

МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

Федеральное государственное автономное образовательное учреждение

высшего образования

«КРЫМСКИЙ ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ им. В. И. ВЕРНАДСКОГО»

ФИЗИКО-ТЕХНИЧЕСКИЙ ИНСТИТУТ

Кафедра компьютерной инженерии и моделирования

Apache + PHP

Отчет по лабораторной работе 3

по дисциплине «**Системное администрирование**»

студента 3 курса группы ИВТ-б-о-202

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Ход работы

Цель работы:

Познакомиться с основами установки ОС Linux, а также подготовить базу для выполнения следующих лабораторных и практических занятий

Порядок выполнения работы:

Скачивание утилит

```
[apache@aquia httpd-2.4.56]$ sudo pacman -S make
resolving dependencies...
looking for conflicting packages...

Packages (3) gc-8.2.2-1  guile-3.0.9-1  make-4.4.1-2

Total Download Size:   8.04 MiB
Total Installed Size:  55.40 MiB

:: Proceed with installation? [Y/n] y
:: Retrieving packages...
guile-3.0.9-1-x86_64      8.1 MiB   3.40 MiB/s   00:02 [#####] 100%
make-4.4.1-2-x86_64     523.8 KiB  3.93 MiB/s   00:00 [#####] 100%
gc-8.2.2-1-x86_64      233.2 KiB 1274 KiB/s   00:00 [#####] 100%
Total (3/3)              8.8 MiB   3.03 MiB/s   00:03 [#####] 100%
(3/3) checking keys in keyring
(3/3) checking package integrity
(3/3) loading package files
(3/3) checking for file conflicts
(3/3) checking available disk space
:: Processing package changes...
(1/3) installing gc                                           [#####] 100%
(2/3) installing guile                                       [#####] 100%
(3/3) installing make                                         [#####] 100%
:: Running post-transaction hooks...
(1/1) Arming ConditionNeedsUpdate...
[apache@aquia httpd-2.4.56]$ _
```

```
[apache@aquia httpd-2.4.56]$ sudo pacman -S apr
resolving dependencies...
looking for conflicting packages...

Packages (1) apr-1.7.2-2

Total Download Size:   0.27 MiB
Total Installed Size:  1.16 MiB

:: Proceed with installation? [Y/n] y
:: Retrieving packages...
apr-1.7.2-2-x86_64      279.6 KiB   528 KiB/s   00:01 [#####] 100%
(1/1) checking keys in keyring
(1/1) checking package integrity
(1/1) loading package files
(1/1) checking for file conflicts
(1/1) checking available disk space
:: Processing package changes...
(1/1) installing apr                                           [#####] 100%
:: Running post-transaction hooks...
(1/1) Arming ConditionNeedsUpdate...
[apache@aquia httpd-2.4.56]$
```

```

[lapche@aqua httpd-2.4.56]$ sudo pacman -S apr-util
resolving dependencies...
looking for conflicting packages...

Packages (1) apr-util-1.6.3-1

Total Download Size: 0.17 MiB
Total Installed Size: 0.67 MiB

:: Proceed with installation? [Y/n] y
:: Retrieving packages...
apr-util-1.6.3-1-x86_64 170.2 KiB 352 KiB/s 00:00 [#####] 100%
(1/1) checking keys in keyring [#####] 100%
(1/1) checking package integrity [#####] 100%
(1/1) loading package files [#####] 100%
(1/1) checking for file conflicts [#####] 100%
(1/1) checking available disk space [#####] 100%
:: Processing package changes...
(1/1) installing apr-util [#####] 100%
Optional dependencies for apr-util
gdbm: enable gdbm support [installed]
libldap: enable ldap support [installed]
unixodbc: enable odbc support
mariadb-libs: enable mysql/mariadb support
postgresql-libs: enable postgres support
db: enable berkley db support
sqlite: enable sqlite support [installed]
nss: enable nss crypto support [installed]
openssl: enable openssl crypto support [installed]
:: Running post-transaction hooks...
(1/1) Arming ConditionNeedsUpdate...
[lapche@aqua httpd-2.4.56]$

```

```

[lapche@aqua httpd-2.4.56]$ sudo pacman -S base-devel
[sudol password for apache:
resolving dependencies...
looking for conflicting packages...

Packages (19) autoconf-2.71-4 automake-1.16.5-2 bison-3.8.2-5 db5.3-5.3.28-2 debugedit-5.0-5 fakeroot-1.31-2 flex-2.6.4-5 gcc-12.2.1-2 groff-1.2
libisl-0.25-1 libmpc-1.3.1-1 libtool-2.4.7+4+g1ec8fa28-2 m4-1.4.19-3 patch-2.7.6-9 perl-5.36.0-3 pkgconf-1.8.0-1 texinfo-7.0.2-2
which-2.21-6 base-devel-1-1

Total Download Size: 69.40 MiB
Total Installed Size: 273.45 MiB

:: Proceed with installation? [Y/n] y
:: Retrieving packages...
gcc-12.2.1-2-x86_64 21.8 MiB 9.99 MiB/s 00:02 [#####]
Total ( 0/19) 21.8 MiB 9.99 MiB/s 00:04 [#####]

```

```

[lapche@aqua httpd-2.4.56]$ sudo pacman -S db
resolving dependencies...
looking for conflicting packages...

Packages (1) db-6.2.32-1

Total Download Size: 1.33 MiB
Total Installed Size: 7.16 MiB

:: Proceed with installation? [Y/n] y
:: Retrieving packages...
db-6.2.32-1-x86_64 1360.3 KiB 1694 KiB/s 00:01 [#####]
(1/1) checking keys in keyring [#####]
(1/1) checking package integrity [#####]
(1/1) loading package files [#####]
(1/1) checking for file conflicts [#####]
(1/1) checking available disk space [#####]
:: Processing package changes...
(1/1) installing db [#####]
:: Running post-transaction hooks...
(1/1) Arming ConditionNeedsUpdate...
[lapche@aqua httpd-2.4.56]$ _

```

```

[apache@aqua httpd-2.4.56]$ sudo pacman -S gcc
warning: gcc-12.2.1-2 is up to date -- reinstalling
# resolving dependencies...
# looking for conflicting packages...

Packages (1) gcc-12.2.1-2

Total Installed Size: 171.25 MiB
Net Upgrade Size:      0.00 MiB

:: Proceed with installation? [Y/n] y
(1/1) checking keys in keyring [#####] 100%
(1/1) checking package integrity [#####] 100%
(1/1) loading package files [#####] 100%
(1/1) checking for file conflicts [#####] 100%
(1/1) checking available disk space [#####] 100%
:: Processing package changes...
(1/1) reinstalling gcc [#####] 100%
:: Running post-transaction hooks...
(1/2) Arming ConditionNeedsUpdate...
(2/2) Updating the info directory file...
[apache@aqua httpd-2.4.56]$ _

```

```

File Virtual Machine View Send Key
[apache@aqua install]$ pacman -S apache
error: you cannot perform this operation unless you are root.
[apache@aqua install]$ sudo pacman -S apache
# resolving dependencies...
# looking for conflicting packages...

Packages (1) apache-2.4.56-1

Total Download Size: 1.69 MiB
Total Installed Size: 6.48 MiB

:: Proceed with installation? [Y/n] y
:: Retrieving packages...
apache-2.4.56-1-x86_64 1726.9 KiB 858 KiB/s 00:02 [#####]
(1/1) checking keys in keyring [#####]
(1/1) checking package integrity [#####]
(1/1) loading package files [#####]
(1/1) checking for file conflicts [#####]
(1/1) checking available disk space [#####]
:: Processing package changes...
(1/1) installing apache [#####]
Optional dependencies for apache
lua: for mod_lua module
libxml2: for mod_proxy_html, mod_xml2enc modules [installed]
curl: for mod_md module [installed]
jansson: for mod_md module [installed]
brotli: for mod_brotli module [installed]
uwsgi: for mod_proxy_uwsgi module
lynx: apachectl status
perl: for apxs and dbmmanage [installed]
:: Running post-transaction hooks...
(1/3) Reloading system manager configuration...
(2/3) Creating temporary files...
(3/3) Arming ConditionNeedsUpdate...
[apache@aqua install]$

```

```
[apache@aquaphp-8.2.4]$ sudo pacman -S mysql
:: There are 2 providers available for mysql:
:: Repository extra
   1) mariadb
:: Repository community
   2) percona-server

Enter a number (default=1): 1
resolving dependencies...
looking for conflicting packages...

Packages (5) jemalloc-1:5.3.0-1  liburing-2.3-1  mariadb-clients-10.11.2-1  mariadb-libs-10.11.2-1

Total Download Size:   36.86 MiB
Total Installed Size: 265.50 MiB

:: Proceed with installation? [Y/n] y_
```

```
[apache@aquaphp-8.2.4]$ sudo pacman -S postgresql
resolving dependencies...
looking for conflicting packages...

Packages (5) libedit-20221030_3.1-1  libxslt-1.1.37-2  llvm-libs-15.0.7-2  postgresql-15.1-1

Total Download Size:   49.85 MiB
Total Installed Size: 187.02 MiB

:: Proceed with installation? [Y/n] y
```

Установка исходных кодов apache

/var/cache/pacman/pkg/

```
[root@aqua pkg]# pacman -U https://www.apache.org/dist/httpd/httpd-2.4.56.tar.gz
:: Retrieving packages...
  alpmtmp.ESKTFM                               9.3 MiB 1407 KiB/s
error: failed retrieving file 'httpd-2.4.56.tar.gz.sig' from www.apache.org : The requeste
warning: failed to retrieve some files
[root@aqua pkg]# ls | grep http
httpd-2.4.56.tar.gz
libnghttp2-1.52.0-1-x86_64.pkg.tar.zst
libnghttp2-1.52.0-1-x86_64.pkg.tar.zst.sig
[root@aqua pkg]#
```

```
gzip -d httpd-2_0_NW.tar.gz
tar xvf httpd-2_0_NW.tar
```

```
httpd-2.4.56/test/pyhttpd/htdocs/test1/006/header.html
httpd-2.4.56/test/pyhttpd/htdocs/test1/007/007.py
httpd-2.4.56/test/pyhttpd/mod_aptest/mod_aptest.c
[root@aqua src]# ls
httpd-2.4.56 httpd-2.4.56.tar
[root@aqua src]#
```

```
[apache@aqua ~]# cd /var/cache/pacman/pkg/
[apache@aqua pkg]# ls | grep apr
apr-1.7.2-2-x86_64.pkg.tar.zst
apr-1.7.2-2-x86_64.pkg.tar.zst.sig
apr-util-1.6.3-1-x86_64.pkg.tar.zst
apr-util-1.6.3-1-x86_64.pkg.tar.zst.sig
[apache@aqua pkg]# sudo cp apr-1.7.2-2-x86_64.pkg.tar.zst /usr/src/httpd-2.4.56/src/lib/apr

We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:

    #1) Respect the privacy of others.
    #2) Think before you type.
    #3) With great power comes great responsibility.

For security reasons, the password you type will not be visible.

[sudo] password for apache:
[apache@aqua pkg]# sudo cp apr-util-1.6.3-1-x86_64.pkg.tar.zst /usr/src/httpd-2.4.56/src/lib/apr-util
[apache@aqua pkg]# ls /usr/src/httpd-2.4.56/src/lib/
Makefile.in apr apr-util
[apache@aqua pkg]#
```

Создание группы пользователя и папки

```
[root@aqua ~]# cd /home
[root@aqua home]# ls
[root@aqua home]# groupadd apache
[root@aqua home]# useradd -m -g apache apache
[root@aqua home]# passwd apache
New password:
Retype new password:
Sorry, passwords do not match.
passwd: Failed preliminary check by password service
passwd: password unchanged
[root@aqua home]# passwd apache
New password:
Retype new password:
passwd: password updated successfully
[root@aqua home]# ls
apache
[root@aqua home]# cd apache/
[root@aqua apache]# mkdir install
[root@aqua apache]# mkdir 3rdparty
[root@aqua apache]# _
```

Конфигурация

```
[apache@aqua httpd-2.4.56]# sudo CC="gcc" CFLAGS="-O2" \
> ./configure --prefix=/home/apache/install/ \
> --with-apxs=/usr/bin/apxs \
> --enable-mpms-shared="all" \
> --enable-so \
> --enable-foo \
> --enable-mods-shared="all" \
> --enable-mods-shared="reallyall" \
> --enable-load-modules \
> --enable-rewrite=shared \
> --enable-speling=shared
```

```
config.status: creating test/pyhttpd/config.ini
config.status: creating docs/conf/httpd.conf
config.status: creating docs/conf/extra/httpd-autoindex.conf
config.status: creating docs/conf/extra/httpd-dav.conf
config.status: creating docs/conf/extra/httpd-default.conf
config.status: creating docs/conf/extra/httpd-info.conf
config.status: creating docs/conf/extra/httpd-languages.conf
config.status: creating docs/conf/extra/httpd-manual.conf
config.status: creating docs/conf/extra/httpd-mpm.conf
config.status: creating docs/conf/extra/httpd-multilang-errordoc.conf
config.status: creating docs/conf/extra/httpd-ssl.conf
config.status: creating docs/conf/extra/httpd-userdir.conf
config.status: creating docs/conf/extra/httpd-uhhosts.conf
config.status: creating docs/conf/extra/proxy-html.conf
config.status: creating include/ap_config_layout.h
config.status: creating support/apxs
config.status: creating support/apachectl
config.status: creating support/dbmmanage
config.status: creating support/envvars-std
config.status: creating support/log_server_status
config.status: creating support/logresolve.pl
config.status: creating support/phf_abuse_log.cgi
config.status: creating support/split-logfile
config.status: creating build/rules.mk
config.status: creating build/pkg/pkginfo
config.status: creating build/config_vars.sh
config.status: creating include/ap_config_auto.h
config.status: include/ap_config_auto.h is unchanged
config.status: executing default commands
configure: summary of build options:
```

```
Server Version: 2.4.56
Install prefix: /home/apache/install/
C compiler:      gcc
CFLAGS:          -O2
CPPFLAGS:        -DLINUX -D_REENTRANT -D_GNU_SOURCE
LDFLAGS:         -L/usr/lib
LIBS:
C preprocessor:  gcc -E
```


Сборка

```
[apache@aquas httpd-2.4.56]$ sudo make _
```

```
make[4]: Leaving directory '/usr/src/httpd-2.4.56/modules/mappers'
make[3]: Leaving directory '/usr/src/httpd-2.4.56/modules/mappers'
make[2]: Leaving directory '/usr/src/httpd-2.4.56/modules'
make[2]: Entering directory '/usr/src/httpd-2.4.56/support'
make[2]: Leaving directory '/usr/src/httpd-2.4.56/support'

cd support && make suexec
make[2]: Entering directory '/usr/src/httpd-2.4.56/support'
/usr/share/apr-1/build/libtool --silent --mode=compile gcc -O2 -fPIE
-2.4.56/include -I/usr/include/apr-1 -I/usr/include -I/usr/src/httpd-2
re -I/usr/src/httpd-2.4.56/modules/database -I/usr/src/httpd-2.4.56/mod
rc/httpd-2.4.56/modules/loggers -I/usr/src/httpd-2.4.56/modules/lua -I
-2.4.56/modules/session -I/usr/src/httpd-2.4.56/modules/ssl -I/usr/src
md -I/usr/src/httpd-2.4.56/modules/arch/unix -I/usr/src/httpd-2.4.56/m
/mappers -prefer-non-pic -static -c suexec.c && touch suexec.lo
/usr/share/apr-1/build/libtool --silent --mode=link gcc -O2 -fPIE -L
make[2]: Leaving directory '/usr/src/httpd-2.4.56/support'
make[1]: Leaving directory '/usr/src/httpd-2.4.56'
[root@agua httpd-2.4.56]#
```

Установка

```
[apache@aquia httpd-2.4.56]$ sudo make install
```

```
cd support && make suexec
make[2]: Entering directory '/usr/src/httpd-2.4.56/support'
make[2]: 'suexec' is up to date.
make[2]: Leaving directory '/usr/src/httpd-2.4.56/support'
Installing configuration files
mkdir /home/apache/install/conf
mkdir /home/apache/install/conf/extra
mkdir /home/apache/install/conf/original
mkdir /home/apache/install/conf/original/extra
Installing HTML documents
mkdir /home/apache/install/htdocs
Installing error documents
mkdir /home/apache/install/error
Installing icons
mkdir /home/apache/install/icons
mkdir /home/apache/install/logs
Installing CGIs
mkdir /home/apache/install/cgi-bin
Installing header files
mkdir /home/apache/install/include
Installing build system files
mkdir /home/apache/install/build
Installing man pages and online manual
mkdir /home/apache/install/man
mkdir /home/apache/install/man/man1
mkdir /home/apache/install/man/man8
mkdir /home/apache/install/manual
make[1]: Leaving directory '/usr/src/httpd-2.4.56'
[root@aquia httpd-2.4.56]#
```

Настройка

<файл установки>/conf/httpd.conf

```
ServerRoot "/home/apache/install/"

ServerAdmin First_apache@localhost
ServerName www.first_apache.com:80

# Mutex default:logs

<VirtualHost *:80>
    DocumentRoot "/home/apache/install/htdocs"
</VirtualHost>
```

```
<IfModule unixd_module>
#
#_
#User daemon
#Group daemon
    User apache
    Group apache
</IfModule>
```

```
<Directory />
    AllowOverride all
    Require all granted
    Options all
</Directory>

<Directory "/home/apache/install/htdocs">
    #
    #   Indexes Includes FollowSymLinks SymLinksifOwn
    #
    Options Indexes FollowSymLinks
    AllowOverride all
    Require all granted
</Directory>
```

Остальное всё по умолчанию

Страница сайта

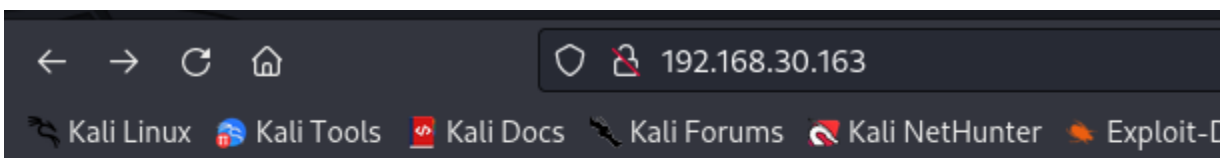
Включаем сервер

```
[apache@aquacnfl]$ sudo /home/apache/install/bin/apachectl stop
[sudo] password for apache:
httpd (no pid file) not running
[apache@aquacnfl]$ sudo /home/apache/install/bin/apachectl start
[apache@aquacnfl]$
```

Смотрим ip адресс

```
[apache@aquacnfl]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp1s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state
    link/ether 52:54:00:8b:39:de brd ff:ff:ff:ff:ff:ff
    inet 192.168.30.163/24 brd 192.168.30.255 scope global dynamic noprefi
        valid_lft 3132sec preferred_lft 3132sec
    inet6 fe80::fab1:61d8:316c:bcc9/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
[apache@aquacnfl]$
```

Вводим его в браузере



It works!

PHP

Скачивание

```
error: you cannot perform this operation unless you are root.  
[apache@aquia pkg1]$ sudo pacman -U https://www.php.net/distributions/php-8.2.4.tar.bz2  
[sudo] password for apache:  
:: Retrieving packages...  
  alpmtp.sdiFwK                               14.5 MiB  1819 KiB/s 00:08 [E  
error: failed retrieving file 'php-8.2.4.tar.bz2.sig' from www.php.net : The requested URL returned  
warning: failed to retrieve some files  
[apache@aquia pkg1]$ ls | grep php  
php-8.2.4.tar.bz2  
[apache@aquia pkg1]$ _
```

Распаковка

```
[apache@aquia src1]$ sudo tar -xjf /var/cache/pacman/pkg/php-8.2.4.tar.bz2  
[apache@aquia src1]$ ls  
httpd-2.4.56  httpd-2.4.56.tar  php-8.2.4  
[apache@aquia src1]$ cd php-8.2.4/  
[apache@aquia php-8.2.4]$ ls  
CODING_STANDARDS.md  LICENSE  README.md  UPGRADING_INTERNALS  b  
CONTRIBUTING.md    NEWS    TSRM      Zend              b  
EXTENSIONS          README.REDIST.BINS  UPGRADING  appveyor          b  
[apache@aquia php-8.2.4]$ _
```

Конфигурация

```
[apache@aquaphp-8.2.41]$ sudo \  
> ./configure --prefix=/home/apache/php/ \  
> --with-apxs2=/home/apache/install/bin/apxs \  
> --with-pdo-mysql \  
> --with-pgsql
```

Generating files

```
configure: patching main/php_config.h.in  
configure: creating ./config.status  
creating main/internal_functions.c  
creating main/internal_functions_cli.c  
config.status: creating main/build-defs.h  
config.status: creating scripts/phpize  
config.status: creating scripts/man1/phpize.1  
config.status: creating scripts/php-config  
config.status: creating scripts/man1/php-config.1  
config.status: creating sapi/cli/php.1  
config.status: creating sapi/phpdbg/phpdbg.1  
config.status: creating sapi/cgi/php-cgi.1  
config.status: creating ext/phar/phar.1  
config.status: creating ext/phar/phar.phar.1  
config.status: creating main/php_config.h  
config.status: executing default commands
```

+-----+ | License:

```
| This software is subject to the PHP License, available in this |  
| distribution in the file LICENSE. By continuing this installation |  
| process, you are bound by the terms of this license agreement. |  
| If you do not agree with the terms of this license, you must abort |  
| the installation process at this point. |  
+-----+
```

Thank you for using PHP.

Сборка

```
[apache@aquaphp-8.2.41$ sudo make
/bin/sh /usr/src/php-8.2.4/libtool --silent --preserve-dup-deps --tag CC --mode=compile cc -Iext/date/ -Iusr/src/php-8.2.4
de -Iusr/src/php-8.2.4/main -Iusr/src/php-8.2.4 -Iusr/src/php-8.2.4/ext/date/lib -Iusr/include/libxml2 -Iusr/src/php-8
-D_GNU_SOURCE -D_REENTRANT -pthread -fno-common -Wstrict-prototypes -Wformat-truncation -Wlogical-op -Wduplicated-cond -Wn
-aliasing -Wno-unused-parameter -Wno-sign-compare -g -O2 -fvisibility=hidden -pthread -Wimplicit-fallthrough=1 -DZTS -DZEND
-Iext/date/lib -DZEND_ENABLE_STATIC_TSRMLS_CACHE=1 -DHAVE_TIMELIB_CONFIG_H=1 -c /usr/src/php-8.2.4/ext/date/php_date.c -o e
e/php_date.dep -MT ext/date/php_date.lo
/bin/sh /usr/src/php-8.2.4/libtool --silent --preserve-dup-deps --tag CC --mode=compile cc -Iext/date/ -Iusr/src/php-8.2.4
de -Iusr/src/php-8.2.4/main -Iusr/src/php-8.2.4 -Iusr/src/php-8.2.4/ext/date/lib -Iusr/include/libxml2 -Iusr/src/php-8
-D_GNU_SOURCE -D_REENTRANT -pthread -fno-common -Wstrict-prototypes -Wformat-truncation -Wlogical-op -Wduplicated-cond -Wn
-aliasing -Wno-unused-parameter -Wno-sign-compare -g -O2 -fvisibility=hidden -pthread -Wimplicit-fallthrough=1 -DZTS -DZEND
-Iext/date/lib -DZEND_ENABLE_STATIC_TSRMLS_CACHE=1 -DHAVE_TIMELIB_CONFIG_H=1 -c /usr/src/php-8.2.4/ext/date/lib/astro.c -o
ate/lib/astro.dep -MT ext/date/lib/astro.lo

nd_signal.o Zend/zend_generators.o Zend/zend_virtual_cwd.o Zend/zend_ast.o Zend/zend_objects.o Zend/z
ault_classes.o Zend/zend_inheritance.o Zend/zend_smart_str.o Zend/zend_cpuinfo.o Zend/zend_gdb.o Zend
d/zend_fibers.o Zend/zend_atomic.o Zend/Optimizer/zend_optimizer.o Zend/Optimizer/pass1.o Zend/Optimi
izer/block_pass.o Zend/Optimizer/optimize_temp_vars_5.o Zend/Optimizer/nop_removal.o Zend/Optimizer/c
zend_dfg.o Zend/Optimizer/dfa_pass.o Zend/Optimizer/zend_ssa.o Zend/Optimizer/zend_inference.o Zend/O
Zend/Optimizer/sccp.o Zend/Optimizer/scdf.o Zend/Optimizer/dce.o Zend/Optimizer/escape_analysis.o Zen
internal_functions_cli.o main/fastcgi.o sapi/cgi/cgi_main.o -lpq -lrt -lrt -lm -lpthread -lxml2 -lsql
api/cgi/php-cgi
Generating phar.php
Generating phar.phar
PEAR package PHP_Archive not installed: generated phar will require PHP's phar extension be enabled.
clicommand.inc
invertedregexiterator.inc
phar.inc
directorytreeiterator.inc
pharcommand.inc
directorygraphiterator.inc

Build complete.
Don't forget to run 'make test'.

[apache@aquaphp-8.2.41$
```

Установка

```
You may have found a problem in PHP.
This report can be saved and used to open an issue on the bug tracker at
https://github.com/php/php-src/issues
This gives us a better understanding of PHP's behavior.
Do you want to save this report in a file? [Yn]: n
[apache@aquaphp-8.2.4]$ sudo make install
[sudo] password for apache:
Installing PHP SAPI module:      apache2handler
/usr/lib/httpd/build/instdso.sh SH_LIBTOOL='/usr/share/apr-1/build/libtool' libphp.la /usr/lib/httpd/modules/
libtool: install: install .libs/libphp.so /usr/lib/httpd/modules/libphp.so
libtool: install: install .libs/libphp.lai /usr/lib/httpd/modules/libphp.la
libtool: warning: remember to run 'libtool --finish /usr/src/php-8.2.4/libs'
chmod 755 /usr/lib/httpd/modules/libphp.so
[activating module `php' in /etc/httpd/conf/httpd.conf]
Installing shared extensions:    /home/apache/PHP/lib/php/extensions/no-debug-zts-20220829/
Installing PHP CLI binary:       /home/apache/PHP/bin/
Installing PHP CLI man page:     /home/apache/PHP/php/man/man1/
Installing phpdbg binary:       /home/apache/PHP/bin/
Installing phpdbg man page:     /home/apache/PHP/php/man/man1/
Installing PHP CGI binary:      /home/apache/PHP/bin/
Installing PHP CGI man page:    /home/apache/PHP/php/man/man1/
Installing build environment:    /home/apache/PHP/lib/php/build/
Installing header files:        /home/apache/PHP/include/php/
Installing helper programs:     /home/apache/PHP/bin/
  program: phize
  program: php-config
Installing man pages:          /home/apache/PHP/php/man/man1/
  page: phize.1
  page: php-config.1
/usr/src/php-8.2.4/build/shtool install -c ext/phar/phar.phar /home/apache/PHP/bin/phar.phar
ln -s -f phar.phar /home/apache/PHP/bin/phar
Installing PDO headers:         /home/apache/PHP/include/php/ext/pdo/
[apache@aquaphp-8.2.4]$ cd /home/apache/PHP/
[apache@aquaphp-8.2.4]$ ls
```

Копирование ini файла

```
[apache@aquaphp-8.2.4]$ cd /usr/src/php-8.2.4/
[apache@aquaphp-8.2.4]$ ls
CODING_STANDARDS.md  Makefile.fragments  TSRM          build          c
CONTRIBUTING.md    Makefile.objects    UPGRADING     buildconf      c
EXTENSIONS          NEWS               UPGRADING.INTERNAL buildconf.bat  c
LICENSE             README.REDIST.BINS  Zend          config.log     d
Makefile            README.md           appveyor      config.nice    e
[apache@aquaphp-8.2.4]$ cp php.ini-development /usr/local/lib/php.ini
cp: cannot create regular file '/usr/local/lib/php.ini': Permission denied
[apache@aquaphp-8.2.4]$ sudo cp php.ini-development /usr/local/lib/php.ini
[apache@aquaphp-8.2.4]$ cd /usr/local/lib/
[apache@aquaphp-8.2.4]$ ls
php.ini
[apache@aquaphp-8.2.4]$ _
```


Подключение модуля php

```
LoadModule php_module modules/libphp.so
AddHandler php-script .php
```

Настройка вывода php файла на сайт

```
#
<IfModule dir_module>
    DirectoryIndex index.php
</IfModule>
```

Содержимое php файла

```
[apache@aquas htdocs]$ ls
index.html index.php test.php
```

```
GNU nano 7.2 index.php
<?
phpinfo();
?>
```

Рестарт сервера


```
[apache@aquas htdocs]$ sudo /home/apache/install/bin/apachectl stop
[sudo] password for apache:
[apache@aquas htdocs]$ sudo /home/apache/install/bin/apachectl start
[apache@aquas htdocs]$
```

httpd поднялся

```
[apache@aqua htdocs]$ sudo systemctl status httpd
■ httpd.service - Apache Web Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disabled)
   Active: active (running) since Mon 2023-04-10 06:41:42 UTC; 2h 40min ago
     Main PID: 279 (httpd)
        Tasks: 82 (limit: 4684)
      Memory: 29.3M
         CPU: 633ms
    CGroup: /system.slice/httpd.service
            └─279 /usr/bin/httpd -k start -DFOREGROUND
              └─285 /usr/bin/httpd -k start -DFOREGROUND
                └─286 /usr/bin/httpd -k start -DFOREGROUND
                  └─287 /usr/bin/httpd -k start -DFOREGROUND

Apr 10 06:41:42 aqua systemd[1]: Started Apache Web Server.
Apr 10 06:41:43 aqua httpd[279]: AH00558: httpd: Could not reliably determine the server's
[apache@aqua htdocs]$
```

На сайте появилось содержимое

PHP Version 8.2.4	
	
System	Linux aqua 6.2.8-arch1-1 #1 SMP PREEMPT_DYNAMIC Wed, 22 Mar 2023 22:52:35 +0000 x86_64
Build Date	Mar 24 2023 15:29:44
Build System	Linux aqua 6.2.8-arch1-1 #1 SMP PREEMPT_DYNAMIC Wed, 22 Mar 2023 22:52:35 +0000 x86_64 GNU/Linux
Configure Command	'./configure' '--prefix=/home/apache/php/' '--with-apxs2=/home/apache/install/bin/apxs' '--with-pdo-mysql' '--with-pgsql'
Server API	Apache 2.0 Handler
Virtual Directory Support	enabled
Configuration File (php.ini) Path	/home/apache/php/lib
Loaded Configuration File	(none)
Scan this dir for additional .ini files	(none)
Additional .ini files parsed	(none)
PHP API	20220829
PHP Extension	20220829
Zend Extension	420220829
Zend Extension Build	API420220829,TS
PHP Extension Build	API20220829,TS
Debug Build	no
Thread Safety	enabled
Thread API	POSIX Threads
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled
IPv6 Support	enabled
DTrace Support	disabled
Registered PHP Streams	php, file, glob, data, http, ftp, phar
Registered Stream Socket Transports	tcp, udp, unix, udg
Registered Stream Filters	convert.iconv.*, string.rot13, string.toupper, string.tolower, convert.*, consumed, dechunk

Контрольные вопросы:

1. Как настроить запуск веб-сервера с учётными данными конкретного пользователя

```
<IfModule unixd_module>
#
#User daemon
#Group daemon
User apache
Group apache
</IfModule>
```

2. Какие этапы установки ПО из исходных кодов:

- Скачивание исходников при помощи `rsync -U` в `/var/cache/rsync/pkg`
- Распаковка при помощи `tar` (или других)
- Конфигурация файла `./configure`
- Сборка `make`
- Установка `make install`

3. Какая директория обычно используется для установки стороннего ПО в дистрибутивах Linux
`/usr/src`

4. Для чего используется опция конфигурации исходных кодов `PHP-with-apxs2`

Для работы с модулями

apxs is a tool for building and installing extension modules for the Apache HyperText Transfer Protocol (HTTP) server. This is achieved by building a dynamic shared object (DSO) from one or more source or object files which then can be loaded into the Apache server under runtime via the [LoadModule](#) directive from [mod_so](#).

`apxs` - это инструмент для создания и установки модулей расширения для сервера Apache HyperText Transfer Protocol (HTTP). Это достигается путем создания динамического разделяемого объекта (DSO) из одного или нескольких исходных или объектных файлов, которые затем могут быть загружены в сервер Apache во время выполнения с помощью директивы `LoadModule` из `mod_so`.