Produse
1	Papetarie	3
2	Instrumente	3
3	Audio-video	3
4	Calculatoare	3
5	Jucarii	2

Total produse: 14

Magazin online Firma X SRL

Finalizati comanda

Nr.	Produs	Pret	Cantitate
1	Carti	100	<input type="text" value="1"/>
2	Caiete	50	<input type="text" value="2"/>
3	Penare	150	<input type="text" value="1"/>
4	Stilouri	125	<input type="text" value="0"/>
5	Creioane	25	<input type="text" value="0"/>

Magazin online Firma X SRL

Rezultate comanda

Pret total (fara TVA): 350

Pret total (cu TVA): 416.5

Comanda receptionata la data: 17/03/2010 ora 08:24



Rezultat (vanzator)

Magazin Firma X

[Inceput](#) | [Inapoi](#)

Magazin online Firma X SRL

Alegeti:

- [Cumparator](#)
- [Vanzator](#)

Categorii Produse

Alegeti categoria:

Nr.	Categorie	Total Produse
1	Papetarie	3
2	Instrumente	3
3	Audio-video	3
4	Calculatoare	3
5	Jucarii	2

Total produse: 14

Categorie noua de produse:

Lista produse in categoria Calculatoare

Nr.	Produs	Descriere	Pret	Cantitate	Actiuni
1	Laptop	calculator mic	2000	2	modifica
2	Desktop	calculator mare	1000	5	modifica
3	Imprimanta	prn	200	2	modifica
-	Produs nou				adauga

Produs in categoria Calculatoare

Produs	<input type="text" value="laptop"/>
Descriere	<input type="text" value="calculator mic"/>
Pret	<input type="text" value="2000"/>
Cantitate	<input type="text" value="2"/>



Tabel Categorii

The screenshot shows the MySQL Table Editor interface for a table named 'categorii' in the 'tmpaw' database. The table is currently empty. The editor is configured with the following settings:

- Table Name:** categorii
- Database:** tmpaw
- Comment:** InnoDB free: 11264 kB

The **Columns and Indices** tab is active, showing the following columns:

Column Name	Datatype	NOT NULL	AUTO INC	Flags	Default Value	Comment
id_categ	INT(10)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	
nume	VARCHAR(45)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY		
detalii	VARCHAR(150)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	NULL	

The **Indices** tab is also active, showing a primary index named 'PRIMARY' on the 'id_categ' column. The index settings are:

- Index Name:** PRIMARY
- Index Kind:** PRIMARY
- Index Type:** BTREE
- Index Columns:** id_categ

The **Apply Changes**, **Discard Changes**, and **Close** buttons are visible at the bottom of the editor.

Tabel Prognose

The screenshot shows the MySQL Table Editor interface for a table named 'produse' in the 'tmpaw' database. The table has 6 columns: id_produkt, id_kategori, nama, detail, stok, and harga. The primary key is set to 'id_produkt' with a BTREE index type.

Column Name	Datatype	NOT NULL	AUTO INC	Flags	Default Value	Comment
id_produkt	INT(10)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	
id_kategori	INT(10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL		
nama	VARCHAR(45)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> BINARY		
detail	VARCHAR(150)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> BINARY	NULL	
stok	INT(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	
harga	FLOAT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	

Indices Foreign Keys Column Details

PRIMARY

Index Settings

Index Name: PRIMARY

Index Kind: PRIMARY

Index Type: BTREE

Index Columns (Use Drag'n'Drop)

id_produkt

Buttons: Apply Changes, Discard Changes, Close

Laborator 6 – Mod de lucru

- Se continua lucrul la aplicatie (L5)
- Se recomanda laboratorul **asincron** – S2
- Se poate folosi fisierul cu surse cypaste.txt
(site-<http://rf-opto.etti.tuiasi.ro>)

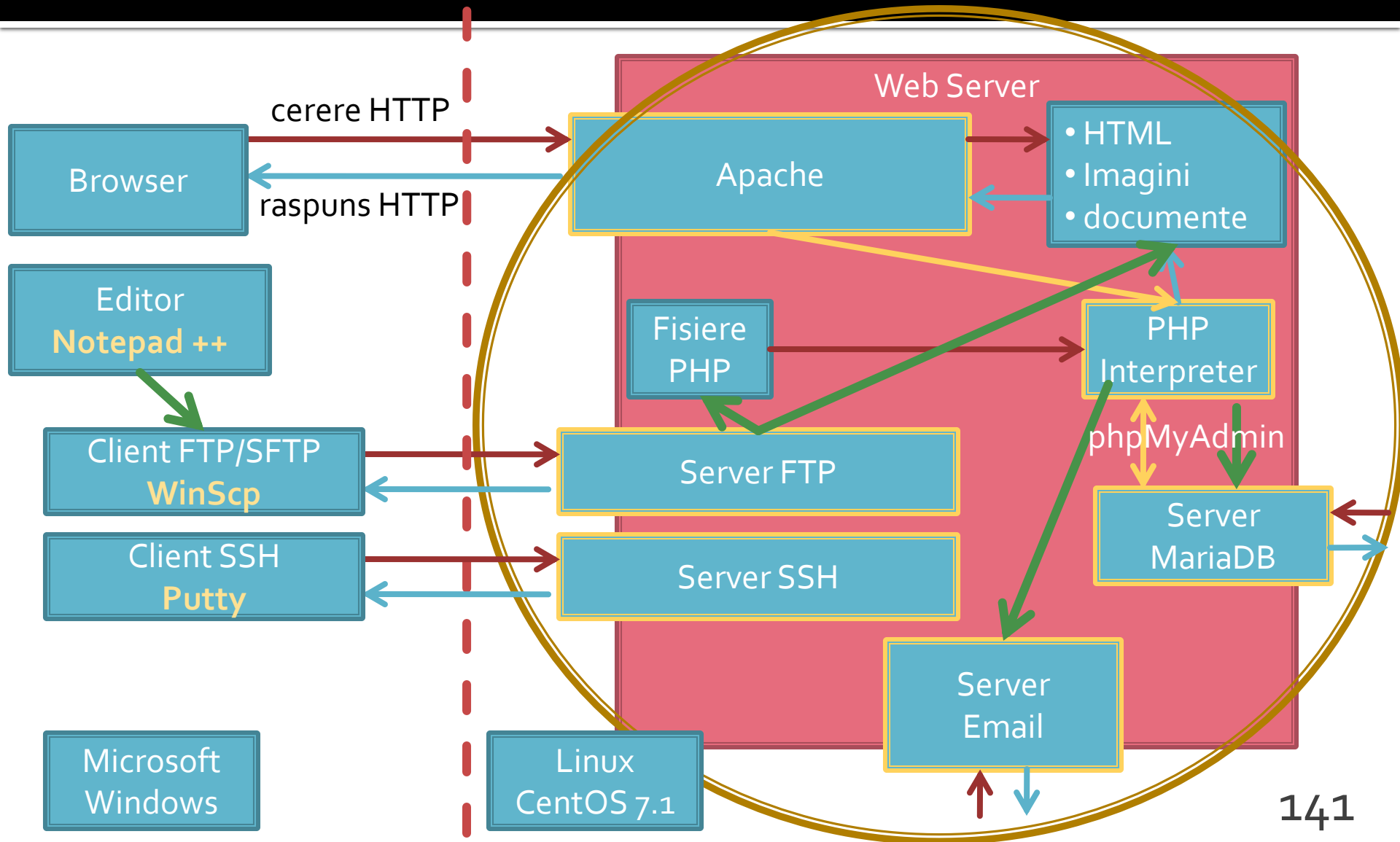
Laborator 6 – Mod de lucru

- Se ia o decizie relativ la relatia dintre produse si categorii (S63-S67)
 - One to Many
 - Many to Many
- Se creaza cele 2(3) tabele corespunzatoare
- Se populeaza cu date
- Se actualizeaza planul aplicatiei pentru a corespunde cu aplicatia proprie
 - nume de fisiere, tipuri de transfer a datelor

Laborator 6 – Mod de lucru

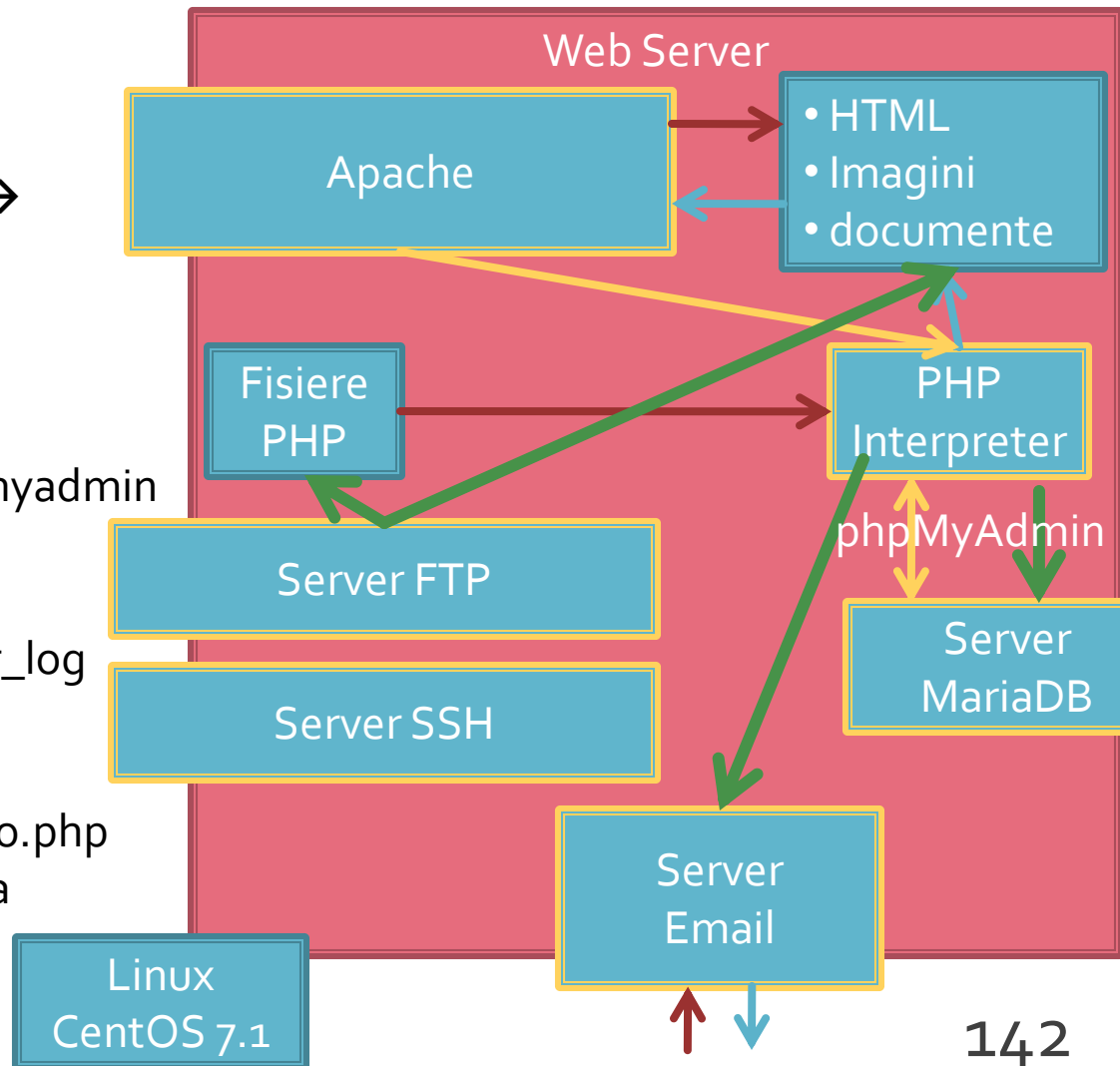
- Se creaza firul de executie paralel pentru vanzator
 - fisierele pentru cumparator reprezinta o buna cale de pornire (Save As, Copy/Paste) pentru 2 din cele 3 fisiere
- Se lucreaza cat mai mult la conversia text -> MySQL
 - activitatea se continua la laboratorul 7

Utilizare LAMP



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`



Faza de verificare/depanare

- Se recomanda utilizarea posibilitatii vizualizarii matricilor
 - In fisierul care receptioneaza datele
 - temporar pina la definitivarea codului
- utilizarea de cod "verbose" (manual) in etapele initiale de scriere a surselor PHP poate fi extinsa si la alte tipuri de date
 - singura (aproape) metoda de depanare(debug) in PHP
 - `<p>temp <?php echo "a=";echo $a; ?> </p>`

```
echo "<pre>";  
print_r($_POST);  
echo "</pre>";
```

Depanare

```
echo "<pre>";  
print_r($_POST);  
echo "</pre>";
```

```
<p>temp <?php echo  
"a=";echo $a; ?> </p>
```


Contact

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