Projektmunka

Dancs Sándor
Nyíregyházi Egyetem
Matematika és Informatika Intézet

1. Bemutatkozás, a tananyag beosztásának áttekintése és a követelmények ismertetése

Kurzusinformáció

Köszönöm a figyelmet!

2. Team programozási környezet összeállítása, verziókezelés, csomagfüggőség és szerkesztés (build) Naplózás

LAMP
Linux, Apache, MariaDB, PHP

Debian GNU/Linux

Update && Upgrade

```
# apt-get update && apt-get upgrade
```

Midnight Commander

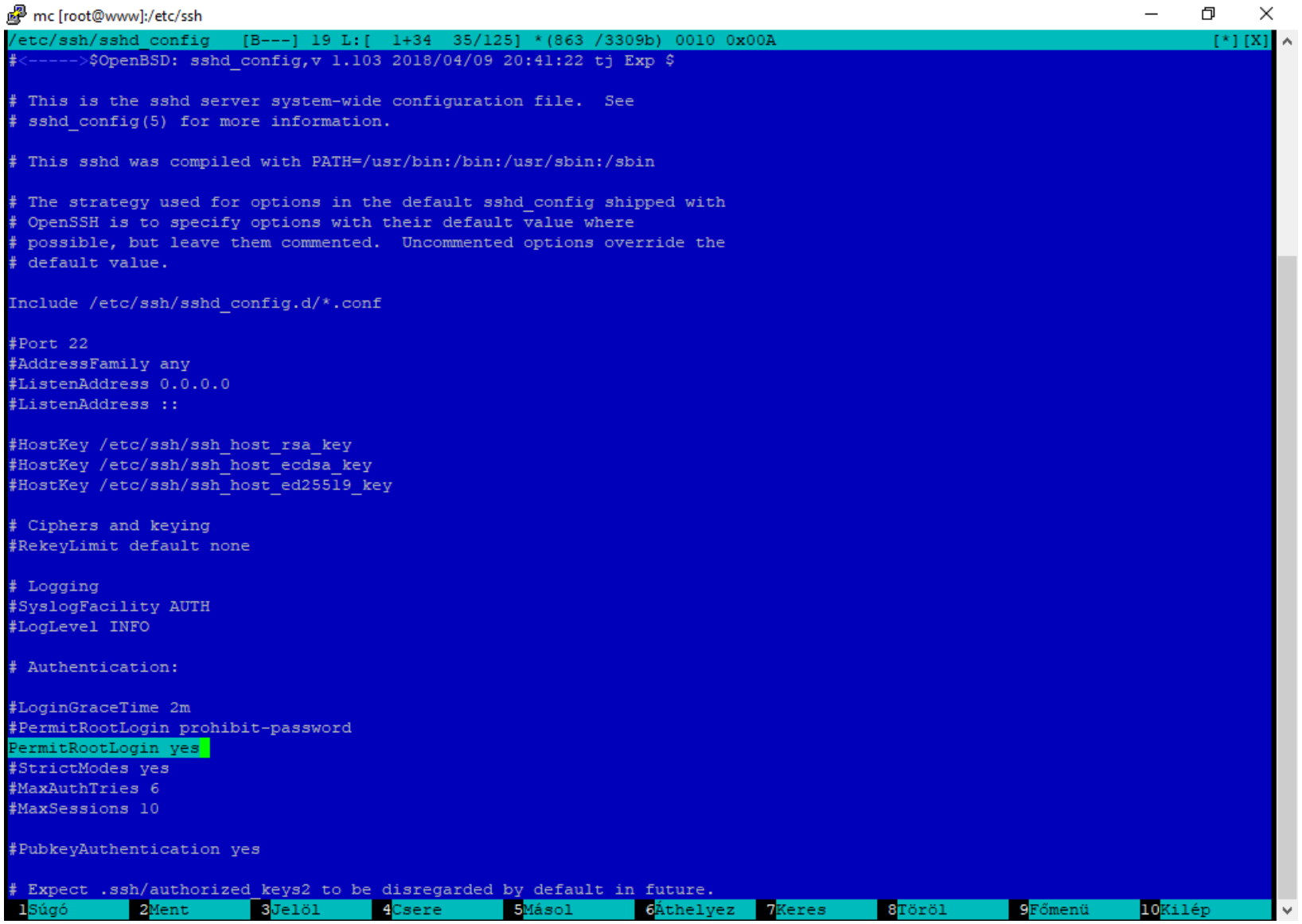
```
# apt-get install mc
```

SSH (Secure Shell)

```
# apt-get install ssh
# mcedit /etc/ssh/sshd_config
```

sshd_config

```
…
PermitRootLogin yes
…
```


mc [root@www]:/etc/ssh
/etc/ssh/sshd_config [B---] 19 L:[1+34 35/125] *(863 /3309b) 0010 0x00A [*][X]
#<------>$OpenBSD: sshd_config,v 1.103 2018/04/09 20:41:22 tj Exp $
This is the sshd server system-wide configuration file. See
sshd_config(5) for more information.
This sshd was compiled with PATH=/usr/bin:/bin:/usr/sbin:/sbin
The strategy used for options in the default sshd_config shipped with
OpenSSH is to specify options with their default value where
possible, but leave them commented. Uncommented options override the
default value.
Include /etc/ssh/sshd_config.d/*.conf
#Port 22
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::
#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key
Ciphers and keying
#RekeyLimit default none
Logging
#SyslogFacility AUTH
#LogLevel INFO
Authentication:
#LoginGraceTime 2m
#PermitRootLogin prohibit-password
PermitRootLogin yes
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10
#PubkeyAuthentication yes
Expect .ssh/authorized_keys2 to be disregarded by default in future.
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Restart SSH

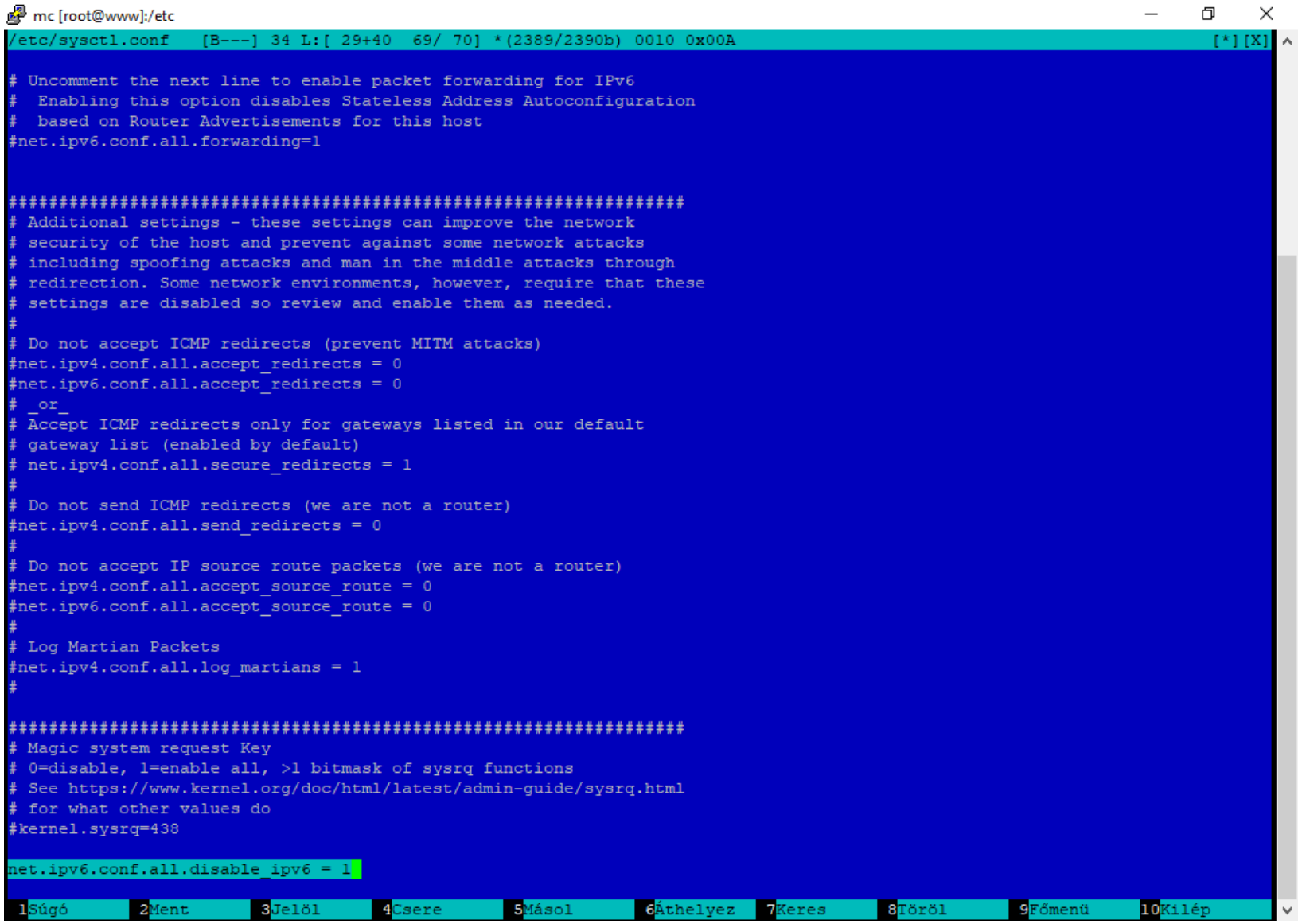
```
# systemctl reload ssh
```

Disable IPv6

```
# mcedit /etc/sysctl.conf
```

sysctl.conf

```
…
net.ipv6.conf.all.disable_ipv6 = 1
```


mc [root@www]:/etc
/etc/sysctl.conf [B---] 34 L:[29+40 69/ 70] *(2389/2390b) 0010 0x00A [*][X]
Uncomment the next line to enable packet forwarding for IPv6
Enabling this option disables Stateless Address Autoconfiguration
based on Router Advertisements for this host
#net.ipv6.conf.all.forwarding=1
###
Additional settings - these settings can improve the network
security of the host and prevent against some network attacks
including spoofing attacks and man in the middle attacks through
redirection. Some network environments, however, require that these
settings are disabled so review and enable them as needed.
#
Do not accept ICMP redirects (prevent MITM attacks)
#net.ipv4.conf.all.accept_redirects = 0
#net.ipv6.conf.all.accept_redirects = 0
_or_
Accept ICMP redirects only for gateways listed in our default
gateway list (enabled by default)
net.ipv4.conf.all.secure_redirects = 1
#
Do not send ICMP redirects (we are not a router)
#net.ipv4.conf.all.send_redirects = 0
#
Do not accept IP source route packets (we are not a router)
#net.ipv4.conf.all.accept_source_route = 0
#net.ipv6.conf.all.accept_source_route = 0
#
Log Martian Packets
#net.ipv4.conf.all.log_martians = 1
#
###
Magic system request Key
0=disable, 1=enable all, >1 bitmask of sysrq functions
See https://www.kernel.org/doc/html/latest/admin-guide/sysrq.html
for what other values do
#kernel.sysrq=438
net.ipv6.conf.all.disable_ipv6 = 1
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Reload sysctl settings

```
# sysctl -p
```

Show IP address

```
# ip address show
# apt-get install net-tools
# ifconfig -a
```

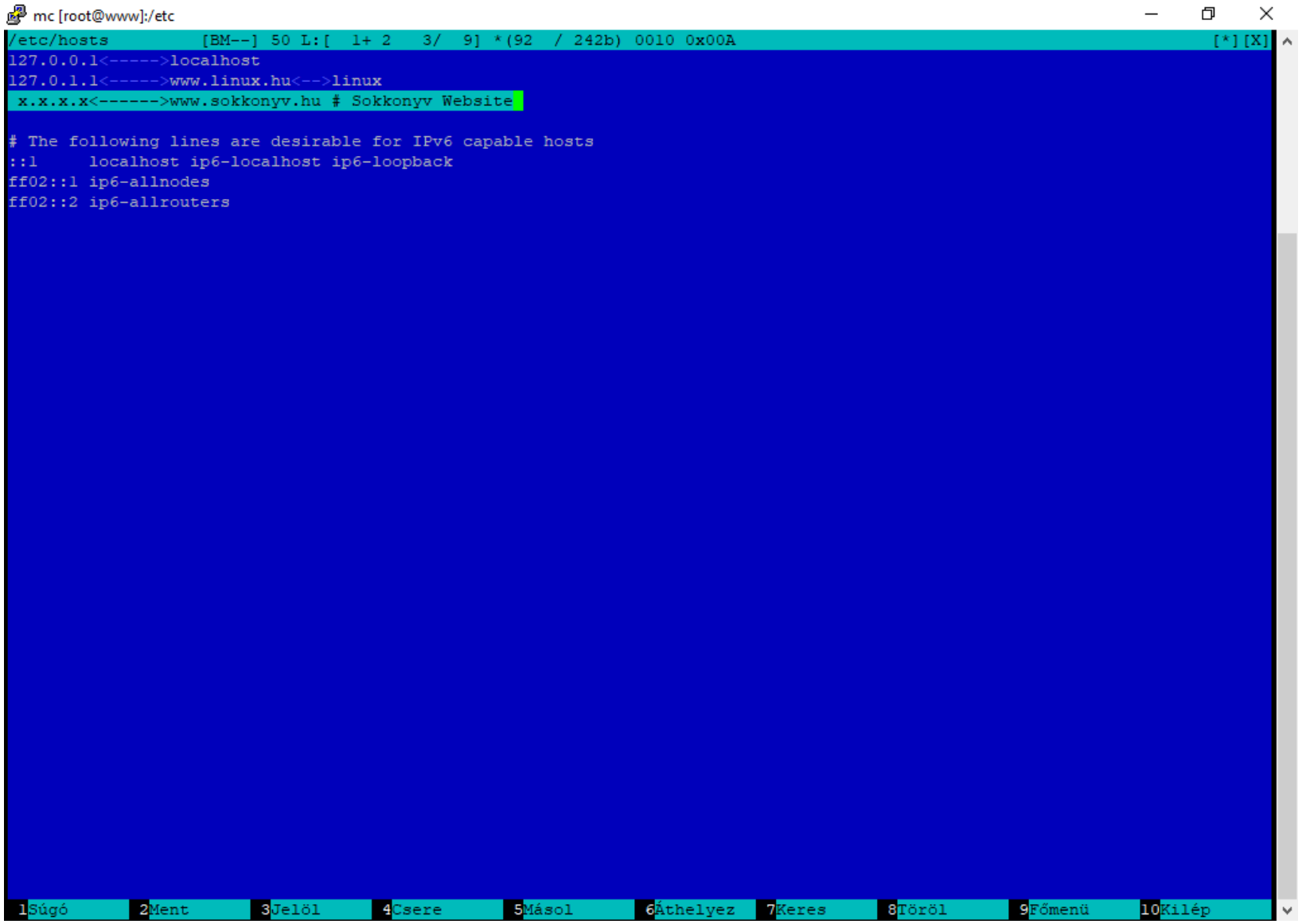
Linux client

```
# mcedit /etc/hosts
```

hosts

```
…

x.x.x.x www.sokkonyv.hu # Sokkonyv Website

…
```

```
# ssh root@www.sokkonyv.hu
```

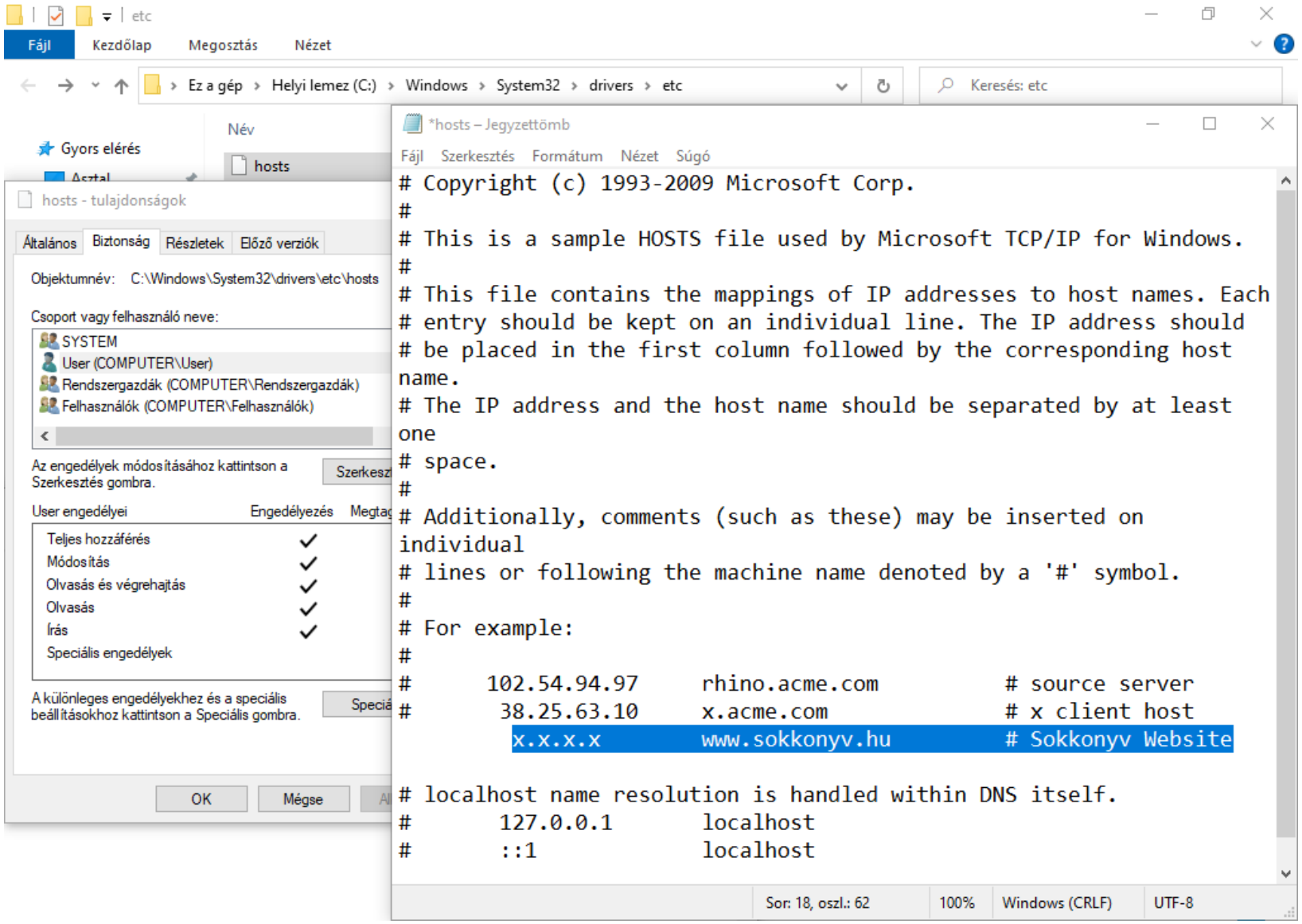

mc [root@www]:/etc
/etc/hosts [BM--] 50 L:[1+ 2 3/ 9] *(92 / 242b) 0010 0x00A [*][X]
127.0.0.1<------>localhost
127.0.1.1<------>www.linux.hu<-->linux
x.x.x.x<------>www.sokkonyv.hu # Sokkonyv Website
# The following lines are desirable for IPv6 capable hosts
::1 localhost ip6-localhost ip6-loopback
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
1Súgó 2Ment 3Jelöl 4Csere 5Másol 6Áthelyez 7Keres 8Töröl 9Főmenü 10Kilép

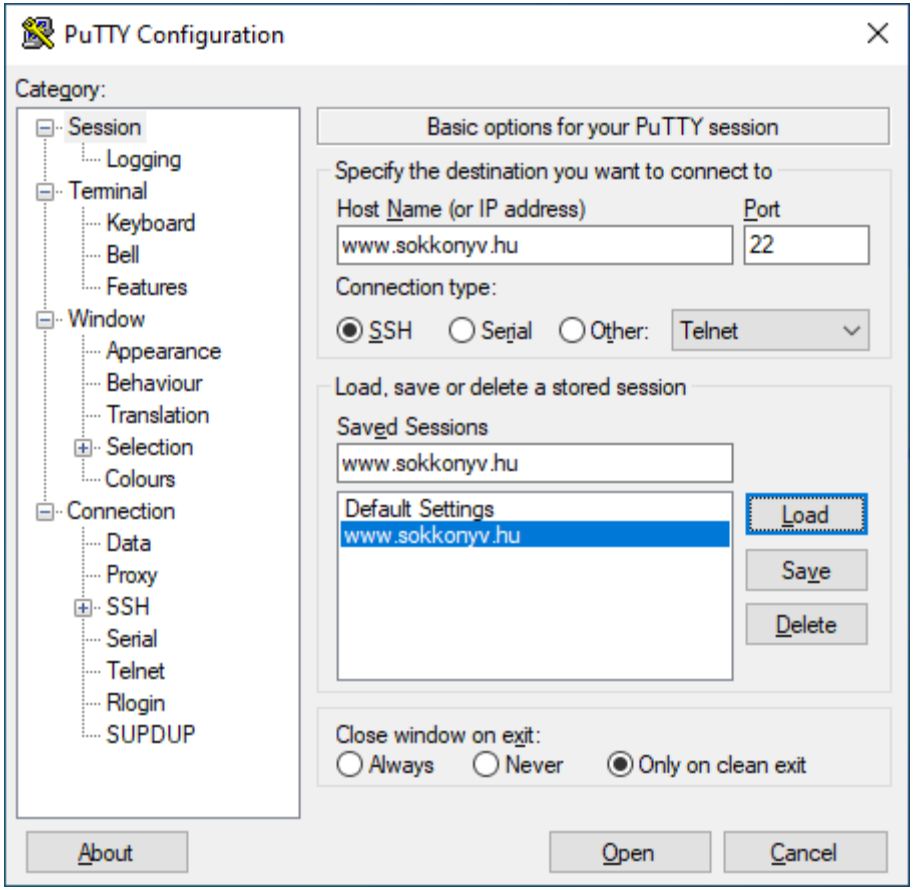
MS Windows client

```
>explorer.exe C:\Windows\System32\drivers\etc\

hosts -> Jobb kattintás -> Tulajdonságok /
Biztonság / Szerkesztés /Hozzáadás.../ User /
OK / Teljes hozzáférés (Engedélyezés) / OK / OK

>notepad C:\Windows\System32\drivers\etc\hosts
```

hosts

```
…

x.x.x.x www.sokkonyv.hu # Sokkonyv Website

…
```


etc
Fájl
Kezdőlap
Megosztás
Nézet
Ez a gép › Helyi lemez (C:) › Windows › System32 › drivers › etc
Keresés: etc
Gyors elérés
Név
hosts
hosts - tulajdonságok
Általános
Biztonság
Részletek
Előző verziók
Objektumnév: C:\Windows\System32\drivers\etc\hosts
Csoport vagy felhasználó neve:
SYSTEM
User (COMPUTER\User)
Rendszergazdák (COMPUTER\Rendszergazdák)
Felhasználók (COMPUTER\Felhasználók)
Az engedélyek módosításához kattintson a Szerkesztés gombra.
User engedélyei
Engedélyezés
Teljes hozzáférés
Módosítás
Olvasás és végrehajtás
Olvasás
Írás
Speciális engedélyek
A különleges engedélyekhez és a speciális beállításokhoz kattintson a Speciális gombra.
OK
Mégse
*hosts – Jegyzettömb
Fájl Szerkesztés Formátum Nézet Súgó
Copyright (c) 1993-2009 Microsoft Corp.
#
This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
This file contains the mappings of IP addresses to host names. Each
entry should be kept on an individual line. The IP address should
be placed in the first column followed by the corresponding host
name.
The IP address and the host name should be separated by at least
one
space.
#
Additionally, comments (such as these) may be inserted on
individual
lines or following the machine name denoted by a '#' symbol.
#
For example:
#
102.54.94.97   rhino.acme.com   # source server
38.25.63.10   x.acme.com   # x client host
x.x.x.x www.sokkonyv.hu # Sokkonyv Website
localhost name resolution is handled within DNS itself.
127.0.0.1   localhost
::1   localhost
Sor: 18, oszl.: 62
100%
Windows (CRLF)
UTF-8

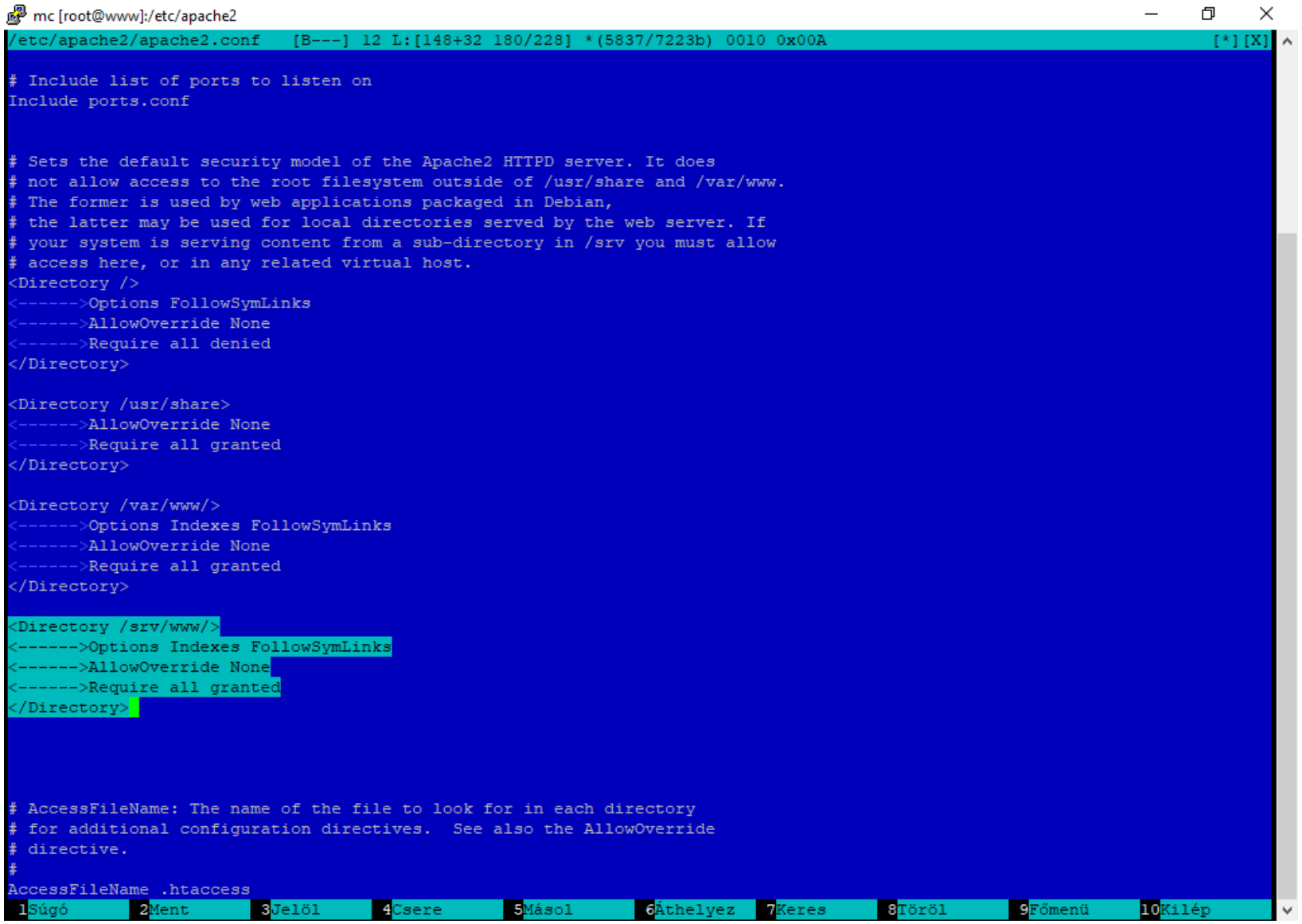

PuTTY Configuration
Category:
Session
Logging
Terminal
Keyboard
Bell
Features
Window
Appearance
Behaviour
Translation
Selection
Colours
Connection
Data
Proxy
SSH
Serial
Telnet
Rlogin
SUPDUP
Basic options for your PuTTY session
Specify the destination you want to connect to
Host Name (or IP address)
Port
www.sokkonyv.hu
22
Connection type:
SSH
Serial
Other:
Telnet
Load, save or delete a stored session
Saved Sessions
www.sokkonyv.hu
Default Settings
www.sokkonyv.hu
Load
Save
Delete
Close window on exit:
Always
Never
Only on clean exit
About
Open
Cancel

Apache (HTTP Server)

```
# apt-get install apache2

# mkdir -p /srv/www/www.sokkonyv.hu

# cp /var/www/html/index.html
/srv/www/www.sokkonyv.hu

# mcedit /etc/apache2/apache2.conf
```

apache2.conf

```
…
<Directory /srv/www/>
        Options Indexes FollowSymLinks
        AllowOverride None
        Require all granted
</Directory>
…
```

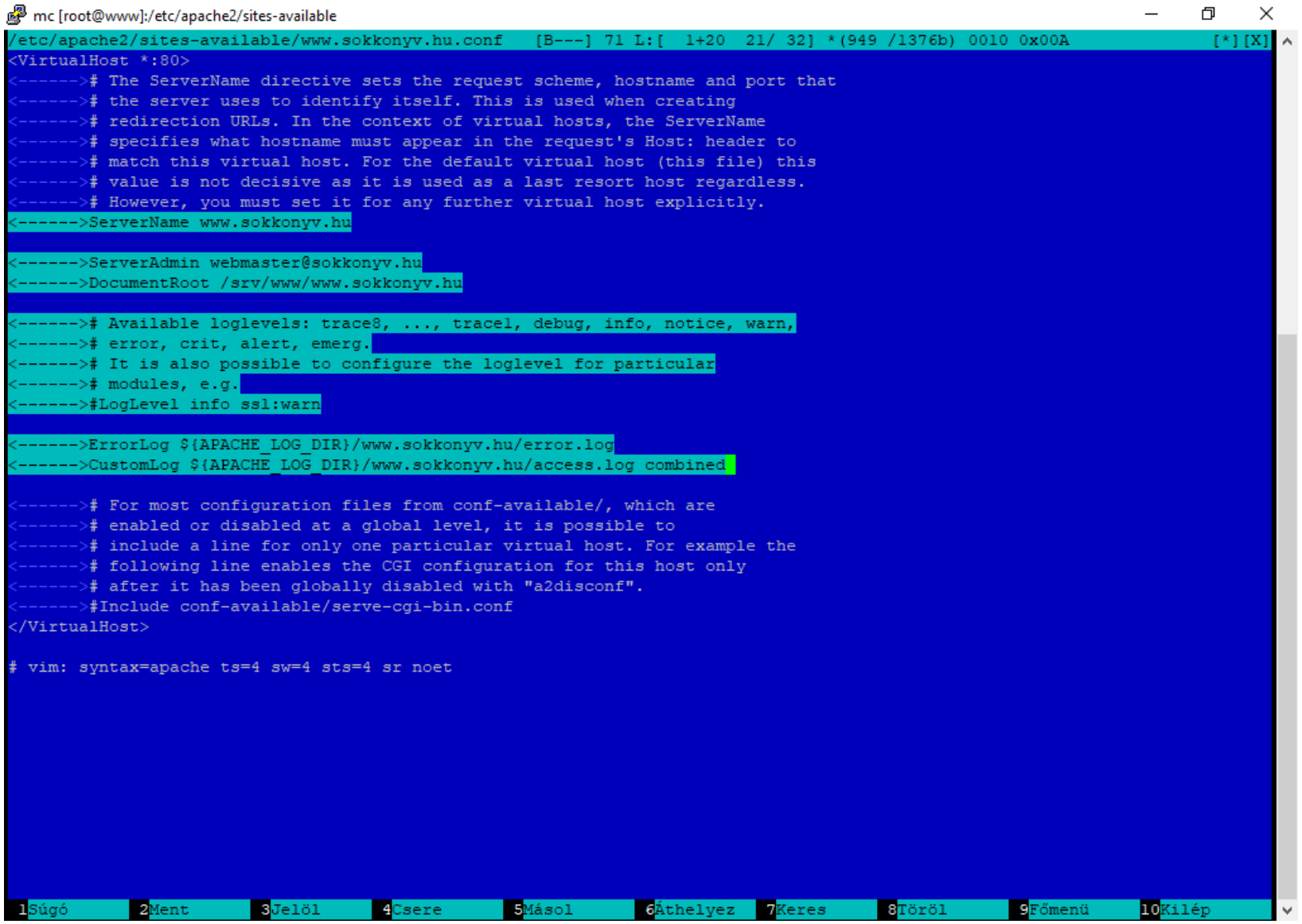

mc [root@www]:/etc/apache2
/etc/apache2/apache2.conf [B---] 12 L:[148+32 180/228] *(5837/7223b) 0010 0x00A [*][X]
Include list of ports to listen on
Include ports.conf
Sets the default security model of the Apache2 HTTPD server. It does
not allow access to the root filesystem outside of /usr/share and /var/www.
The former is used by web applications packaged in Debian,
the latter may be used for local directories served by the web server. If
your system is serving content from a sub-directory in /srv you must allow
access here, or in any related virtual host.
<Directory />
<------>Options FollowSymLinks
<------>AllowOverride None
<------>Require all denied
</Directory>
<Directory /usr/share>
<------>AllowOverride None
<------>Require all granted
</Directory>
<Directory /var/www/>
<------>Options Indexes FollowSymLinks
<------>AllowOverride None
<------>Require all granted
</Directory>
<Directory /srv/www/>
<------>Options Indexes FollowSymLinks
<------>AllowOverride None
<------>Require all granted
</Directory>
AccessFileName: The name of the file to look for in each directory
for additional configuration directives. See also the AllowOverride
directive.
#
AccessFileName .htaccess
1Súgó 2Ment 3Jelöl 4Csere 5Másol 6Áthelyez 7Keres 8Töröl 9Főmenü 10Kilép

Apache virtualhost

```
# cp /etc/apache2/sites-available/000-default.conf /etc/apache2/sites-available/www.sokkonyv.hu.conf

# mcedit www.sokkonyv.hu.conf
```

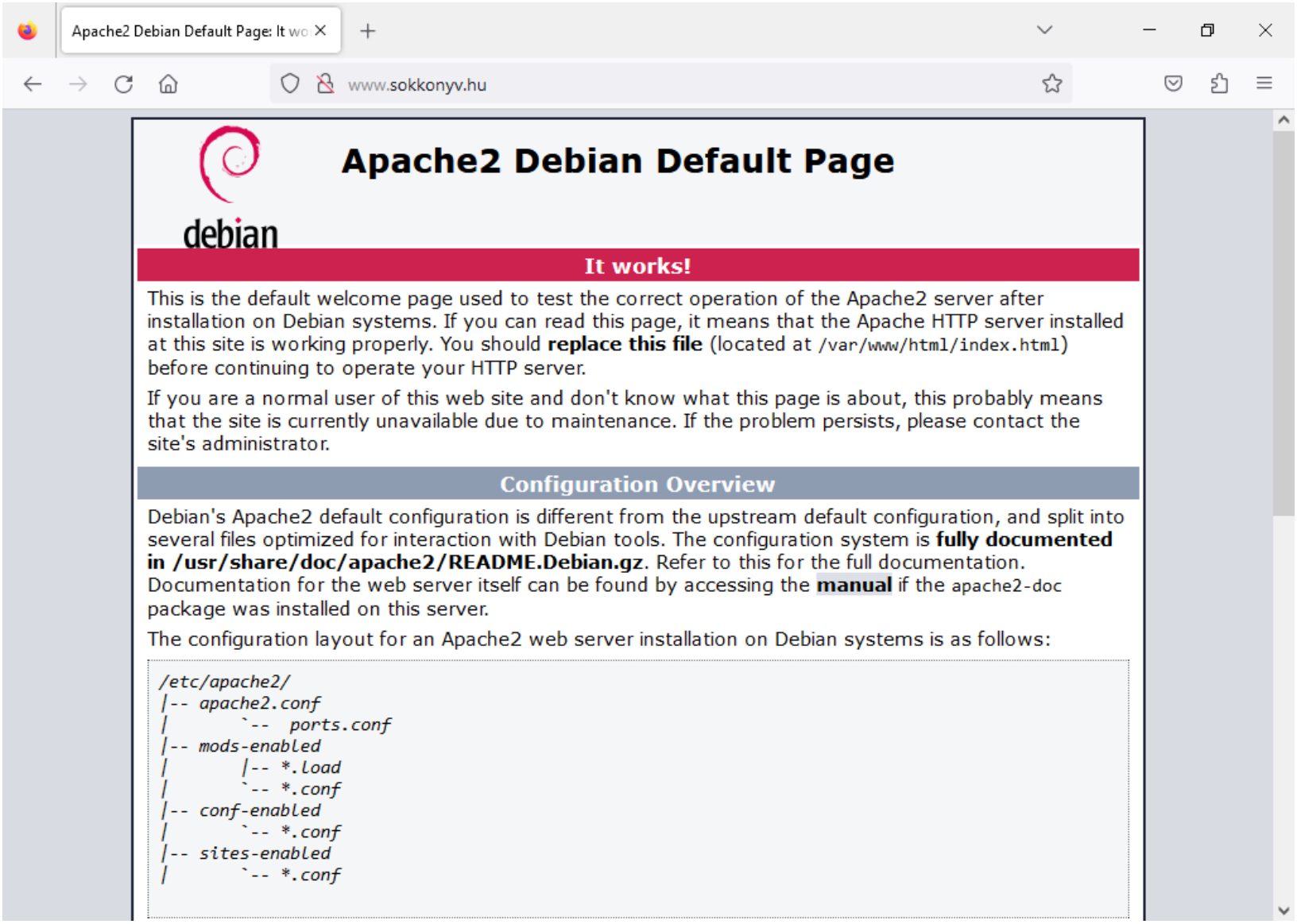
www.sokkonyv.hu.conf

```
…
ServerName www.sokkonyv.hu

ServerAdmin webmaster@sokkonyv.hu
DocumentRoot /srv/www/www.sokkonyv.hu
…
ErrorLog ${APACHE_LOG_DIR}/www.sokkonyv.hu/error.log
CustomLog
${APACHE_LOG_DIR}/www.sokkonyv.hu/access.log combined
…
```


mc [root@www]:/etc/apache2/sites-available
/etc/apache2/sites-available/www.sokkonyv.hu.conf [B---] 71 L:[1+20 21/ 32] *(949 /1376b) 0010 0x00A [*][X]
<VirtualHost *:80>
<------># The ServerName directive sets the request scheme, hostname and port that
<------># the server uses to identify itself. This is used when creating
<------># redirection URLs. In the context of virtual hosts, the ServerName
<------># specifies what hostname must appear in the request's Host: header to
<------># match this virtual host. For the default virtual host (this file) this
<------># value is not decisive as it is used as a last resort host regardless.
<------># However, you must set it for any further virtual host explicitly.
<------>ServerName www.sokkonyv.hu
<------>ServerAdmin webmaster@sokkonyv.hu
<------>DocumentRoot /srv/www/www.sokkonyv.hu
<------># Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
<------># error, crit, alert, emerg.
<------># It is also possible to configure the loglevel for particular
<------># modules, e.g.
<------>#LogLevel info ssl:warn
<------>ErrorLog ${APACHE_LOG_DIR}/www.sokkonyv.hu/error.log
<------>CustomLog ${APACHE_LOG_DIR}/www.sokkonyv.hu/access.log combined
<------># For most configuration files from conf-available/, which are
<------># enabled or disabled at a global level, it is possible to
<------># include a line for only one particular virtual host. For example the
<------># following line enables the CGI configuration for this host only
<------># after it has been globally disabled with "a2disconf".
<------>#Include conf-available/serve-cgi-bin.conf
</VirtualHost>
vim: syntax=apache ts=4 sw=4 sts=4 sr noet
1Súgó 2Ment 3Jelöl 4Csere 5Másol 6Áthelyez 7Keres 8Töröl 9Főmenü 10Kilép

Apache virtualhost

```
# mkdir
/var/log/apache2/www.sokkonyv.hu

# a2dissite 000-default

# a2ensite www.sokkonyv.hu

# systemctl reload apache2
```

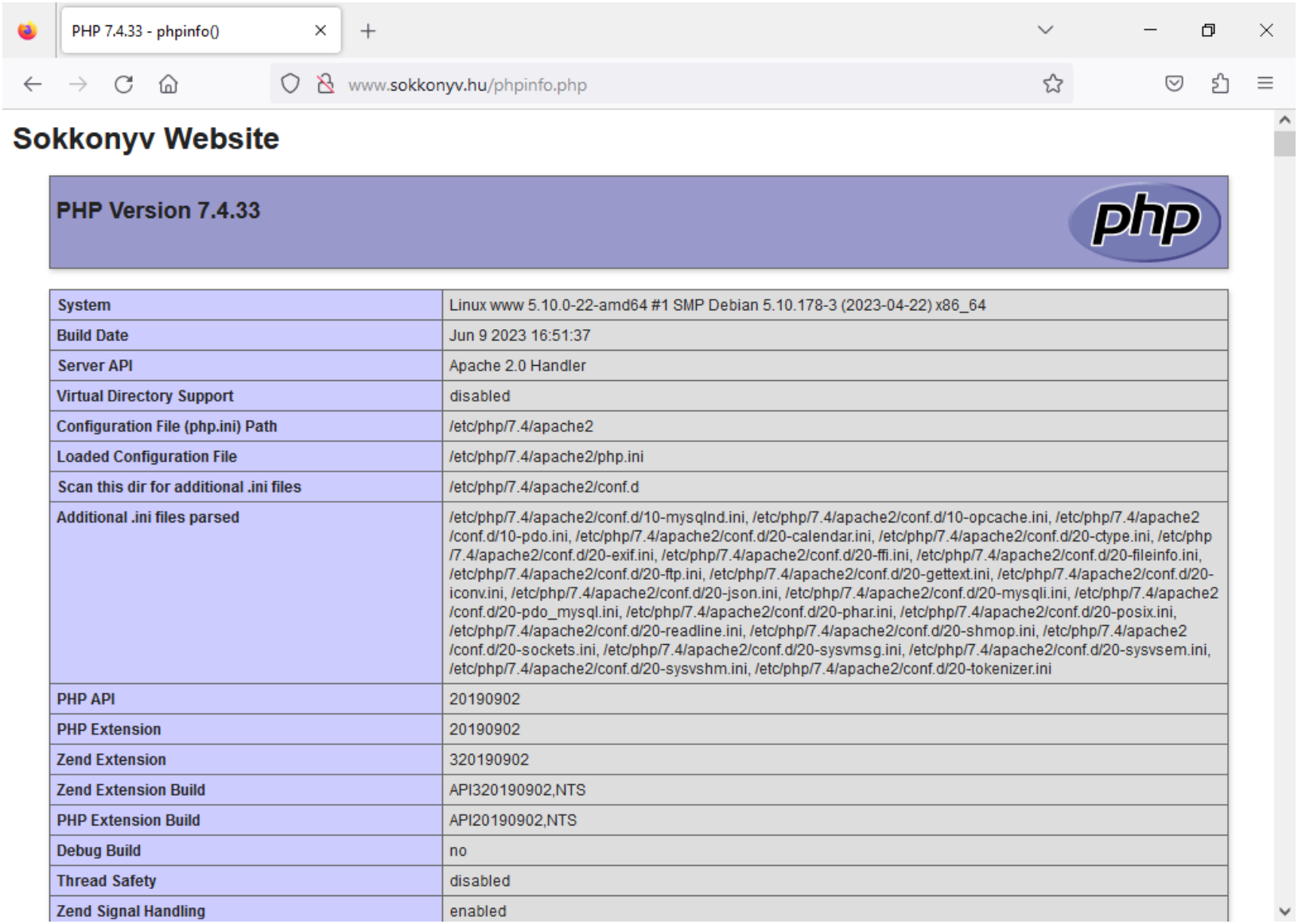

Apache2 Debian Default Page: It wo
www.sokkonyv.hu
Apache2 Debian Default Page
debian
It works!
This is the default welcome page used to test the correct operation of the Apache2 server after installation on Debian systems. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should replace this file (located at /var/www/html/index.html) before continuing to operate your HTTP server.
If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.
Configuration Overview
Debian's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Debian tools. The configuration system is fully documented in /usr/share/doc/apache2/README.Debian.gz. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the manual if the apache2-doc package was installed on this server.
The configuration layout for an Apache2 web server installation on Debian systems is as follows:
/etc/apache2/
|-- apache2.conf
| `-- ports.conf
|-- mods-enabled
| |-- *.load
| `-- *.conf
|-- conf-enabled
| `-- *.conf
|-- sites-enabled
| `-- *.conf

PHP: Hypertext Preprocessor

```
# apt-get install php php-common

# php –v

# a2enmod php7.*

# systemctl restart apache2

# mcedit
/srv/www/www.sokkonyv.hu/phpinfo.php
```

phpinfo.php

```
<H1>Sokkonyv Website</H1>
<?php
phpinfo();
?>
```



System	Linux www 5.10.0-22-amd64 #1 SMP Debian 5.10.178-3 (2023-04-22) x86_64
Build Date	Jun 9 2023 16:51:37
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/7.4/apache2
Loaded Configuration File	/etc/php/7.4/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/7.4/apache2/conf.d
Additional .ini files parsed	/etc/php/7.4/apache2/conf.d/10-mysqlnd.ini, /etc/php/7.4/apache2/conf.d/10-opcache.ini, /etc/php/7.4/apache2/conf.d/10-pdo.ini, /etc/php/7.4/apache2/conf.d/20-calendar.ini, /etc/php/7.4/apache2/conf.d/20-ctype.ini, /etc/php/7.4/apache2/conf.d/20-exif.ini, /etc/php/7.4/apache2/conf.d/20-ffi.ini, /etc/php/7.4/apache2/conf.d/20-fileinfo.ini, /etc/php/7.4/apache2/conf.d/20-ftp.ini, /etc/php/7.4/apache2/conf.d/20-gettext.ini, /etc/php/7.4/apache2/conf.d/20-iconv.ini, /etc/php/7.4/apache2/conf.d/20-json.ini, /etc/php/7.4/apache2/conf.d/20-mysqli.ini, /etc/php/7.4/apache2/conf.d/20-pdo_mysql.ini, /etc/php/7.4/apache2/conf.d/20-phar.ini, /etc/php/7.4/apache2/conf.d/20-posix.ini, /etc/php/7.4/apache2/conf.d/20-readline.ini, /etc/php/7.4/apache2/conf.d/20-shmop.ini, /etc/php/7.4/apache2/conf.d/20-sockets.ini, /etc/php/7.4/apache2/conf.d/20-sysvmsg.ini, /etc/php/7.4/apache2/conf.d/20-sysvsem.ini, /etc/php/7.4/apache2/conf.d/20-sysvshm.ini, /etc/php/7.4/apache2/conf.d/20-tokenizer.ini
PHP API	20190902
PHP Extension	20190902
Zend Extension	320190902
Zend Extension Build	API320190902,NTS
PHP Extension Build	API20190902,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled

MariaDB (Database Server)

```
# apt-get install mariadb-server
# apt-get install php-mysql
# systemctl restart apache2
# mysql_secure_installation
```

```
(Az első kérdésnél csak "Enter"-t kell ütni!)
...
Enter current password for root (enter for none):
OK, successfully used password, moving on...
...
```

```
(A következő két kérdésnél "n"-t, majd
"Enter"-t kell ütni!)
Switch to unix_socket authentication
[Y/n] n
 ... skipping.
...
Change the root password? [Y/n] n
 ... skipping.
...
```

```
(Az utolsó négy kérdésnél csak
"Enter"-t kell ütni!)
Remove anonymous users? [Y/n]
 ... Success!
...
Disallow root login remotely? [Y/n]
 ... Success!
...
```

```
Remove test database and access to it?
[Y/n]
 - Dropping test database...
 ... Success!
 - Removing privileges on test
database...
 ... Success!
...
Reload privilege tables now? [Y/n]
 ... Success!
...
Thanks for using MariaDB!
```

MariaDB

```
# mariadb
```

```
MariaDB [(none)]> CREATE DATABASE konyvtar;

MariaDB [(none)]> CREATE USER 'felhasznalo'@'%'
IDENTIFIED BY 'jelszo’;

MariaDB [(none)]> GRANT ALL ON konyvtar.* TO
'felhasznalo'@'%’;

MariaDB [(none)]> FLUSH PRIVILEGES;

MariaDB [(none)]> exit
```

MariaDB

```
# mariadb -u felhasznalo –p

(Be kell írni a "jelszo"-t, majd
"Enter"-t kell ütni!)

Enter password:
```

```
MariaDB [(none)]> SHOW DATABASES;

+--------------------+
| Database           |
+--------------------+
| information_schema |
| konyvtar           |
+--------------------+
2 rows in set (0,000 sec)
```

```
MariaDB [(none)]> CREATE TABLE konyvtar.konyvek
(azonosito INT AUTO_INCREMENT, szerzo
VARCHAR(255), cim VARCHAR(255), PRIMARY
KEY(azonosito));

MariaDB [(none)]> INSERT INTO konyvtar.konyvek
(szerzo, cim) VALUES ("Fekete István",
"Tüskevár");

MariaDB [(none)]> INSERT INTO konyvtar.konyvek
(szerzo, cim) VALUES ("Molnár Ferenc", "A Pál
utcai fiúk");

MariaDB [(none)]> INSERT INTO konyvtar.konyvek
(szerzo, cim) VALUES ("Rejtő Jenő", "A három
testőr Afrikában");

MariaDB [(none)]> INSERT INTO konyvtar.konyvek
(szerzo, cim) VALUES ("Rideg Sándor", "Indul a
bakterház");
```

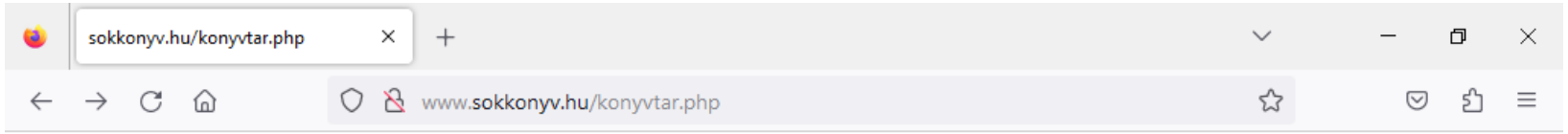
```
MariaDB [(none)]> SELECT * FROM
konyvtar.konyvek;

+-----------+----------------+-----------------------------+
| azonosito | szerzo         | cim                         |
+-----------+----------------+-----------------------------+
|         1 | Fekete István  | Tüskevár                    |
|         2 | Molnár Ferenc  | A Pál utcai fiúk            |
|         3 | Rejtő Jenő     | A három testőr Afrikában    |
|         4 | Rideg Sándor   | Indul a bakterház           |
+-----------+----------------+-----------------------------+
4 rows in set (0,000 sec)

MariaDB [(none)]> exit
```

PHP Database Connection and Query

```
# mcedit
/srv/www/www.sokkonyv.hu/konyvtar.php
```

konyvtar.php

```
<H1>Sokkonyv Website</H1>
<?php
$user = "felhasznalo";
$password = "jelszo";
$database = "konyvtar";
$table = "konyvek";

try {
  $db = new PDO("mysql:host=localhost;dbname=$database",
$user, $password);
  echo "<h2>Könyvek</h2><ol>";
  foreach($db->query("SELECT szerzo, cim FROM $table")
as $row) {
    echo "<li>" . $row['szerzo'] . ": " . $row['cim'] .
"</li>";
  }
  echo "</ol>";
} catch (PDOException $e) {
    print "Error!: " . $e->getMessage() . "<br/>";
    die();
}
?>
```



Sokkönyv Website

Könyvek

1. Fekete István: Tüskevár
2. Molnár Ferenc: A Pál utcai fiúk
3. Rejtő Jenő: A három testőr Afrikában
4. Rideg Sándor: Indul a bakterház

Csomagfüggőség és szerkesztés

Naplózás

Verziókezelő rendszerek

- Központosított
- Elosztott

- Nyitott
- Zárt

Megvalósítások

- Nyitott, központosított
  - SVN
  - CVS
- Nyitott, elosztott
  - Git
  - Bazar

Megvalósítások

- Zárt, központosított
  - Perforce
  - Razor
- Zárt, elosztott
  - BitKeeper
  - Code Co-Op

Git szerverek

- GitHub
- Bitbucket

Köszönöm a figyelmet!

3. Adatbázis-alapú keretrendszerek Kliens és szerver oldali programozást igénylő webes alkalmazások tervezése, fejlesztése, tesztelése és dokumentálása

Development frameworks (Fejlesztői keretrendszerek)

- Front-end
  - A webhely (alkalmazás) felhasználók számára látható része
  - Kliens oldal
  - CSS, HTML, JavaScript, Jquery
  - Angular, BootStrap, Ember, React, Vue

- Back-end
  - Webhely (alkalmazás) háttérben való működése
  - Szerver oldal
  - JavaScript, PHP, Python, Ruby, .NET
  - ASP.NET Core, Django, Express, Ruby On Rails, Spring

A keretrendszer architektúrái

- MVC (Model-view-controller, Modell–nézet–vezérlő)
- Push-based (Művelet-alapú) vs pull-based (Komponens-alapú)
- Three-tier organization (Háromszintű szervezet)

Front-end

- Angular by Google (JavaScript, Netflix)
- BootStrap (CSS, JavaScript, Spotify)
- Ember (JavaScript, LinkedIn)
- React by Facebook (JavaScript, Facebook, Instagram)
- Vue (JavaScript, Statamic)

Back-end

- ASP.NET by Microsoft (C#, StackOverflow)
- Django (Python, Pinterest, Instagram)
- Express (JavaScript, Myspace)
- Ruby on Rails (Ruby, Github)
- Spring (Java, Mascus)

Köszönöm a figyelmet!

4. Csoportok kialakítása, projektek meghatározása
A szoftverfejlesztéshez szükséges technológiák, hardver és szoftver eszközök kiválasztása

Köszönöm a figyelmet!