

Lecture 12 (w13)

2022/2023

Databases, Web Programming and Interfacing

DWPI

- Databases, Web Programming and Interfacing
 - An VI IT₄T
 - 1C/1L/1P
- Timetable
 - Friday, every week (fiecare saptamana) 1C + 2L (17-20)

Grade

- 10% - Test/Examen – last week – 1h
- 40% - Personal/Team Project

Info

- http://rf-opto.etti.tuiasi.ro/master_it.php

Laboratorul de Microunde si Opt: x +

← → ↻ Not secure | rf-opto.etti.tuiasi.ro/master_it.php

RF-OPTO

English | Romana

Main Courses **Master** Staff Research Students

Radiocommunication Systems Microwave IC Satellite Comm. **Web Design** Ethics

Databases, Web Programming and Interfacing

Course: DWPI (2021-2022)

Course Coordinator: Assoc.P. Dr. Radu-Florin Damian
Code: ITT.IA.601
Discipline Type: DIS; Required, Specialty
Credits: 5
Enrollment Year: 6, Sem. 11

Activities

Course: Instructor: Assoc.P. Dr. Radu-Florin Damian, 1 Hours/Week, Year, Timetable:
Laboratory: Instructor: Assoc.P. Dr. Radu-Florin Damian, 1 Hours/Week, Year, Timetable:
Project: Instructor: Assoc.P. Dr. Radu-Florin Damian, 1 Hours/Week, Year, Timetable:

Evaluation

Type: **Verification**

C: 10%, (Tests during semester)
C: 10%, (Tests during semester)
D: 40%, (Homework/Specialty papers)
D: 40%, (Homework/Specialty papers)

Materials

Textbooks

[PHP5 and MySQL Bible \(pdf, 15.97 MB, en, es\)](#)
[PAW 2021 Curs 1 \(pdf, 15.1 MB, ro, it\)](#)
[PAW Curs 1 \(video\) \(mp4, 467.67 MB, ro, it\)](#)

Project/Design

[Server CentOS pentru VMware Player \(cloud\) \(link, 0 Bytes, en, es\)](#)
[Instalare CentOS \(pdf, 2.54 MB, en, es\)](#)

Access

■ Not customized



A student profile page with a photo of a man, a 'Date:' section with a table, and a 'Note obtinute' table. A red circle highlights the link 'Acceseaza ca acest student' and an arrow points from it to the right.

Date:

Grupa	5304 (2015/2016)
Specializarea	Tehnologii si sisteme de telecomunicatii
Marca	5184

[Acceseaza ca acest student](#)

Note obtinute

Disciplina	Tip	Data	Descriere	Nota	Puncte	Obs.
TW			Tehnologii Web			
N		17/01/2014	Nota finala	10	-	
A		17/01/2014	Colocviu Tehnologii Web 2013/2014	10	7.55	
B		17/01/2014	Laborator Tehnologii Web 2013/2014	9	-	
D		17/01/2014	Tema Tehnologii Web 2013/2014	9	-	



A login form with fields for 'Nume', 'Email', and 'Cod de verificare'. The 'Email' and 'Cod de verificare' fields are circled in red. A red arrow points from the link in the previous image to the 'Email' field. A verification code '344bd9f' is displayed below the 'Cod de verificare' field, and a 'Trimite' button is at the bottom.

Nume
IACOBSCUN

Email

Cod de verificare

344bd9f

Trimite

Online

- access to **online exams** requires the **password** received by email

English | Romana |

Main Courses Master Staff Research **Student**

Grades Student List Exams Photos

POPESCU GOPO ION

Fotografia nu exista

Date:

Grupa	5700 (2019/2020)
Specializarea	Inginerie electronica si telecomunicatii
Marca	7000000

[Access the site as this student](#) | [request access to software](#)

Grades

Inca nu a fost notat.

Main Courses Master Staff Research

Grades **Student List** Exams Photos

Login

Use the last name and email stored in the database

Name
POPESCU GOPO

Email/Password

Write the code below

828f26b

Send

Online

- access email/password

Main Courses Master Staff Research

Grades Student List Exams Photos

POPESCU GOPO ION

Fotografia nu exista

Date:

Grupa	5700 (2019/2020)
Specializarea	Inginerie electronica si telec
Marca	7000000

You access the site as **this student!**

Main Courses Master Staff Research

Grades Student List Exams Photos

POPESCU GOPO ION

Fotografia nu exista

Date:

Grupa	5700 (2019/2020)
Specializarea	Inginerie electronica si telec
Marca	7000000

You access the site ~~as~~ this student **(including exams)!**

Password

■ received by email

Important message from RF-OPTO Inbox x

 **Radu-Florin Damian**
to me, POPESCU ▾

🗨 Romanian ▾ > English ▾ [Translate message](#)



Laboratorul de Microunde si Optoelectronica
Facultatea de Electronica, Telecomunicatii si Tehnologia Informatiei
Universitatea Tehnica "Gh. Asachi" Iasi

In atentie: POPESCU GOPO ION

Parola pentru a accesa examenele pe server-ul **rf-opto** este
Parola: [REDACTED]

Identificati-va pe [server](#), cu parola, cat mai rapid, pentru confirmare.

Memorati acest mesaj intr-un loc sigur, pentru utilizare ulterioara

Attention: POPESCU GOPO ION

The password to access the exams on the **rf-opto** server is
Password: [REDACTED]

Login to the [server](#), with this password, as soon as possible, for confirmation.

Save this message in a safe place for later use

[Reply](#) [Reply all](#) [Forward](#)

Subject

	Subject	Correspondents
★	Important message from RF-OPTO	⇒ POPESCU GOPO ION
★	Validation of MD/CR exam from 02/05/2020	[REDACTED]
★	[REDACTED]	[REDACTED]

From Me <rdamian@etti.tuiasi.ro> ★

Subject **Important message from RF-OPTO**

To [REDACTED]

Cc Me <rdamian@etti.tuiasi.ro> ★



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In atentie: POPESCU GOPO ION

Parola pentru a accesa examenele pe server-ul **rf-opto** este
Parola: [REDACTED]

Identificati-va pe [server](#), cu parola, cat mai rapid, pentru confirmare.

Memorati acest mesaj intr-un loc sigur, pentru utilizare ulterioara

Attention: POPESCU GOPO ION

The password to access the exams on the **rf-opto** server is
Password: [REDACTED]

Login to the [server](#), with this password, as soon as possible, for confirmation.

Save this message in a safe place for later use

Online exam manual

- The online exam app used for:
 - lectures (attendance)
 - laboratory
 - project
 - examinations

Materials

Other data

[Manual examen on-line](#) (pdf, 2.65 MB, ro, 🇷🇴)

[Simulare Examen](#) (video). (mp4, 65.12 MB, ro, 🇷🇴)

Microwave Devices and Circuits (Englis

Online Exam

- always against a **timetable**
 - long period (lecture attendance/laboratory results)
 - short period (tests: 15min, exam: 2h)

Announcement 23:59 (10/05/2020)	Support material 00:05 (11/05/2020)	Exam Topics 00:07 (11/05/2020)	Results 00:10 (11/05/2020)	End 00:20 (15/05/2020)	Confirmation 00:20 (16/05/2020)	Next timeframe in: 05 m 43 s Refresh now
---	---	--	--------------------------------------	----------------------------------	---	--

Announcement

This is a "fake" exam, introduced to familiarize you with the server interface and to perform the necessary actions during an exam: thesis scan, selfie, use email for co

Server Time

All exams are based on the server's time zone (it may be different from local time). For reference time on the server is now:

10/05/2020 23:59:16

2022/2023

Project

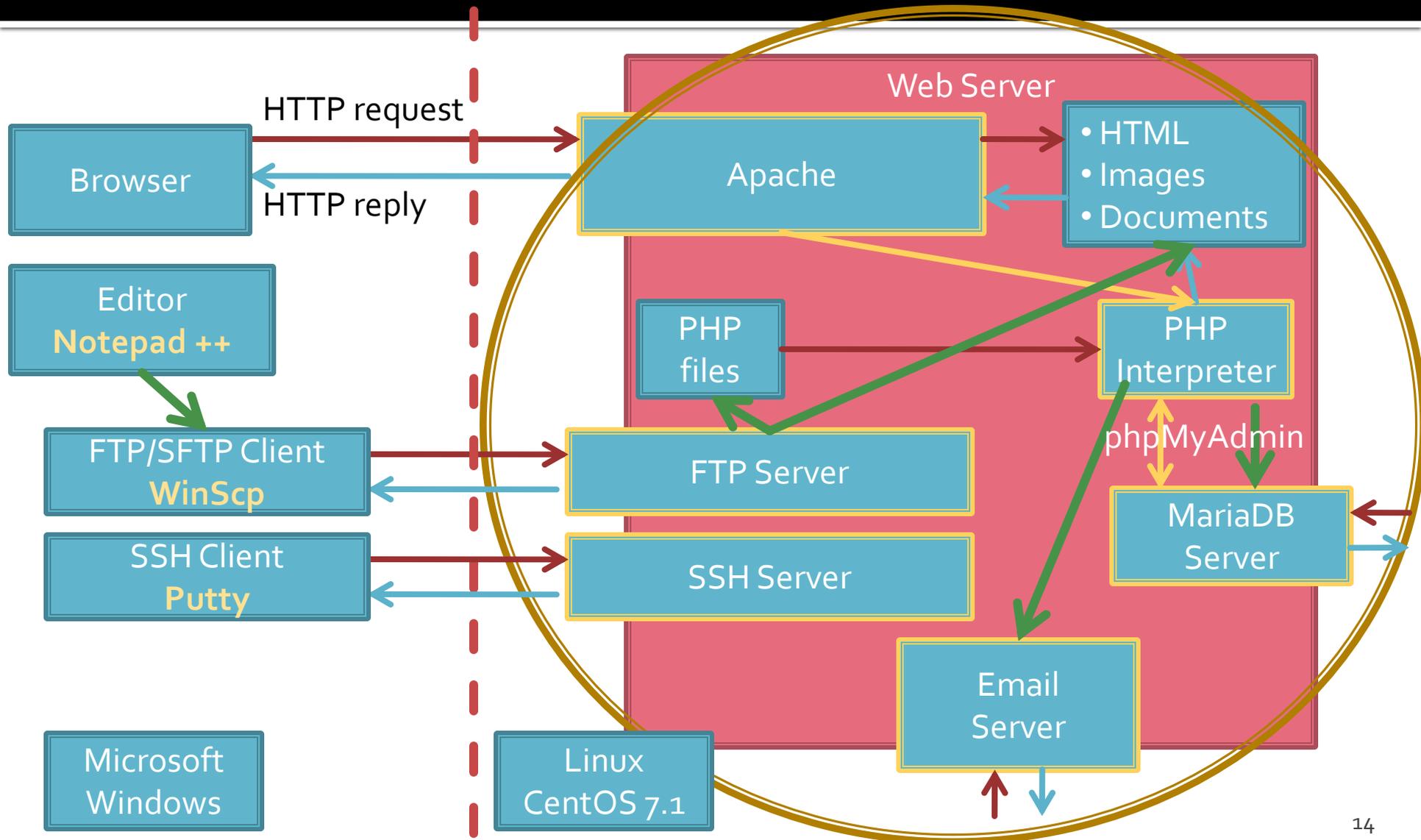
Project

- Submission: **On-site**
- Presentation (in front of the colleagues) + files submission
- 3 files
 - **1 *.pdf** (print-screen while using the application, short usage instructions, a mini-user manual for the application)
 - **1 *.sql** (backup of the database required to run the application)
 - archive of the application (inside: files *.php, *.jpg, folder tree etc., archived: ***.zip, *.7z** etc.)

Project grading

- **(2p)** the application runs on the **reference server** (can be downloaded from [rf-opto](#): Ubuntu, php 7 or CentOS 7, php 5): extract files from the ***.zip** archive in a folder on the server, restore database from the ***.sql** backup file
- **(2p)** the ***.pdf** file containing the user manual exists and is appropriate for the submitted application
- **(2p)** the application **flowchart** has been submitted and contains appropriate data
- **(4p)** presentation on-site of the **application**

Using LAMP



Reference Server

- rf-opto.etti.tuiasi.ro > Master > Web Design

Project/Design

[VMware Workstation Player](#) (link, 0 Bytes, en, 🇸🇪)

[Ubuntu VM for VMWare](#) (link, 0 Bytes, en, 🇸🇪)

[Ubuntu Setup](#) (pdf, 1.83 MB, en, 🇸🇪)

[Centos VM for VMWare](#) (link, 0 Bytes, en, 🇸🇪)

[Centos Setup](#) (pdf, 2.54 MB, en, 🇸🇪)

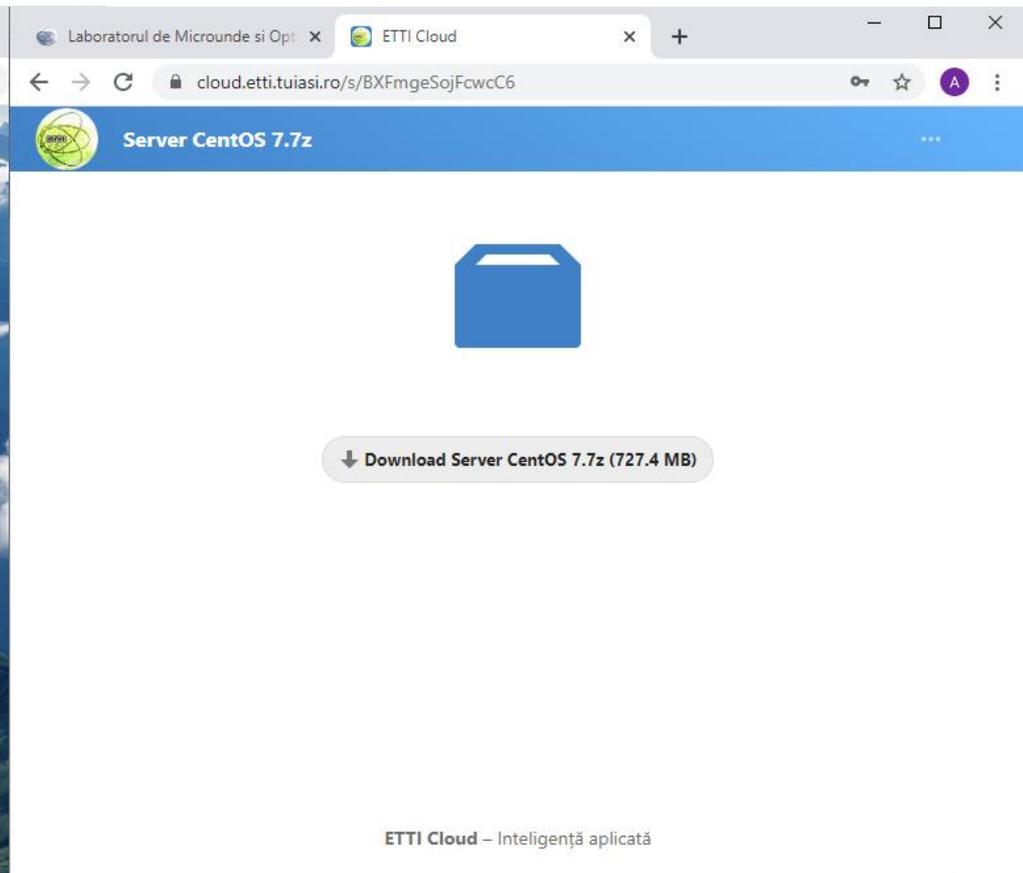
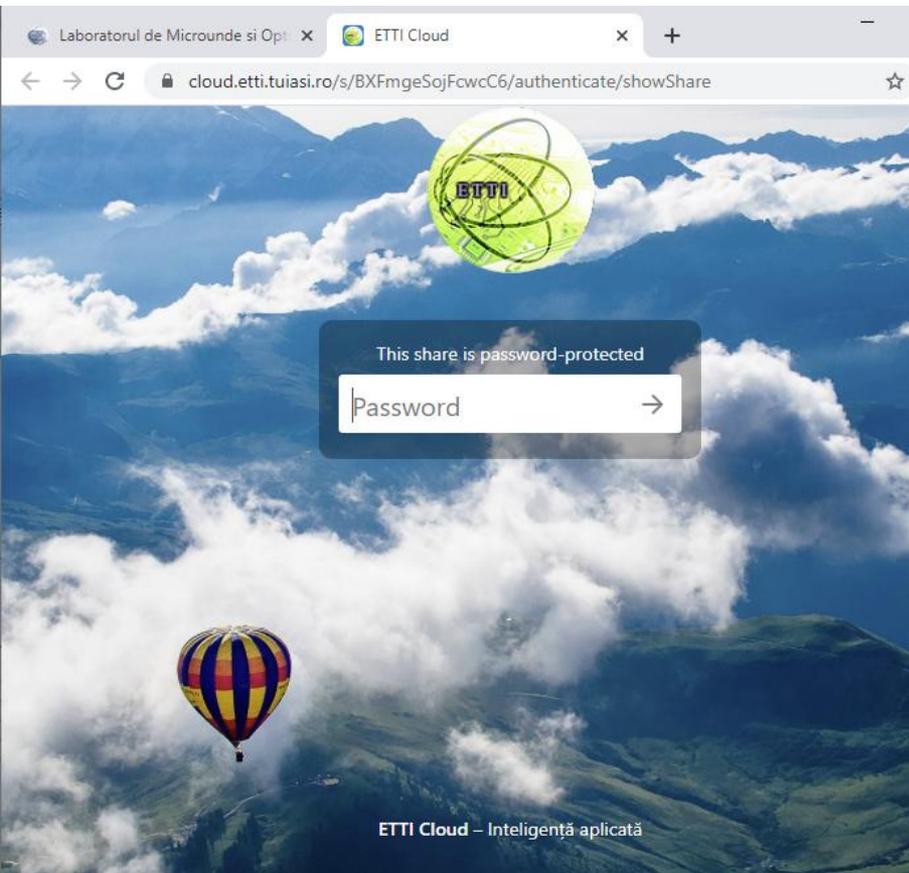
Examen

[Online Exam manual](#) (pdf, 2.56 MB, en, 🇸🇪)

[Manual examen on-line](#) (pdf, 2.65 MB, ro, 🇷🇴)

Reference Server

- Cloud ETTI: **RF-opto3#**



Reference Server

- Virtual Machine
- VMware Workstation Player Windows/Linux
 - Free (non-commercial use)
 - <https://www.vmware.com/products/workstation-player/workstation-player-evaluation.html>

Reference Server

The screenshot shows the VMware Workstation 15 Player interface. The window title is "VMware Workstation 15 Player (Non-commercial use only)". The interface is divided into two main sections. On the left is a library of virtual machines, and on the right is a welcome screen with several options.

Virtual Machine Library:

- Home
- RF XP Professional
- PAW CentOS 64-bit** (circled in red)
- Server CentOS 64-bit

Welcome to VMware Workstation 15 Player

- Create a New Virtual Machine**
Create a new virtual machine, which will then be added to the top of your library.
- Open a Virtual Machine** (circled in red)
Open an existing virtual machine, which will then be added to the top of your library.
- Upgrade to VMware Workstation Pro**
Get advanced features such as snapshots, virtual network management, and more.
- Help**
View online help.

This product is not licensed and is authorized for non-commercial use only. For commercial use, purchase a license. [Buy now.](#)

Possible problems

- Current VMWare Player runs **only** on **64bit** operating systems Windows/Linux
 - for 32bit operating systems previous (**certified originals**) can be made available on rf-opto
- The host computer **must** enable **Hardware Virtualization**
 - Hardware Virtualization is enabled in BIOS, depending on the PC manufacturer: Processor, Chipset, Northbridge
 - Options name: VT-x, AMD-V, Vanderpool, Hyper-V, SVM, Intel Virtualization Technology. if available: Intel VT-d, AMD IOMMU
- VM archive requires **7zip** native to the target operating system

Support applications

- WinSCP (FTP client, free)
 - <https://winscp.net/eng/download.php>
- Notepad ++ (text editor, advanced, free)
 - <https://notepad-plus-plus.org/downloads/>
- Putty (remote access)
 - <https://www.putty.org/>
- MySQL Workbench (gratuit, cont Oracle)
 - <https://www.mysql.com/products/workbench/>

IP address

- login, ifconfig
- Ctrl + Alt + mouse

```
PAW CentOS 64-bit - VMware Workstation 15 Player (Non-commercial use only)
Player | || | | |
CentOS Linux 7 (Core)
Kernel 3.10.0-229.20.1.el7.x86_64 on an x86_64

tmpaw login: root
Password:
Last login: Wed Jun 17 05:35:16 from 192.168.0.106
[root@tmpaw ~]# ifconfig
```

```
PAW CentOS 64-bit - VMware Workstation 15 Player (Non-commercial use only)
Player | || | | |
CentOS Linux 7 (Core)
Kernel 3.10.0-229.20.1.el7.x86_64 on an x86_64

tmpaw login: root
Password:
Last login: Wed Jun 17 05:35:16 from 192.168.0.106
[root@tmpaw ~]# ifconfig
eno16777736: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.0.108 netmask 255.255.255.0 broadcast 192.168.0.255
    inet6 fe80::250:56ff:fe3e:1693 prefixlen 64 scopeid 0x20<link>
    ether 00:50:56:3e:16:93 txqueuelen 1000 (Ethernet)
    RX packets 104 bytes 12814 (12.5 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 99 bytes 11847 (11.5 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

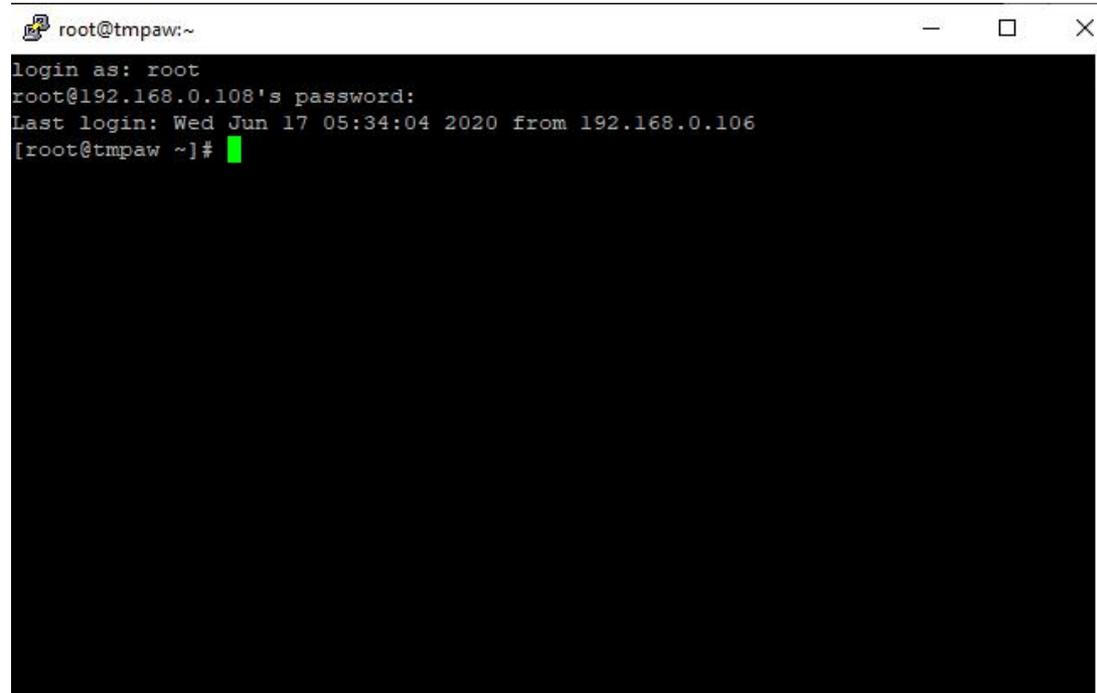
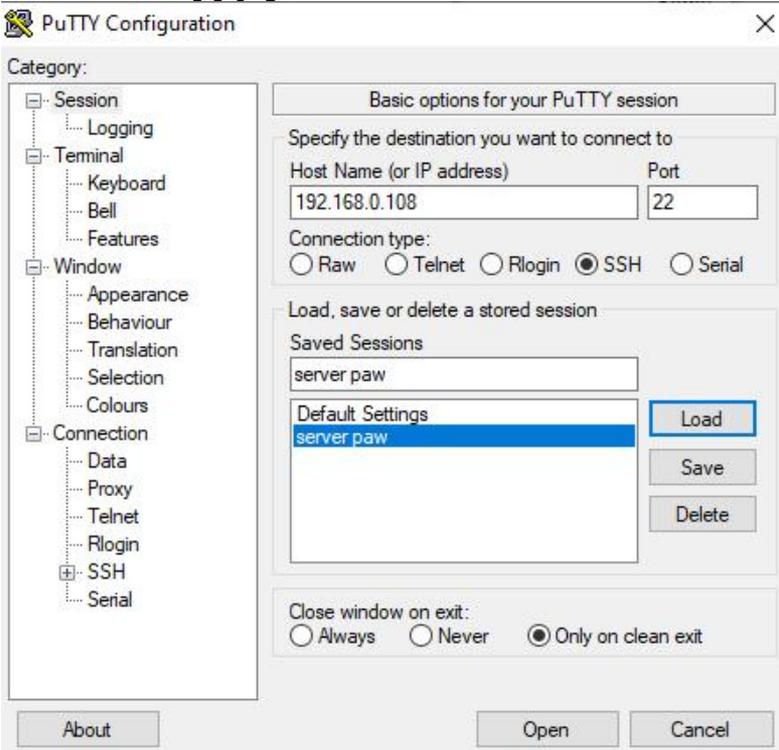
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 0 (Local Loopback)
    RX packets 16 bytes 1774 (1.7 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 16 bytes 1774 (1.7 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[root@tmpaw ~]# _
```

Putty

- putty.exe
- avoids mouse capture (CentOS), copy/paste

etc



WinSCP

- FTP client
- upload files

Session

File protocol:
SFTP

Host name: 192.168.0.108 Port number: 22

User name: student Password: ●●●●●●●●

Edit Advanced...

Login Close Help

html - student@192.168.0.108 - WinSCP

File Commands Mark Session View Help

Address /var/www/html

Find Files Download Edit Properties New Synchronize

Queue Transfer Settings Default

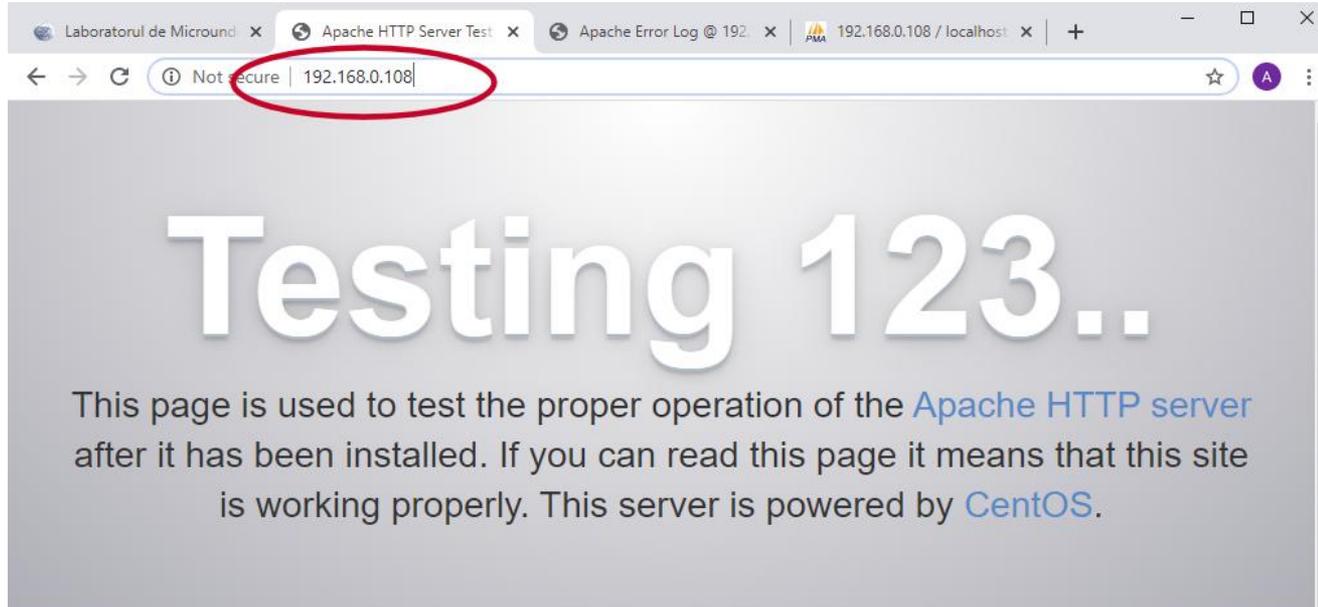
student@192.168.0.108 x New Session

Name	Size	Changed	Rights
ap.log	1 KB	2/29/2016 11:28:50 AM	rwxrwxr
info.php	1 KB	9/30/2009 3:23:00 PM	rw-rw-r
logfile.php	4 KB	12/6/2015 12:05:08 PM	rw-rw-r
test.php	2 KB	2/29/2016 12:04:12 PM	rw-rw-r

0 B of 5.09 KB in 0 of 4

SFTP-3 1, 21:06:30

Browser



Just visiting?

The website you just visited is either experiencing problems or is undergoing routine maintenance.

If you would like to let the administrators of this website know that you've seen this page instead of the page you expected, you should send them e-mail. In general, mail sent to the name "webmaster" and directed to the website's domain should reach the appropriate person.

For example, if you experienced problems while visiting `www.example.com`, you should send e-mail to "webmaster@example.com".

Are you the Administrator?

You should add your website content to the directory `/var/www/html/`.

To prevent this page from ever being used, follow the instructions in the file `/etc/httpd/conf.d/welcome.conf`.

Promoting Apache and CentOS

You are free to use the images below on Apache and CentOS Linux powered HTTP servers. Thanks for using Apache and CentOS!



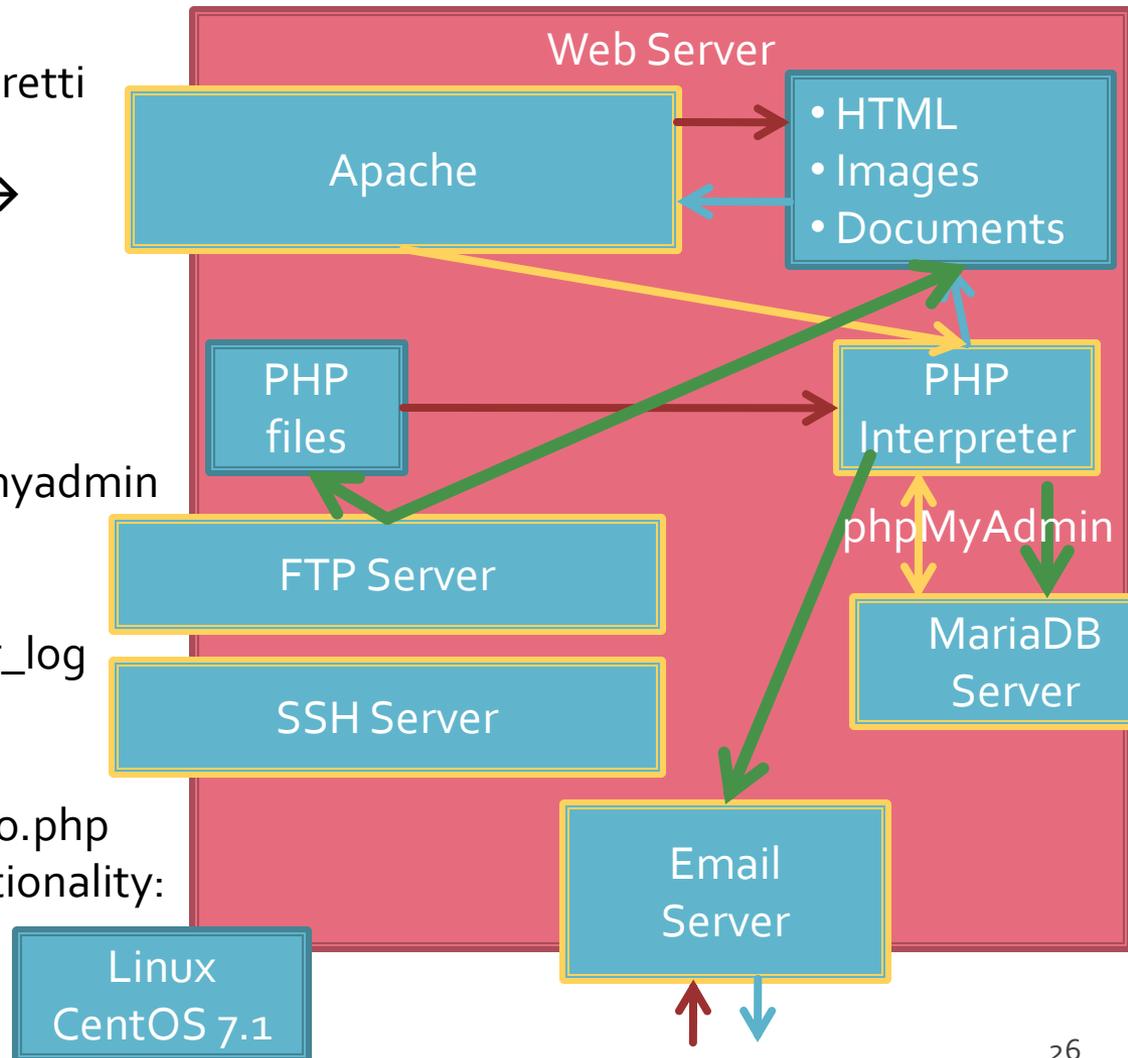
Server MySQL/MariaDB

The screenshot displays the phpMyAdmin web interface in a browser window. The address bar shows the URL `192.168.0.108/phpmyadmin/PHPMAURL-5:index.php?db=&table=&server=1&target=&token=f7dda12d42a1...`, with the domain `192.168.0.108` circled in red. The interface includes a left sidebar with a tree view of databases: `information_schema`, `mysql`, `performance_schema`, `tmpaw`, and `world`. The main content area is titled "Server: localhost" and contains several panels:

- General Settings:** Includes a "Change password" button and a "Server connection collation" dropdown 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
 - 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: mysql
 - PHP version: 5.4.16
- phpMyAdmin:** Lists version information and links:
 - Version information: 4.4.15.1
 - Documentation
 - Wiki
 - Official Homepage
 - Contribute
 - Get support
 - List of changes

Using LAMP

1. login → root:masterrc / paw:masteretti
2. ifconfig → 192.168.30.5
3. putty.exe → 192.168.30.5 → SSH → root:masterrc (remote login)
4. [other linux command line]
5. FTP → Winscp → SFTP → student:masterrc@192.168.30.5
6. MySql → http://192.168.30.5/phpmyadmin → root:masterrc / root:masteretti
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. if DHCP service stops Apache functionality:
service httpd restart



LAMP Reference Server

- Linux, two variants
 - Centos 7.1
 - PHP 5.4.16
 - MariaDB 5.5.44
 - Apache 2.4.6
 - **root/student:masterrc**
 - Ubuntu 20.04 (**recommended**)
 - PHP 7.4.3
 - MariaDB 10.3.31
 - Apache 2.4.41
 - **paw/student:masteretti**
 - correction **paw FTP access**:
 - `sudo usermod -a -G upload paw`
 - `sudo chmod -R 775 /var/www`

Application/Project

Reference server

- **(2p)** the application runs on the **reference server** (can be downloaded from [rf-opto](#): Ubuntu 20.04 or CentOS 7)
- You are **allowed** to modify the existing server
 - install frameworks
 - install newer versions for PHP, Python, MySQL
- but you are **not allowed** to:
 - use another Linux/Windows server
 - change login credentials for users or add users
- A copy of the modified VM must be available at the final presentation

Template

Template

- simultaneous control of the esthetic and functional design for all pages in the site
- separation the application from the esthetic design

Example

Magazin **Firma X SRL**

Magazin online Firma X SRL

Lista Produse

Nr.	Produs	Pret
1	Carti	100
2	Caiete	50
3	Penare	150
4	Stilouri	125
5	Creioane	25
Comanda		

```
<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>
```

Control statements

- `include()`
- `require()`
- `include_once()`
- `require_once()`

- to insert the content of one PHP file (used as parameter) into another PHP file (that uses the `include/require` statement) before the server executes it
- **require** stops the execution of the current script if the parameter file is **not** found
- **..._once()** checks if the respective file has been included before and does not include it again

Example 2

- repeated sections can be moved to a separate file and inserted with `require()`
- first step: common areas are identified

```
<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>
```

Example 3

```
<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>
```

header.php

```
<html>
<head>
<title>Magazin online Firma X
SRL</title>
</head>
<body bgcolor="#CCFFFF"><?php
//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>
```

footer.php

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

Using a template

- header.php
 - any common structure (HTML) code
 - any common application code (PHP) – almost all pages in an application need:
 - data access
 - check access rights
 - constant definitions
 - define/load data **from** session (\$_SESSION)
- footer.php
 - any common structure (HTML) code
 - any common application code (PHP) – usually less:
 - save data **into** the session (\$_SESSION)

Template

- Any php file in my application:
 - `<?php require('header.php');?>`
 - `<?php require('footer.php');?>`
- and automatically that file has the same esthetic and functional design

*.php

```
<?php require('header.php');?>  
<h2>Lista Produce</h2>  
<table border="1">  
...  
</table>  
<?php require('footer.php');?>
```

Advantages working with template

- speed of application development
- clear separation of the application from the form
- unitary form
 - “don’t make me think”
- simultaneous control of the esthetic and functional design for all pages in the site
- defining common data in a single file
 - `define('BOOK_PRICE',100);`

Active Links

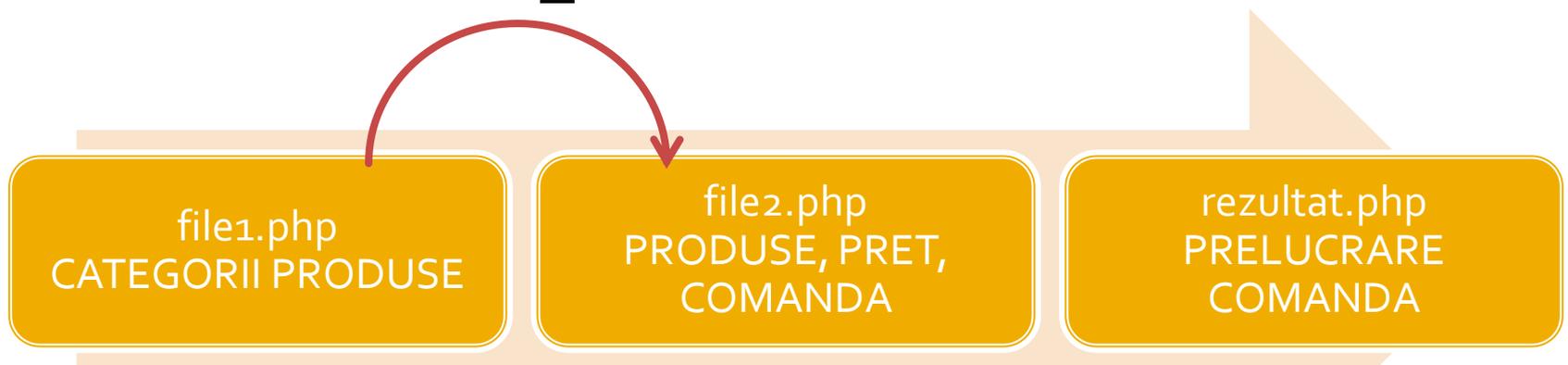
Methods

- **post** : data is transmitted as a block (inside the body of the HTTP request)
- **get** : appends form-data into the URL :
`results.php?prob=81&an=2009`
- **get** must be used only for “idempotent” data,
 - no collateral effects
 - no change in server status (databases, etc)
- we can emulate a form (**get**) by writing links appropriately

Active Links

- used to send specific **information** to the target file
- in `file1.php`
 - `<a href="file2.php?categ=<?php echo $cat;?>"> <?php echo $cat;?> `
- in `file2.php`
 - `$_GET['categ']="value $cat associated to that specific link"`

\$cat – \$_GET



Active Links

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

Application flowchart

Rudimentary online shop app

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

list_categ.php

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"/>

form.php

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

result.php

Application flowchart – Buyer

- As the application leaves a linear thread of execution, it is necessary to introduce a flowchart (tree) of the application
- Buyer
 - reading the required data (database access) is done in header.php, common for all files

list_categ.php
PRODUCT CATEGORIES

form.php
PRODUCTS, PRICE,
ORDER

result.php
PROCESS ORDER

Application flowchart – Seller

- The appearance of the application for the seller
 - introduces a parallel thread of execution with the necessity of the initial choice: buyer/seller
 - brings the possibility of writing in the database
 - various writing operations
 - insert new product category
 - insert new product in an existing category
 - modify existing product
 - writing in the database involves 2 actions:
 - collection of raw data from the user
 - data processing

Seller thread for online shop app

Magazin Firma X

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

Magazin online Firma X SRL

Alegeti:

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

index.php

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:

admin_categ.php

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

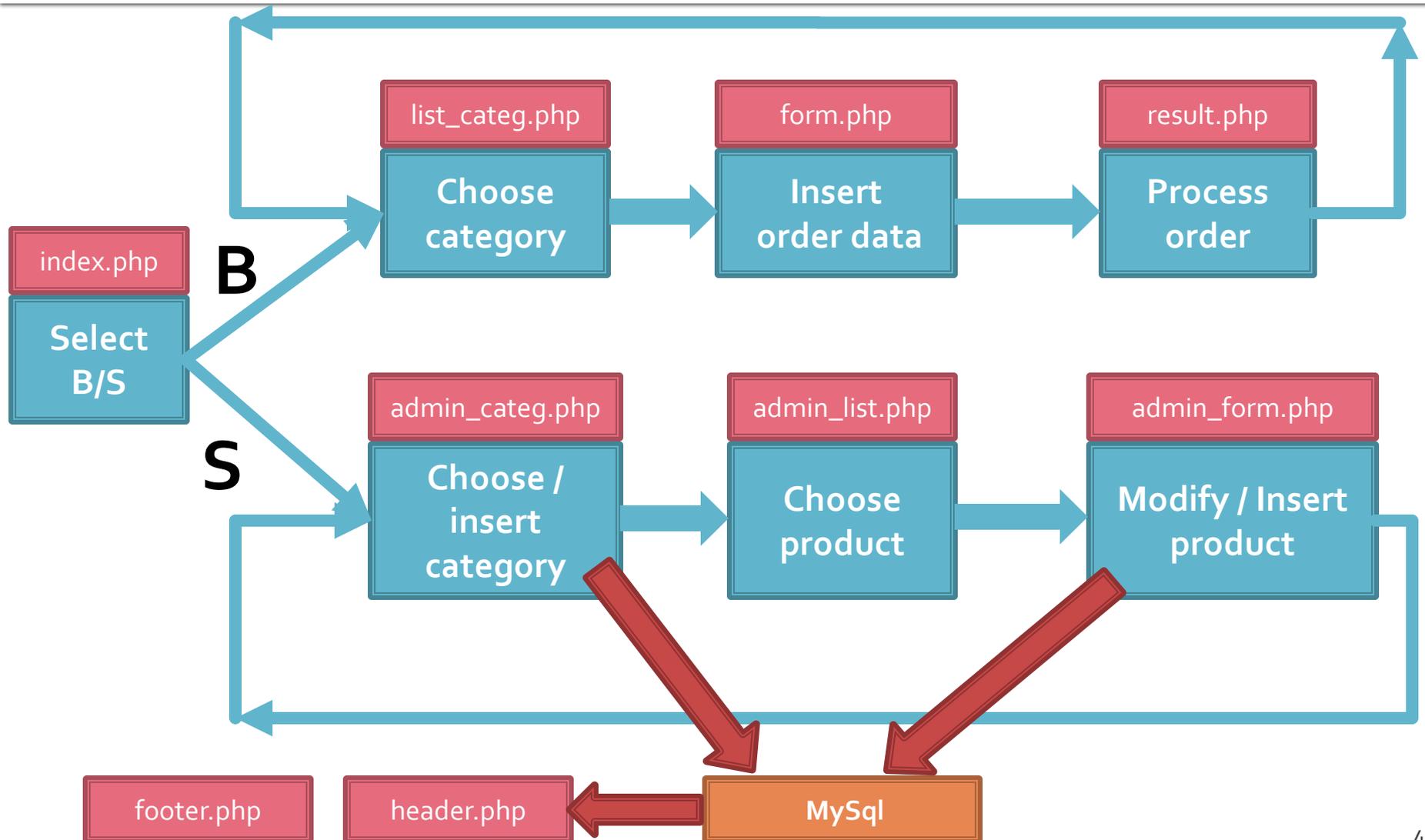
admin_list.php

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"/>

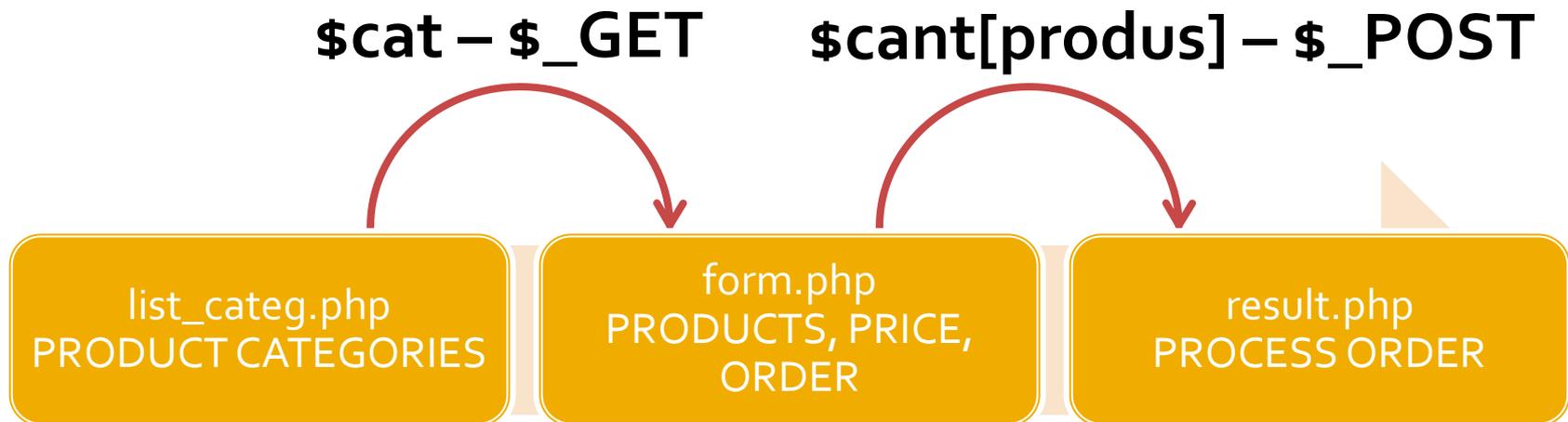
admin_form.php

Application flowchart



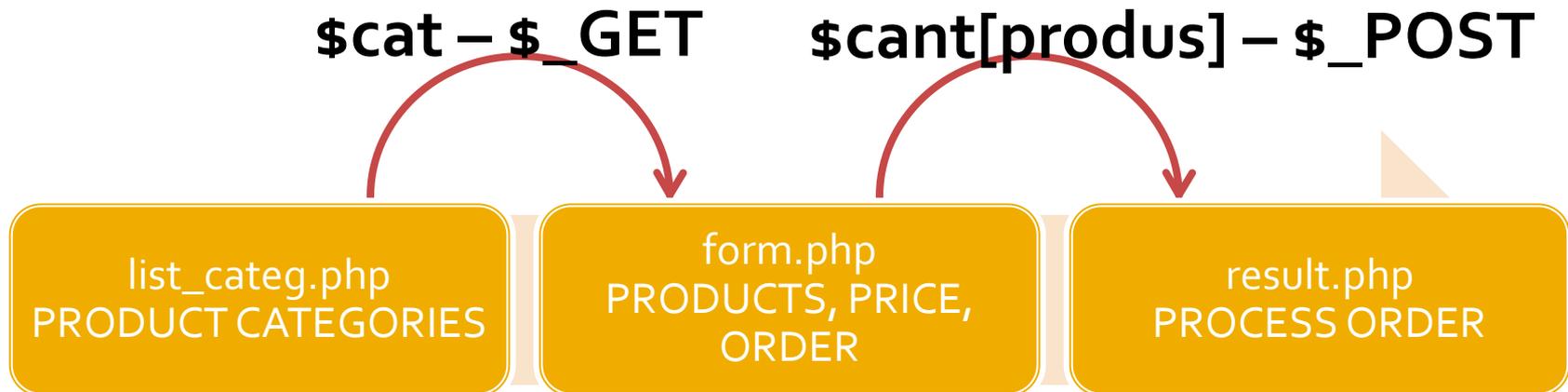
Application flowchart

- The application flowchart must also include information related to :
 - **what** data is transmitted between the different pages
 - **how** data is transmitted between pages

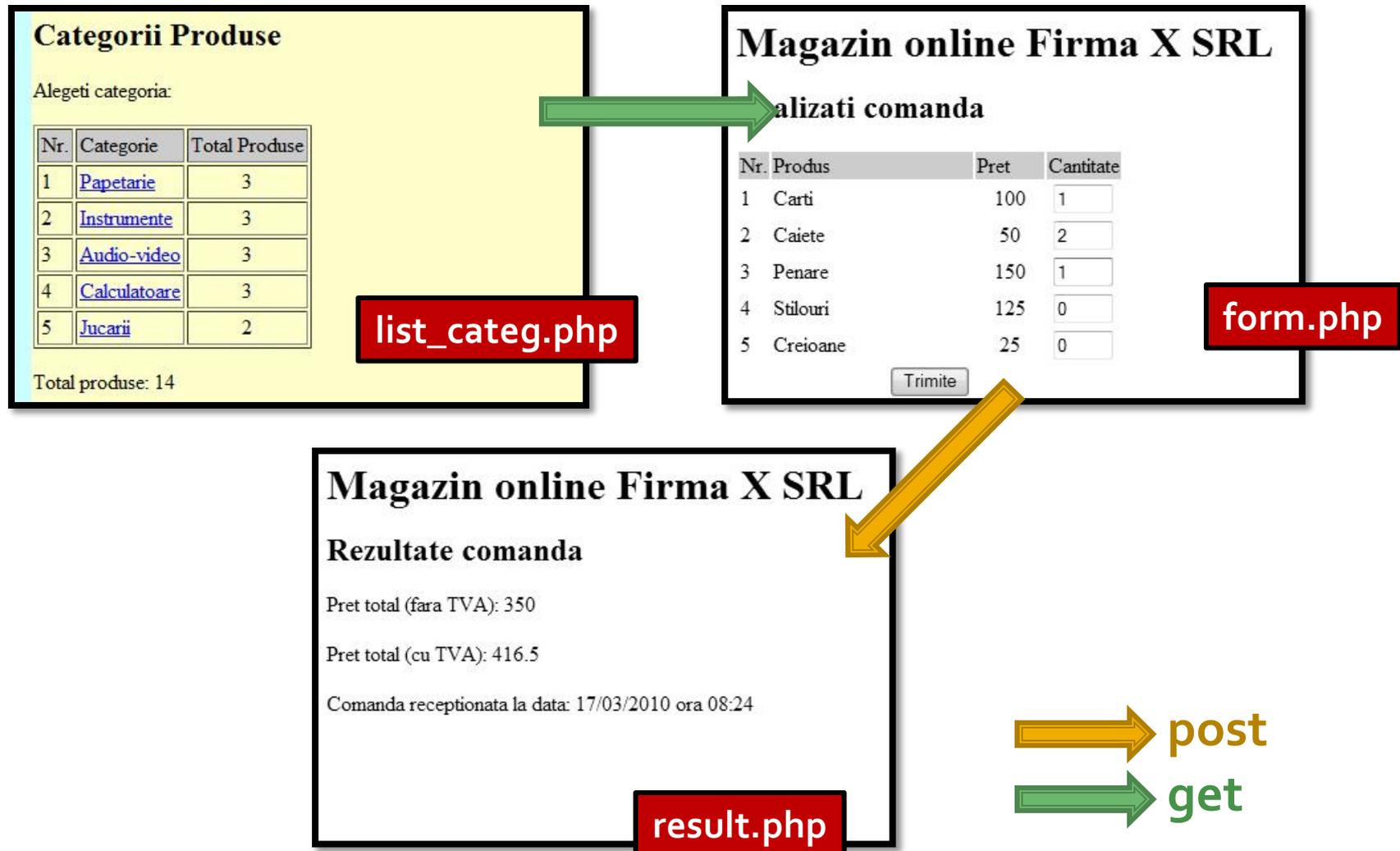


Application flowchart

- Application flowchart – Example
 - the list of categories will transmit a single variable to the next file so we can use "active links", get method, **\$_GET** in next file
 - the order form transmits multiple data included in a form, so the transmission is done with post method, **\$_POST** in next file
- The choice of **\$_GET**/**\$_POST** has implications both in:
 - the page that transmits the data
 - as well as on the page that receives them



Flowchart (Buyer)



Flowchart (Seller)

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Magazin online Firma X SRL

Alegeti:

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index.php

Categorii Produse

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

admin_list.php

Produs in categoria Calculatoa

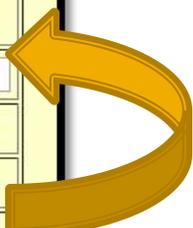
Produs:

Descriere:

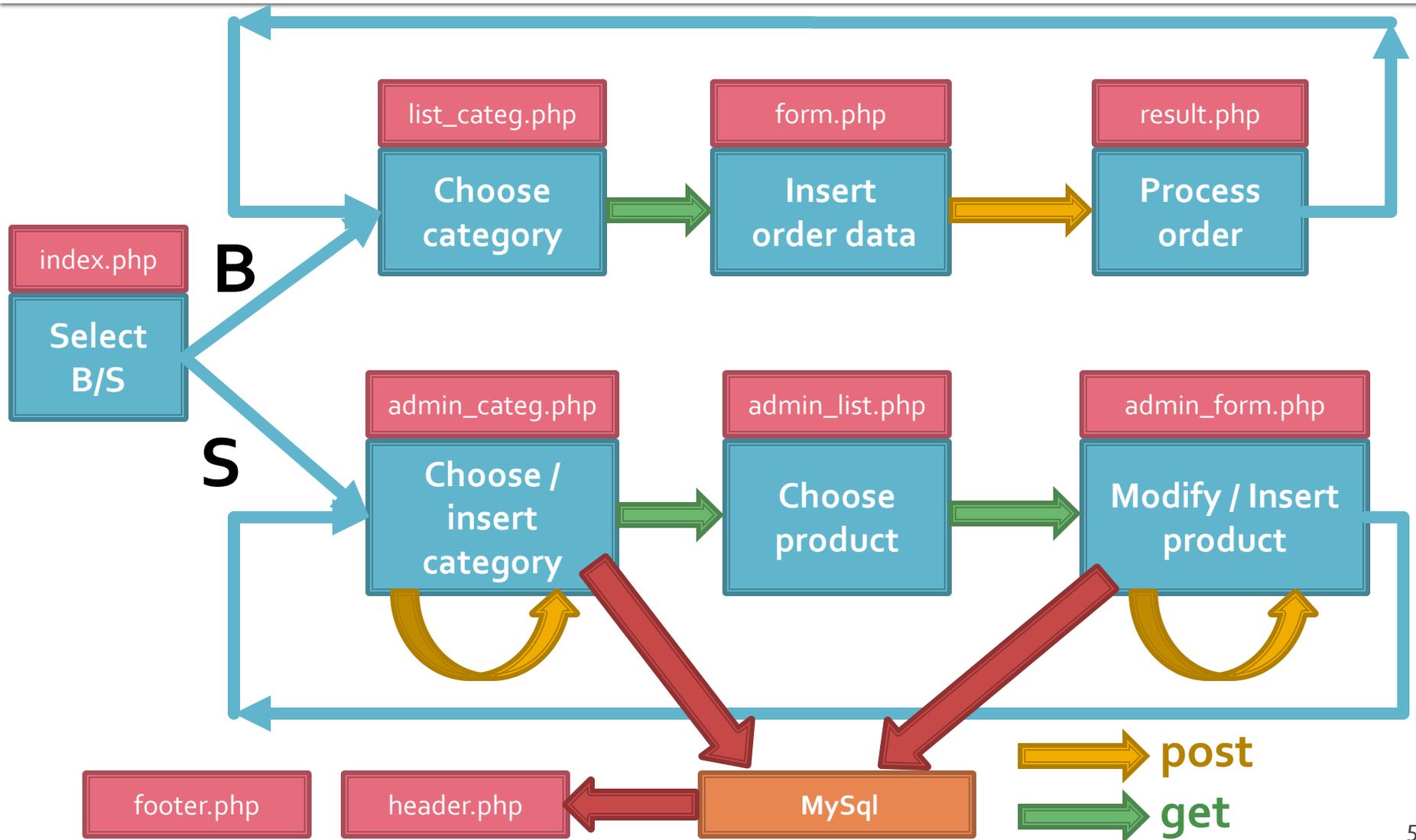
Pret:

Cantitate:

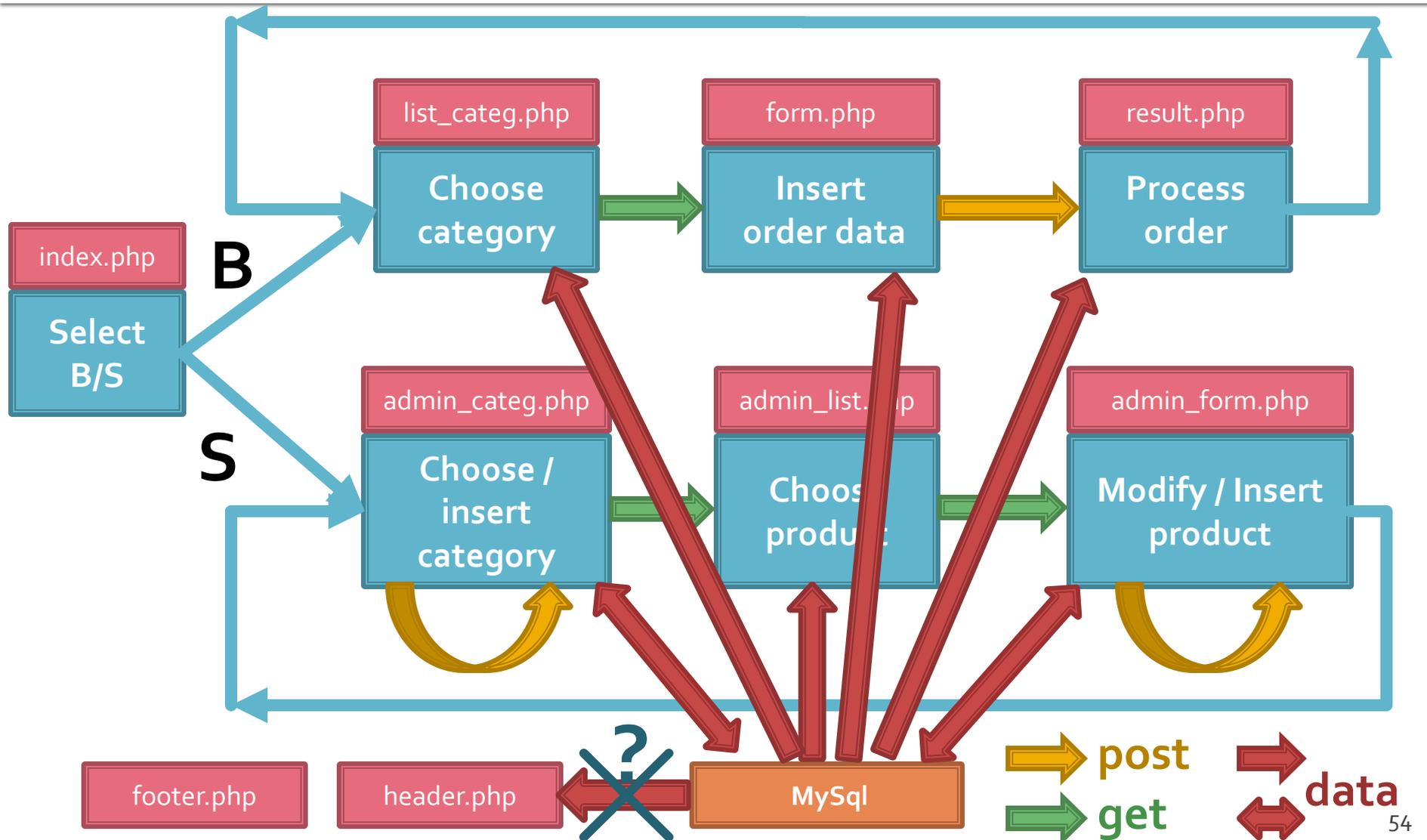
admin_form.php



Complete application flowchart

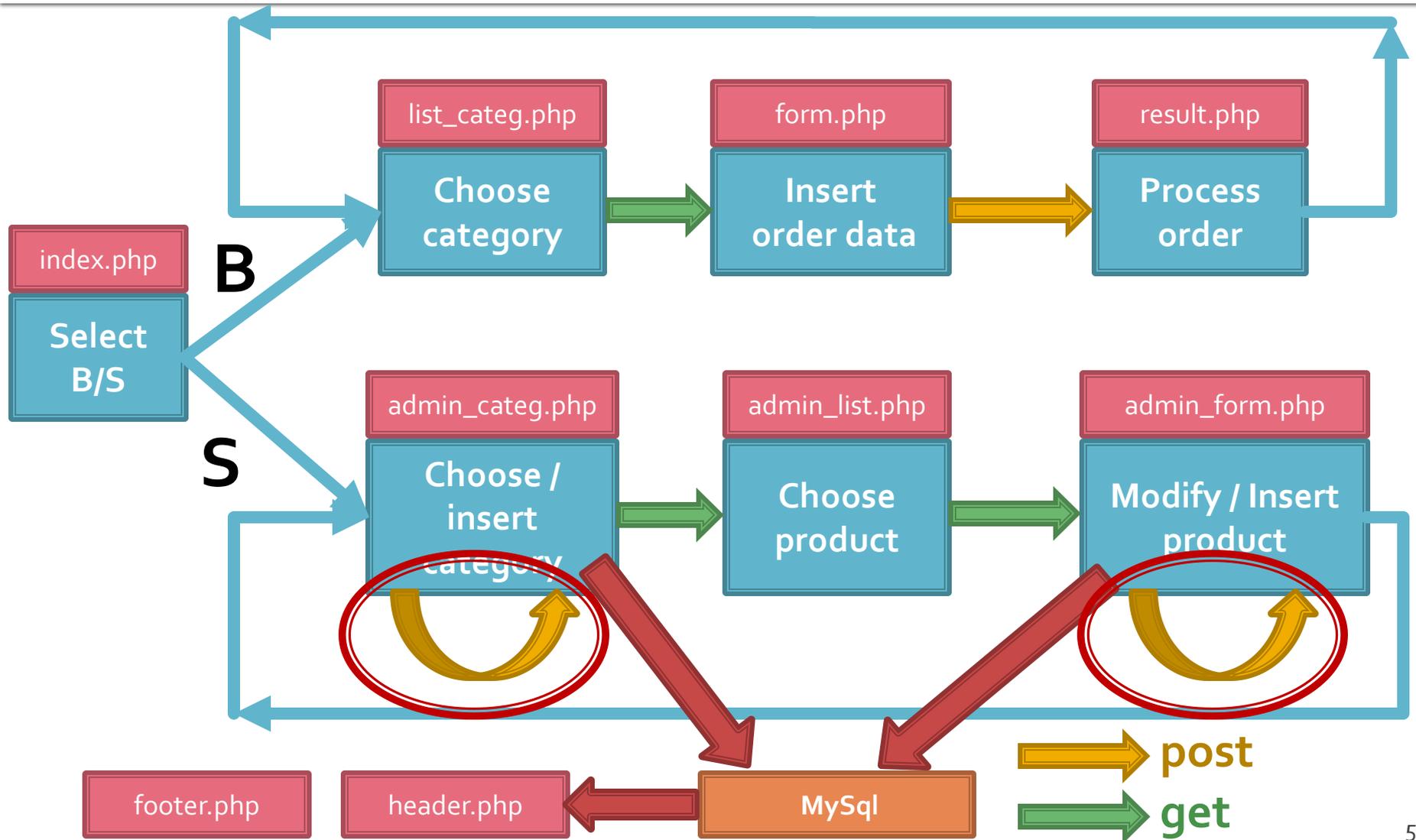


Optimal application flowchart



Single file for data collection AND processing

Complete application flowchart



Flowchart (Seller)

Magazin Firma X

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

Magazin online Firma X SRL

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Categorii Produse

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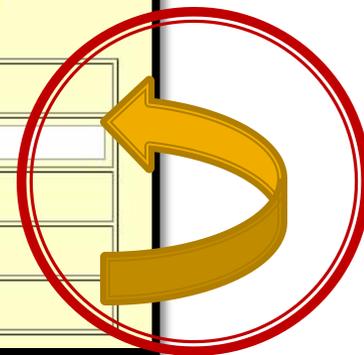
Categorie noua de produse:

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"/>



Single file for data collection AND processing

- This option is often preferred
- It allows the unitary preservation of all operations for the performance of an action
 - easier access
 - ease of programming
 - avoiding errors: File does not exist: /Server/...
- The same file is initially used to collect data and then, if their presence is detected, for their processing

Single file for data collection AND processing

- The "action" file for <form> will be the current file
- it is recommended to use the global variable `$_SERVER['SCRIPT_NAME']`
 - flexibility when renaming files
- alternatively `$_SERVER['PHP_SELF']` is not recommended
 - security issues
- The data collection section is displayed only in the absence of data

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

Single file for data collection AND processing

- The detection of the existence of the data is done by checking the existence (**isset**(\$variable)) of the user inserted values
 - for extra protection, their content can also be checked

```
if (isset($_POST["date_ok "]))
{ //date trimise
  if ($_POST["date_ok "]=="Trimite" )
    { // data sent by the current file
      // data processing
    }
}
else
{
  // data collection
<form action="<?php echo $_SERVER['SCRIPT_NAME '];?>" method="post">
<p><input name="date_ok" type="submit" value="Trimite" /></p></form>
}
```

PHP Debug

View array content (debug)

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

```
$matr= array (  
"fruits" =>  
array("a" => "orange", "b" => "banana", "c" => "apple",  
"ultim"),  
"numbers" =>  
array(1, 2, 3, 4, 5, 6),  
"holes" =>  
array("first", 5 => "second", "third")  
);  
echo $matr;  
echo "<pre>";  
print_r ($matr);  
echo "</pre>";
```

```
Array  
Array  
(  
  [fruits] => Array  
    (  
      [a] => orange  
      [b] => banana  
      [c] => apple  
      [0] => ultim  
    )  
  [numbers] => Array  
    (  
      [0] => 1  
      [1] => 2  
      [2] => 3  
      [3] => 4  
      [4] => 5  
      [5] => 6  
    )  
  [holes] => Array  
    (  
      [0] => first  
      [5] => second  
      [6] => third  
    )  
)
```

Verify/debug PHP code

- It is recommended to use the array visualization option
 - In the file that receives the data
 - temporarily until the final version of the code
- the use of "verbose" code (manual) in the initial stages of writing PHP code can be extended to other types of data
 - the only (almost) debugging method in PHP
 - `<p>temp <?php echo "a=";echo $a; ?> </p>`

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

Debug

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

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

```
echo "<pre>".print_r($_GET,true)."</pre>";
```

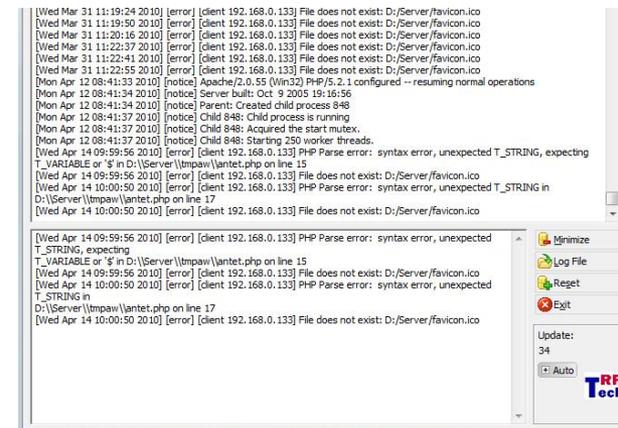
Recommended practical aspects in creating web applications

Recommended methods 1

- If you do not have easy access to the "logs" of the **MySQL** server, you can see how the queries actually reach it by temporarily displaying the query text
 - `$query = "SELECT * FROM `produse` AS p WHERE `id_categ` = ".$row_result_c['id_categ'];
echo $query; // useful during testing`
 - The text processed by PHP of the query will be clearly displayed on the page, making it easier to debug the program
 - These lines **must** be removed in the final form of the program as a security measure

Recommended methods 2

- Checking the error "log" of the Apache server and of the PHP interpreter is one of the main method of debugging PHP code.
- Centos 7.1:
 - putty → nano /var/log/httpd/error_log
 - <http://192.168.30.5/logfile.php> (nonstandard)
 - supplemental homework (php.ini + log PHP **recommended**)

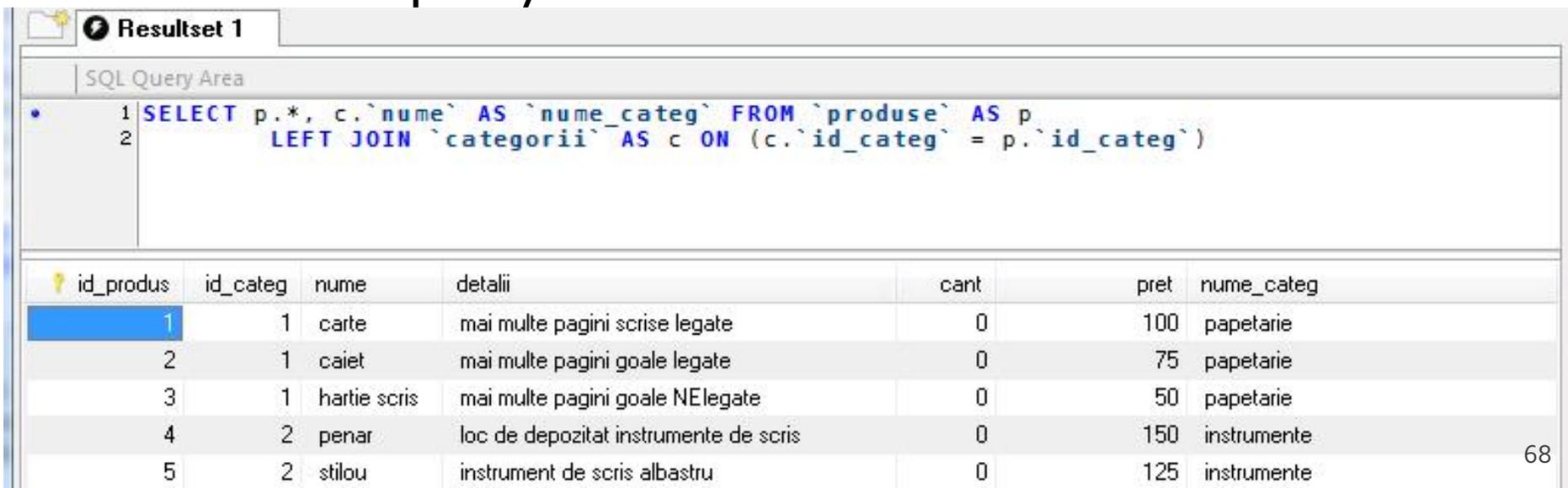


```
[Wed Mar 31 11:19:24 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico
[Wed Mar 31 11:19:50 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico
[Wed Mar 31 11:20:16 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico
[Wed Mar 31 11:22:37 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico
[Wed Mar 31 11:22:41 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico
[Wed Mar 31 11:22:55 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico
[Mon Apr 12 08:41:33 2010] [notice] Apache/2.0.55 (Win32) PHP/5.2.1 configured --- resuming normal operations
[Mon Apr 12 08:41:34 2010] [notice] Server built: Oct 9 2005 19:16:56
[Mon Apr 12 08:41:34 2010] [notice] Parent: Created child process 848
[Mon Apr 12 08:41:37 2010] [notice] Child 848: Child process is running
[Mon Apr 12 08:41:37 2010] [notice] Child 848: Acquired the start mutex.
[Mon Apr 12 08:41:37 2010] [notice] Child 848: Starting 250 worker threads.
[Wed Apr 14 09:59:56 2010] [error] [client 192.168.0.133] PHP Parse error: syntax error, unexpected T_STRING, expecting
T_VARIABLE or '$' in D:\Server\lmpaw\lntet.php on line 15
[Wed Apr 14 09:59:56 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico
[Wed Apr 14 10:00:50 2010] [error] [client 192.168.0.133] PHP Parse error: syntax error, unexpected T_STRING in
D:\Server\lmpaw\lntet.php on line 17
[Wed Apr 14 10:00:50 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico

[Wed Apr 14 09:59:56 2010] [error] [client 192.168.0.133] PHP Parse error: syntax error, unexpected
T_STRING, expecting
T_VARIABLE or '$' in D:\Server\lmpaw\lntet.php on line 15
[Wed Apr 14 09:59:56 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico
[Wed Apr 14 10:00:50 2010] [error] [client 192.168.0.133] PHP Parse error: syntax error, unexpected
T_STRING in
D:\Server\lmpaw\lntet.php on line 17
[Wed Apr 14 10:00:50 2010] [error] [client 192.168.0.133] File does not exist: D:/Server/favicon.ico
```

Recommended methods 3

- During the finalization of the MySQL queries, it is often beneficial to first use **MySQL Workbench / PhpMyAdmin** to test the queries, and then, when you are satisfied with the result, transfer the SQL query to the PHP code



The screenshot shows the MySQL Workbench interface. At the top, there is a tab labeled "Resultset 1". Below it is the "SQL Query Area" containing the following query:

```
1 SELECT p.*, c.`nume` AS `nume_categ` FROM `produse` AS p
2 LEFT JOIN `categorii` AS c ON (c.`id_categ` = p.`id_categ`)
```

Below the query area is a table displaying the results of the query. The table has the following columns: id_produș, id_categ, nume, detalii, cant, pret, and nume_categ. The first row is highlighted in blue.

id_produș	id_categ	nume	detalii	cant	pret	nume_categ
1	1	carte	mai multe pagini scrise legate	0	100	papetarie
2	1	caiet	mai multe pagini goale legate	0	75	papetarie
3	1	hartie scris	mai multe pagini goale NElegate	0	50	papetarie
4	2	penar	loc de depozitat instrumente de scris	0	150	instrumente
5	2	stilou	instrument de scris albastru	0	125	instrumente

Recommended methods 3

MySQL Query Browser - Connection: root@server / tmpaw

File Edit View Query Script Tools Window Help

Transaction Explain Compare

Resultset 1

SQL Query Area

```
1 SELECT p.*, c.`nume` AS `nume_categ` FROM `produse` AS p
2 LEFT JOIN `categorii` AS c ON (c.`id_categ` = p.`id_categ`)
```

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

9 rows fetched in 0.0035s (0.0016s)

Edit Apply Changes Discard Changes First Last Search

1: 1

Recommended methods 4

- the efficiency of a web application
 - 100% - **all processing "moved" to RDBMS**
 - PHP only to **move** and **display** data
- efficiency of a MySql application
 - 25% **correct choice of data types**
 - 25% **creating the necessary indexes in the applications**
 - 25% **correct normalization of the database**
 - 20% **increase in query complexity to "move" processing to the database server**
 - 5% **correct writing of queries**

Recommended methods 5

- When implementing a new application (project)
 1. Imagining the application flowchart (ex: S53)
 - "how would I like to work with such an application"
 - paper/pencil/time - essential
 2. Data identification/data transmission between pages
 - get/post/single file collection-processing
 - read/write database
 3. Identification of the logical structure of the data
 - "classes" of objects/phenomena treated identically
 - scalability is taken into account (the possibility of increasing the number of elements in a class)

Recommended methods 5

- When implementing a new application (project)
 4. Implementation of the database structure
 - In general, a table for each distinct logical class **BUT...**
 - scalability is taken into account (if the application grows the number of classes/tables **WILL NOT** increase) **AND...**
 - normalization
 5. Identifying the data type required for the columns
 - preferably use integers in any situation that requires ordering
 - the size of the fields not larger than necessary (it can be forced by the "size" attribute in the HTML "input" tag)
 6. Imagining the form of the pages
 - "I've seen it like this before and I liked it" (Don't make me think!)
 - investigating the possibility of introducing template functionality

Recommended methods 5

- When implementing a new application (project)
 7. Populate (manual) the database with initial data
 - MySql Query Browser (or PhpMyAdmin) / automatic / imported
 - the individual programming of some pages needs the preexistence of some data
 8. Individual programming of pages
 - Generally in the order from the application flowchart (often a page provides the necessary data for the next one in the plan)
 - "verbose" mode active for PHP (ie: `echo $a; print_r($matr)`)
 9. Preparation for distribution / move on production server
 - detailed testing (possibly a "guinea pig")
 - elimination of "verbose" additions
 - backup
 - generating an eventual install/setup

Tehnici PHP avansate

HTTP headers

- Permite transmiterea unor header-e specifice protocolului HTTP
- Structura mesajului
 - <initial line, different for request vs. response>
 - Header1: value1
 - Header2: value2
 - Header3: value3
 -
 - <optional message body goes here, like file contents or query data; it can be many lines long, or even binary data \$&*%@!^\$@>

HTTP headers

- header(string, code)

```
<?php header("HTTP/1.0 404 Not Found");?>
```

```
<?php header("Location: http://www.example.com/");  
/* Redirect browser */?>
```

```
<meta http-equiv="refresh" content="5;  
url=http://www.example.com/">
```

HTTP headers

- Header-ele HTTP se trimit inaintea oricaror alte date (HTML)
 - Inceput fisier: `<?php header("..."); ?><!DOCTYPE HTML PUBLIC ...
<html>...<body>...</body></html>`
 - Nici macar **un spatiu** nu trebuie sa apara inainte de primul `<?php`
 - Daca necesitatea de a trimite header-e poate aparea mai tarziu in script se foloseste obligatoriu `Buffer ieseire`

Buffer iesire

- Copie orice iesire a scriptului PHP intr-un buffer de memorie fara sa transmita nimic clientului
- Utilizat in general pentru conlucrarea cu header-e HTTP, evitarea generarii de HTML inainte de terminarea lucrului cu header-e
- `ob_start();`
- `ob_end_flush ();`
- `ob_end_clean ();`

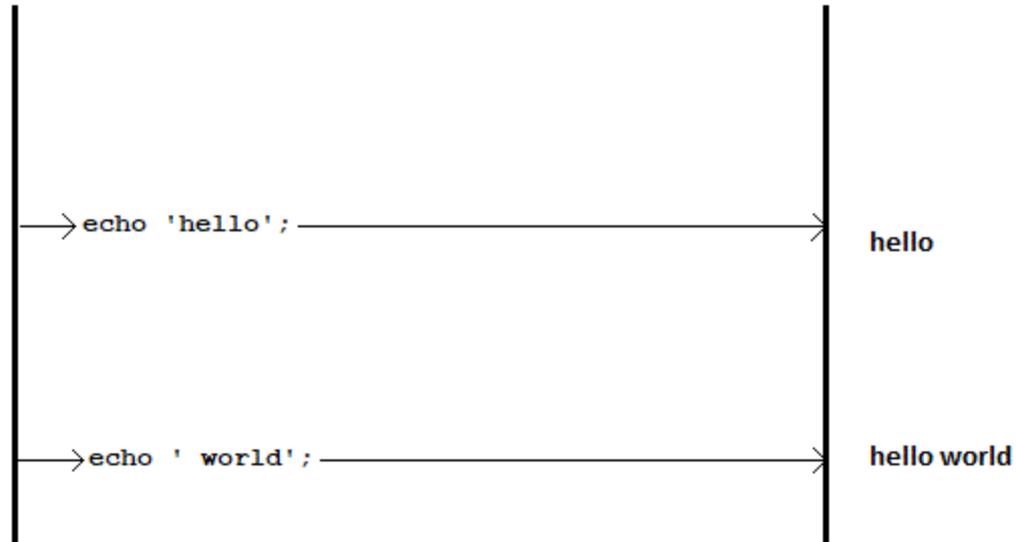
- `ob_get_contents ()`

Buffer issues

No output buffering

PHP script

Client Browser

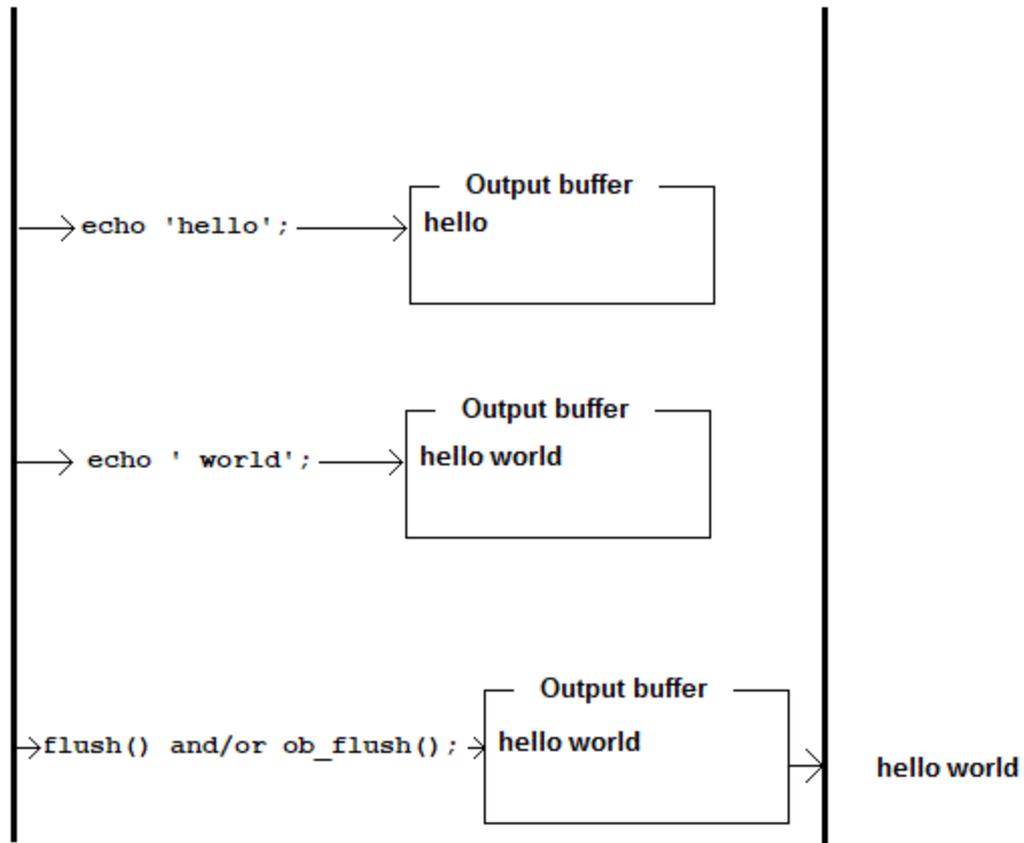


Buffer issues

Output buffering

PHP script

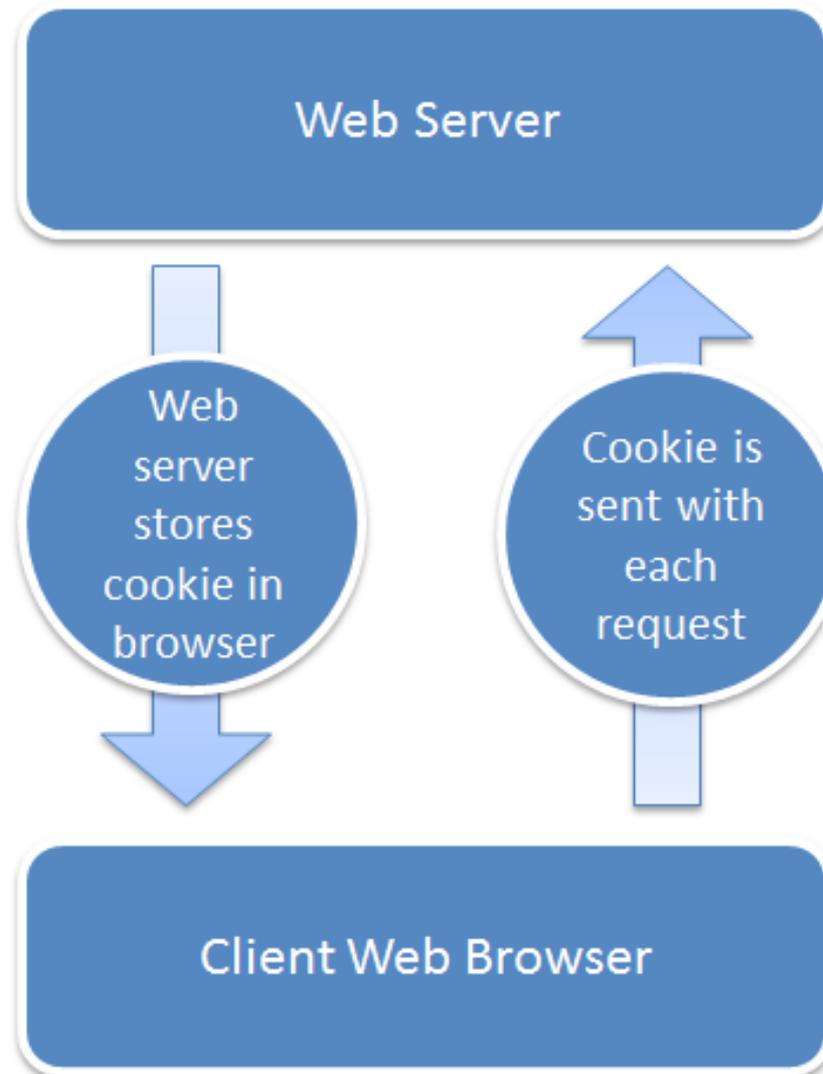
Client Browser



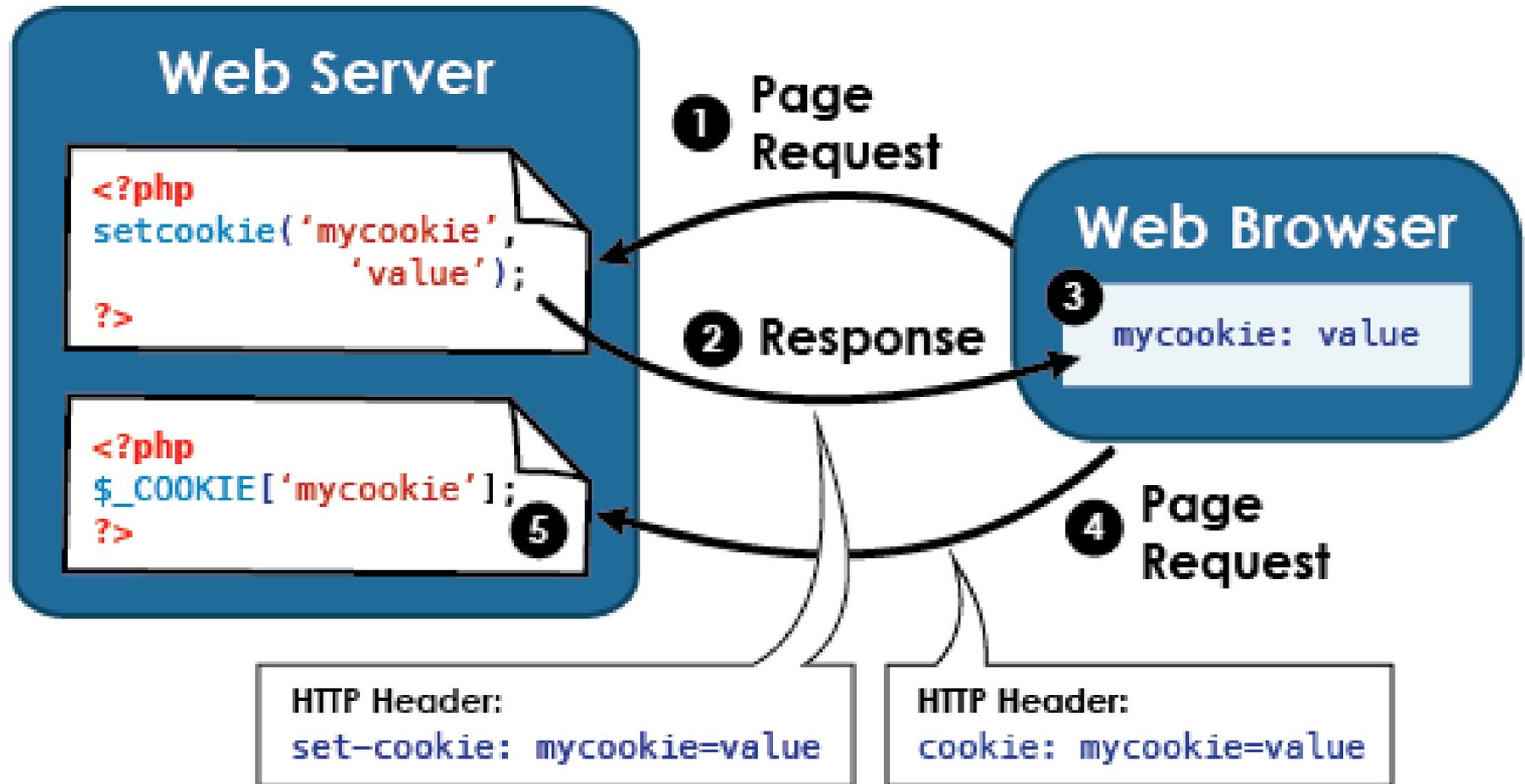
Cookies

- mici cantitati de date ce se stocheaza pe masina client (de obicei gestionat de browser)
- Circula impreuna cu (**este**) header HTTP
- setcookie (string name , string value , int expire , string path , string domain , bool secure , bool httponly)
 - nume (ptr. identificare)
 - value (valoarea/datele stocate)

Cookies



Cookies



Cookies

- `setcookie(string $name, string $value , int $expire = 0)`
 - `expire`: UNIX time stamp, nr. sec. din 1970
 - `time()+nr. sec. de viata dorite`
- datele se stocheaza pe client: probleme de securitate
- Se poate obtine valoarea memorata prin variabila globala `$_COOKIE['nume']`
 - **NU** in acelasi script
 - daca un script php trimite un cookie cu header-ele, de-abia **urmatorul** script accesat va primi acele cookie in header-e

Cookies

```
<?php
$value = 'something from somewhere';

setcookie("TestCookie", $value);
setcookie("TestCookie", $value, time()+3600); /* expire in 1
hour */
setcookie("TestCookie", $value, time()+3600, "~/rasmus/",
"example.com", 1);
?>
```

```
<?php
//Doar pe urmatoarele pagini !!!!

// Print an individual cookie
echo $_COOKIE["TestCookie"];

// Another way to debug/test is to view all cookies
print_r($_COOKIE);
?>
```

Cookies

```
<?php|
//Cookie arrays
// set the cookies
setcookie ("cookie[three]", "cookiethree");
setcookie ("cookie[two]", "cookietwo");
setcookie ("cookie[one]", "cookieone");

// after the page reloads, print them out
if (isset($_COOKIE['cookie']))
{
    foreach ($_COOKIE['cookie'] as $name => $value)
    {
        $name = htmlspecialchars($name);
        $value = htmlspecialchars($value);
        echo "$name : $value <br />\n";
    }
}
?>
```

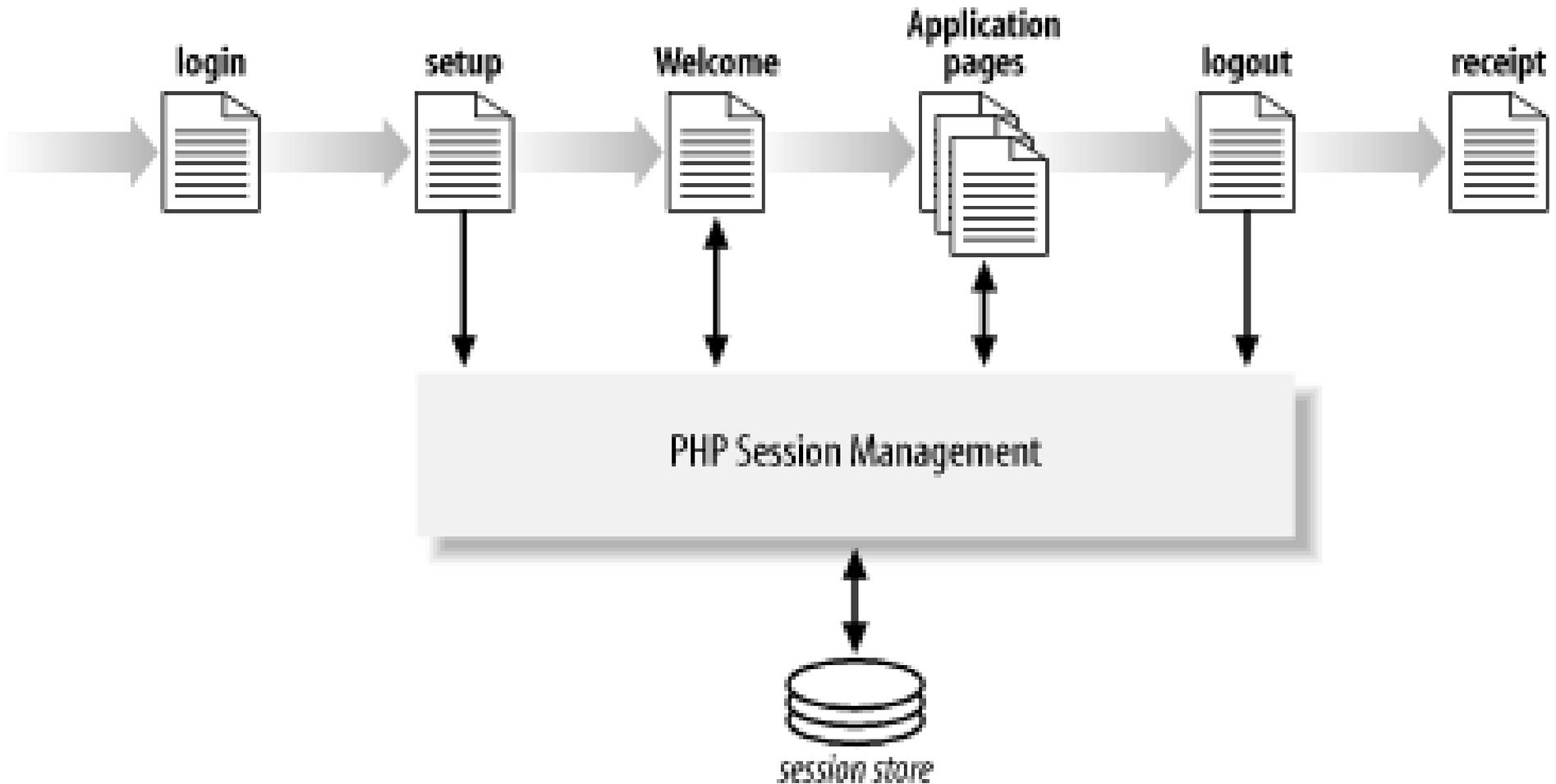
Sesiune

- cookie poate oferi "memorie" aplicatiilor web
- dezavantaje
 - datele se stocheaza la client, nu sunt in siguranta
 - nu se pot stoca oricate date (max. 20)
 - e posibil clientul sa nu accepte cookie
- Sesiunea pentru evitarea acestor dezavantaje
 - stocare pe server
 - oricat de mult date
 - daca clientul nu accepta cookie, "memoria" se realizeaza prin metoda "get"

Sesiune

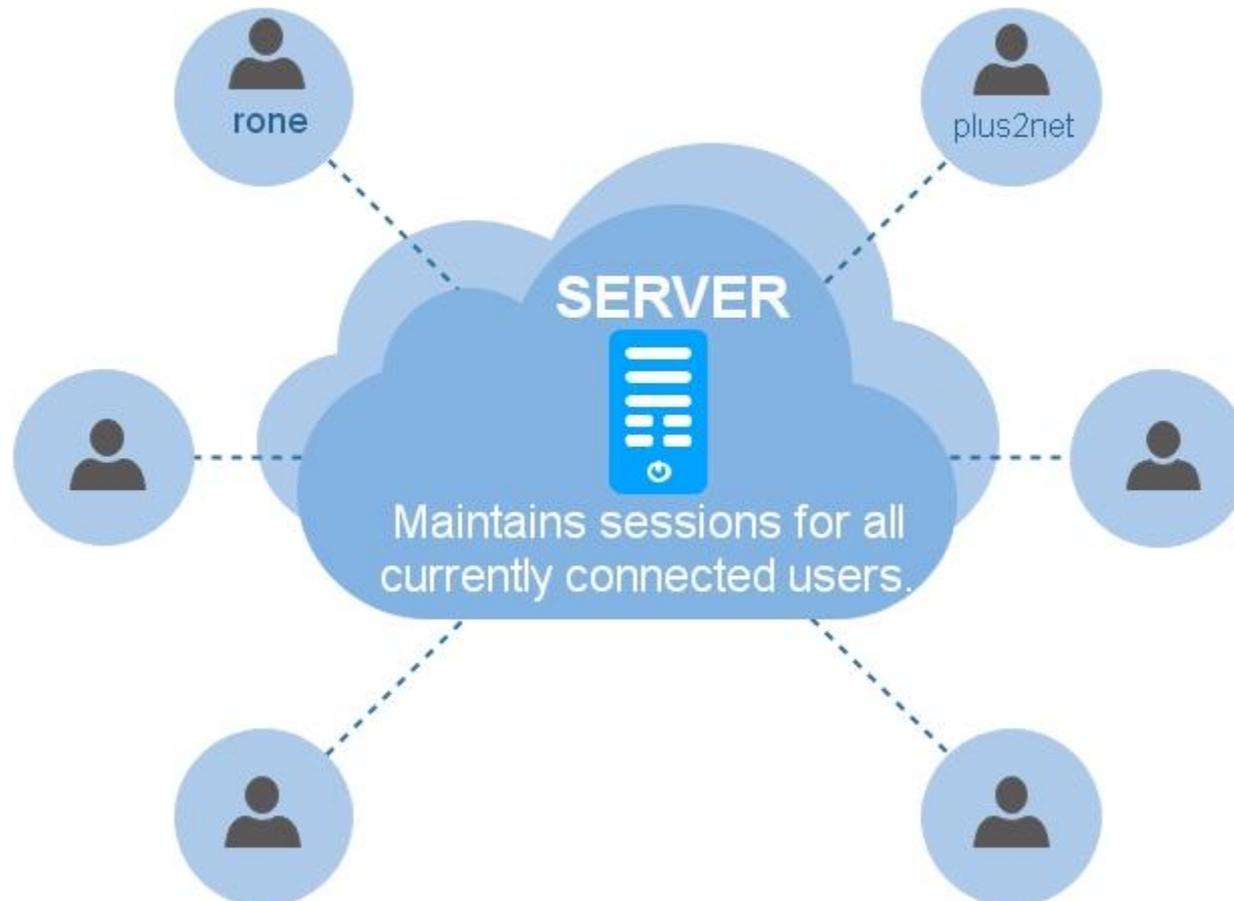
- `session_start()`; (session_ID din GET, POST, COOKIE)
- `session_write_close ()`;
- `session_id ([string id])`;
- datele se manipuleaza prin variabila globala `$_SESSION` care ofera acces la citirea/scrierea datelor

Sesiune



Sesiune

SESSIONS Management



Sesiune

```
<?php
// Initialize the session.
// If you are using session_name("something"), don't forget it now!
session_start();

// Unset all of the session variables.
$_SESSION = array();

// If it's desired to kill the session, also delete the session cookie.
// Note: This will destroy the session, and not just the session data!
if (isset($_COOKIE[session_name()]))
{
    setcookie(session_name(), '', time()-42000, '/');
}

// Finally, destroy the session.
session_destroy();?>
```

Sesiune

```
<?php
// page1.php

session_start();

echo 'Welcome to page #1';

$_SESSION['favcolor'] = 'green';
$_SESSION['animal'] = 'cat';
$_SESSION['time'] = time();

// Works if session cookie was accepted
echo '<br /><a href="page2.php">page 2</a>';

// Or maybe pass along the session id, if needed
//echo '<br /><a href="page2.php?' . SID . '">page 2</a>';
echo '<a href="page2.php?' . session_name() . ' = ' .
session_id() . '">page2</a>' ;
?>
```

Sesiune

```
<?php|
// page2.php

session_start();

echo 'Welcome to page #2<br />';

echo $_SESSION['favcolor']; // green
echo $_SESSION['animal'];   // cat
echo date('Y m d H:i:s', $_SESSION['time']);

// You may want to use SID here, like we did in page1.php
echo '<br /><a href="page1.php">page 1</a>';
?>
```

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