Индивидуальный проект этап 2

Информационная безопасность

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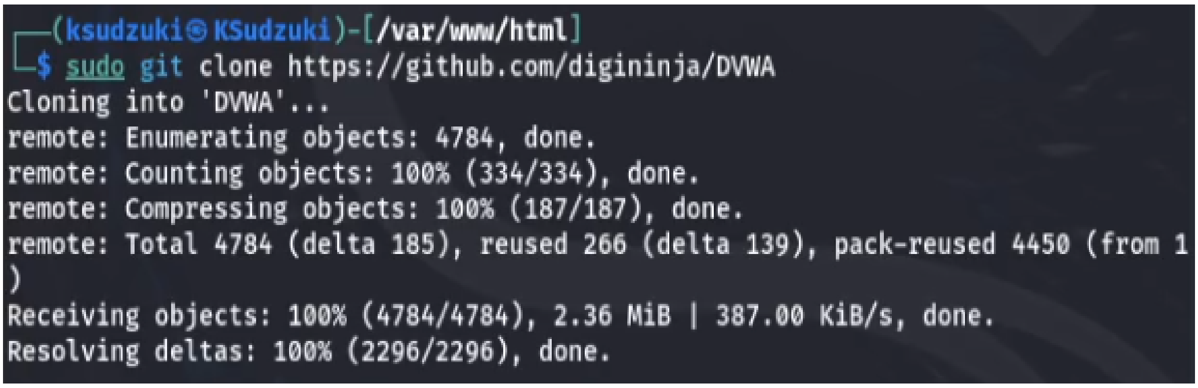
Цель работы

- Научиться основным способам тестирования веб приложений
- Установить и настроить DVWA на Kali linux

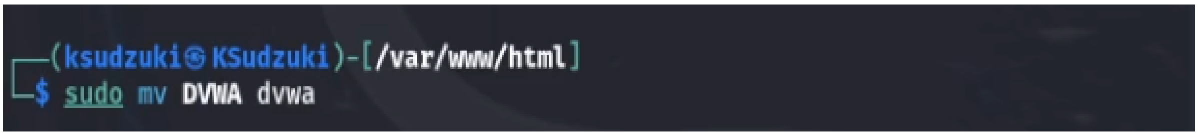
Выполнение лабораторной работы

1. Клонировал DVWA с https://github.com/digininja/DVWA



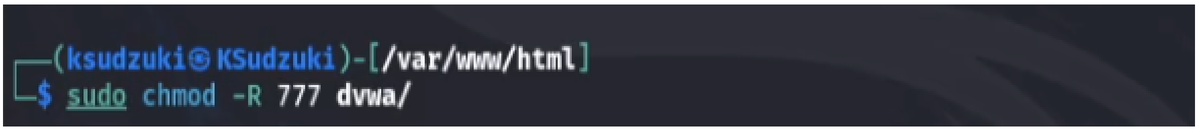
```
┌──(ksudzuki㉿KSudzuki)-[/var/www/html]
└─$ sudo git clone https://github.com/digininja/DVWA
Cloning into 'DVWA'...
remote: Enumerating objects: 4784, done.
remote: Counting objects: 100% (334/334), done.
remote: Compressing objects: 100% (187/187), done.
remote: Total 4784 (delta 185), reused 266 (delta 139), pack-reused 4450 (from 1
)
Receiving objects: 100% (4784/4784), 2.36 MiB | 387.00 KiB/s, done.
Resolving deltas: 100% (2296/2296), done.
```

2. Переименовал директорию DVWA на dvwa



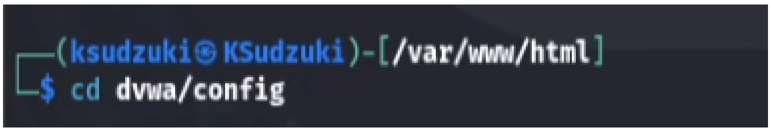
```
┌──(ksudzuki㉿KSudzuki)-[/var/www/html]
└─$ sudo mv DVWA dvwa
```

3. Задал права пользователя для директории



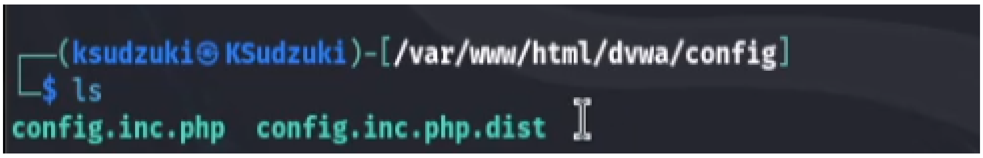
```
┌──(ksudzuki㉿KSudzuki)-[/var/www/html]
└─$ sudo chmod -R 777 dvwa/
```

4. Зашел в директорию dvwa/config



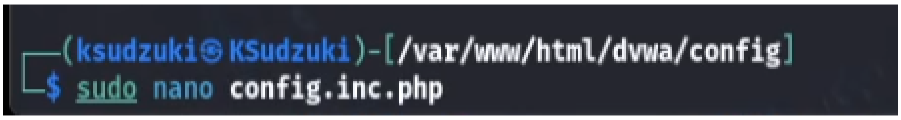
```
┌──(ksudzuki㉿KSudzuki)-[/var/www/html]
└─$ cd dvwa/config
```

5. Проверил что в ней есть



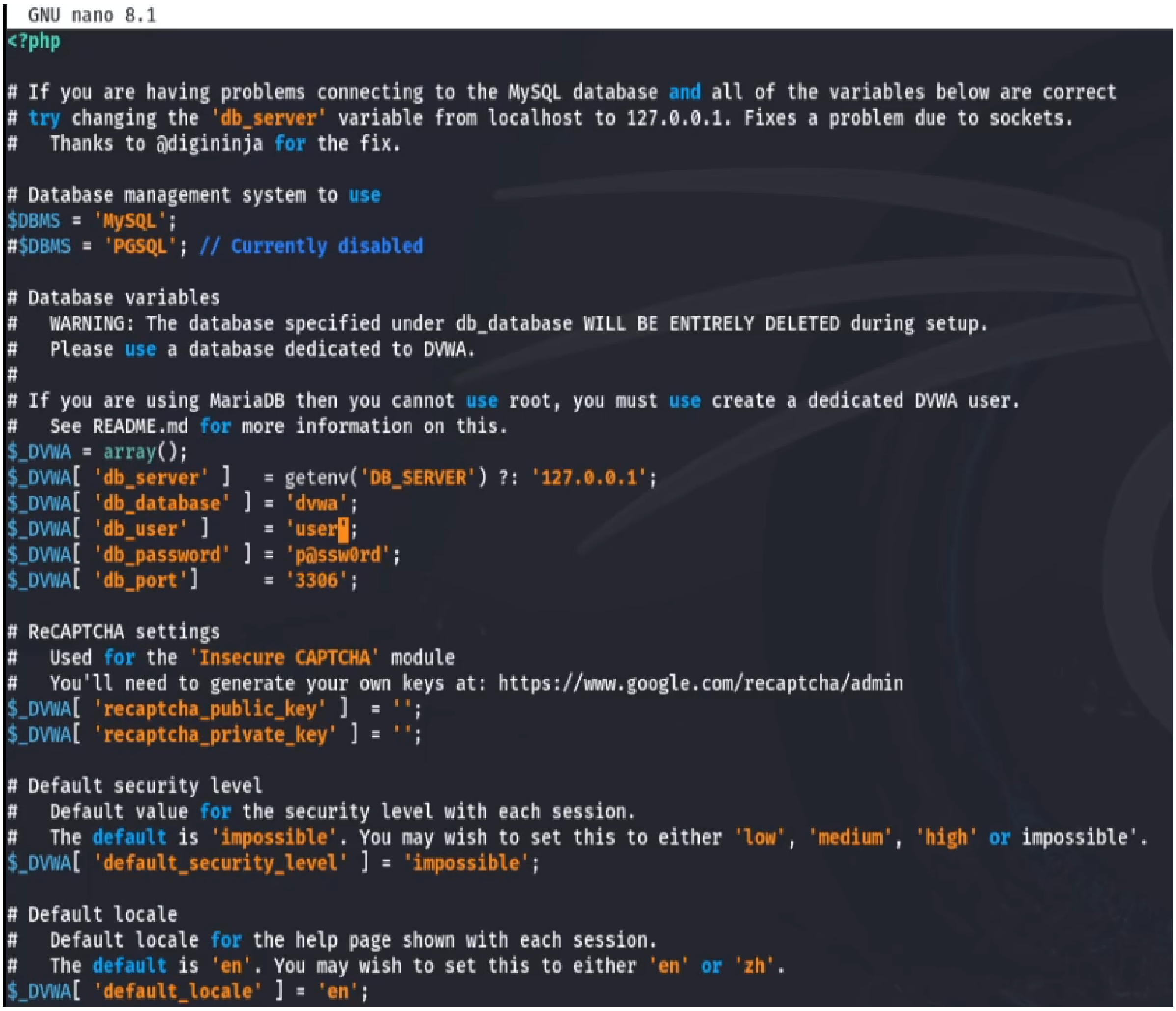
```
┌──(ksudzuki㉿KSudzuki)-[/var/www/html/dvwa/config]
└─$ ls
config.inc.php  config.inc.php.dist
```

6. Открыл файл config.inc.php



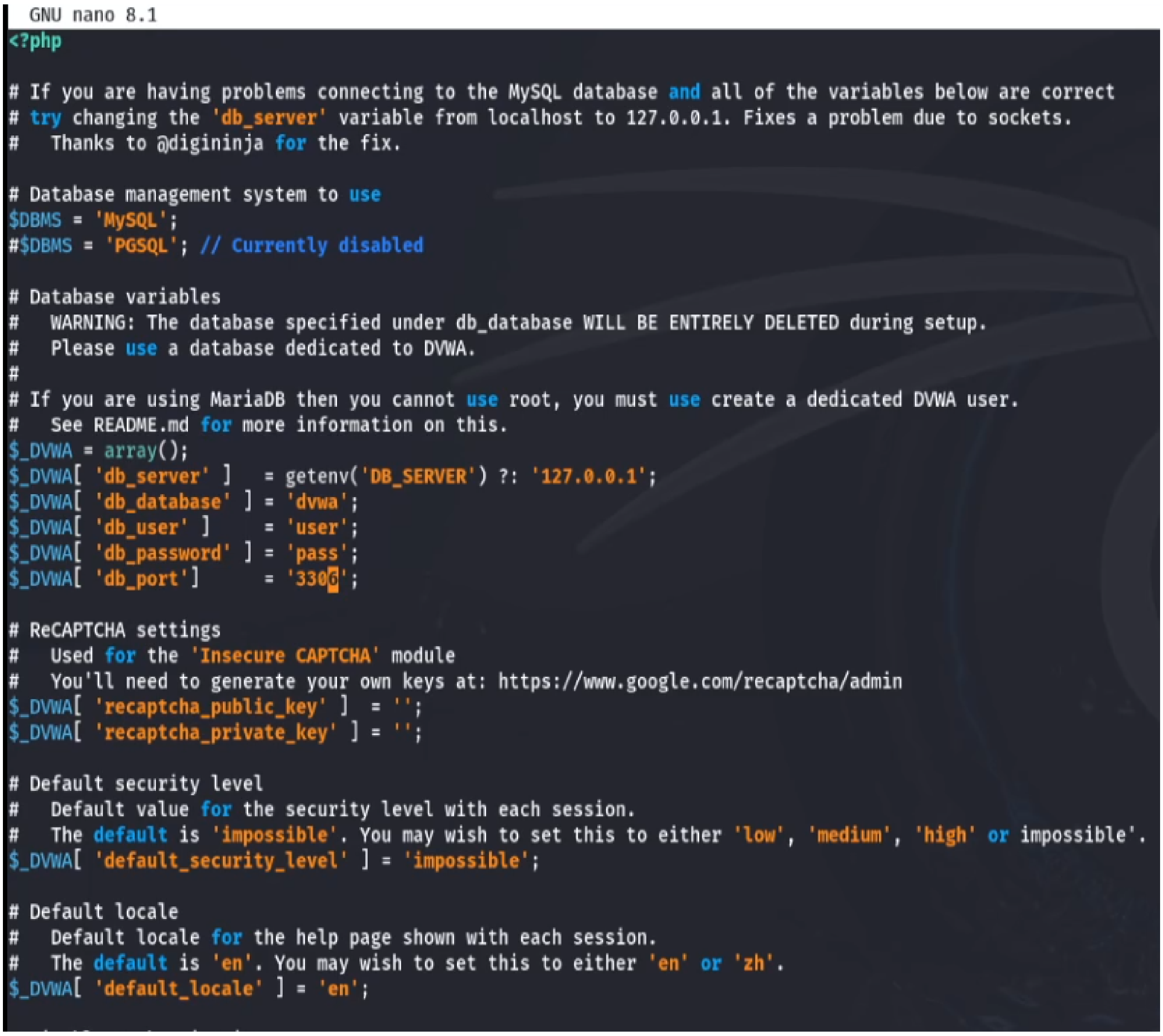
```
┌──(ksudzuki㉿KSudzuki)-[/var/www/html/dvwa/config]
└─$ sudo nano config.inc.php
```

7. Файл config.inc.php



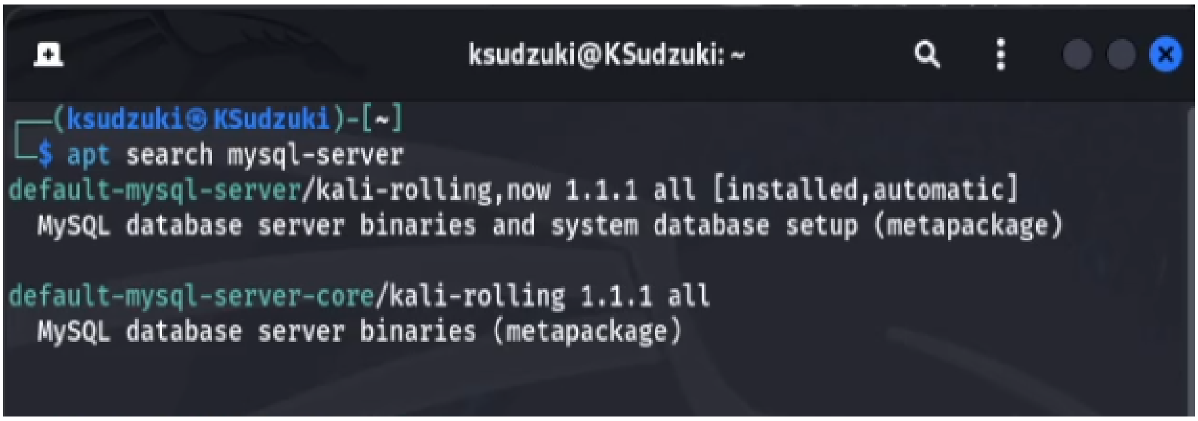
```
 GNU nano 8.1
<?php

# If you are having problems connecting to the MySQL database and all of the variables below are correct
# try changing the 'db_server' variable from localhost to 127.0.0.1. Fixes a problem due to sockets.
#   Thanks to @digininja for the fix.

# Database management system to use
$DBMS = 'MySQL';
#$DBMS = 'PGSQL'; // Currently disabled

# Database variables
#   WARNING: The database specified under db_database WILL BE ENTIRELY DELETED during setup.
#   Please use a database dedicated to DVWA.
#
# If you are using MariaDB then you cannot use root, you must use create a dedicated DVWA user.
#   See README.md for more information on this.
$_DVWA = array();
$_DVWA[ 'db_server' ]   = getenv('DB_SERVER') ?: '127.0.0.1';
$_DVWA[ 'db_database' ] = 'dvwa';
$_DVWA[ 'db_user' ]     = 'user';
$_DVWA[ 'db_password' ] = 'p@ssw0rd';
$_DVWA[ 'db_port']      = '3306';

# ReCAPTCHA settings
#   Used for the 'Insecure CAPTCHA' module
#   You'll need to generate your own keys at: https://www.google.com/recaptcha/admin
$_DVWA[ 'recaptcha_public_key' ]  = '';
$_DVWA[ 'recaptcha_private_key' ] = '';

# Default security level
#   Default value for the security level with each session.
#   The default is 'impossible'. You may wish to set this to either 'low', 'medium', 'high' or impossible'.
$_DVWA[ 'default_security_level' ] = 'impossible';

# Default locale
#   Default locale for the help page shown with each session.
#   The default is 'en'. You may wish to set this to either 'en' or 'zh'.
$_DVWA[ 'default_locale' ] = 'en';
```

8. Заменил в нем db_user и db_password на user и pass



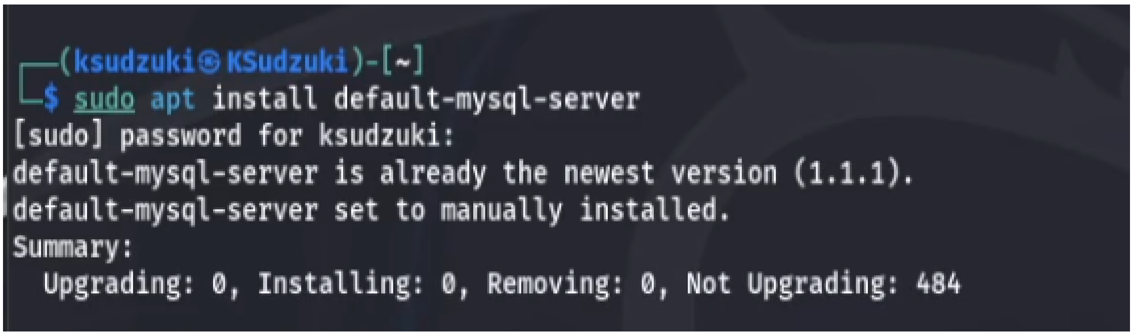
```
  GNU nano 8.1
<?php

# If you are having problems connecting to the MySQL database and all of the variables below are correct
# try changing the 'db_server' variable from localhost to 127.0.0.1. Fixes a problem due to sockets.
#   Thanks to @digininja for the fix.

# Database management system to use
$DBMS = 'MySQL';
#$DBMS = 'PGSQL'; // Currently disabled

# Database variables
#   WARNING: The database specified under db_database WILL BE ENTIRELY DELETED during setup.
#   Please use a database dedicated to DVWA.
#
# If you are using MariaDB then you cannot use root, you must use create a dedicated DVWA user.
#   See README.md for more information on this.
$_DVWA = array();
$_DVWA[ 'db_server' ]   = getenv('DB_SERVER') ?: '127.0.0.1';
$_DVWA[ 'db_database' ] = 'dvwa';
$_DVWA[ 'db_user' ]     = 'user';
$_DVWA[ 'db_password' ] = 'pass';
$_DVWA[ 'db_port']      = '3306';

# ReCAPTCHA settings
#   Used for the 'Insecure CAPTCHA' module
#   You'll need to generate your own keys at: https://www.google.com/recaptcha/admin
$_DVWA[ 'recaptcha_public_key' ]  = '';
$_DVWA[ 'recaptcha_private_key' ] = '';

# Default security level
#   Default value for the security level with each session.
#   The default is 'impossible'. You may wish to set this to either 'low', 'medium', 'high' or impossible'.
$_DVWA[ 'default_security_level' ] = 'impossible';

# Default locale
#   Default locale for the help page shown with each session.
#   The default is 'en'. You may wish to set this to either 'en' or 'zh'.
$_DVWA[ 'default_locale' ] = 'en';
```

9. Посмотрел мой mysql-server



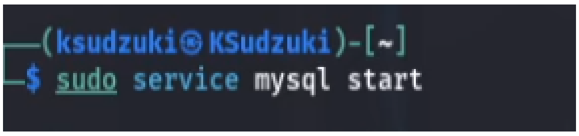
```
ksudzuki@KSudzuki: ~

┌──(ksudzuki㉿KSudzuki)-[~]
└─$ apt search mysql-server
default-mysql-server/kali-rolling,now 1.1.1 all [installed,automatic]
  MySQL database server binaries and system database setup (metapackage)

default-mysql-server-core/kali-rolling 1.1.1 all
  MySQL database server binaries (metapackage)
```

10. Установил mysql-server



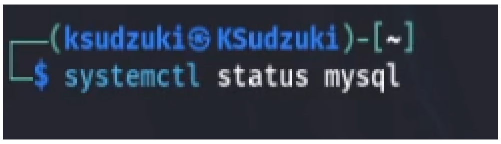
```
┌──(ksudzuki㉿KSudzuki)-[~]
└─$ sudo apt install default-mysql-server
[sudo] password for ksudzuki:
default-mysql-server is already the newest version (1.1.1).
default-mysql-server set to manually installed.
Summary:
  Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 484
```

11. Запустил mysql

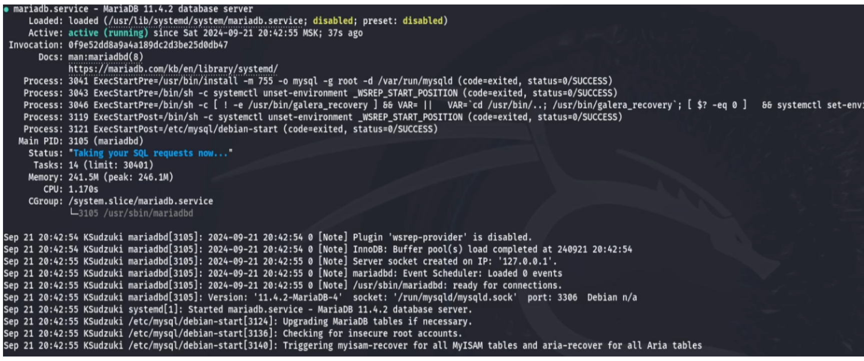


```
┌──(ksudzuki㉿KSudzuki)-[~]
└─$ sudo service mysql start
```

12. Посмотрел статус mysql

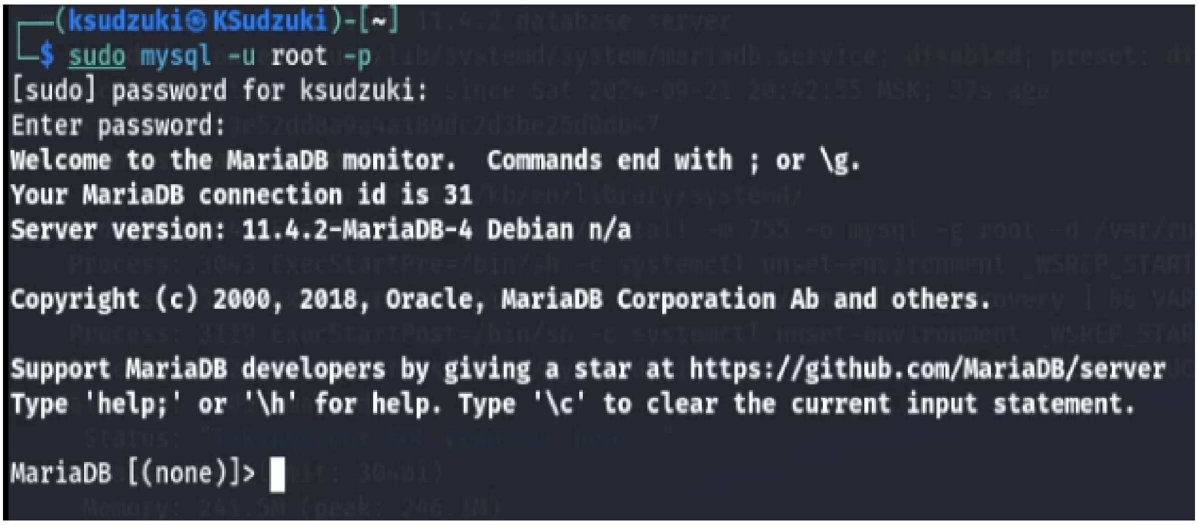


```
┌──(ksudzuki㉿KSudzuki)-[~]
└─$ systemctl status mysql
```



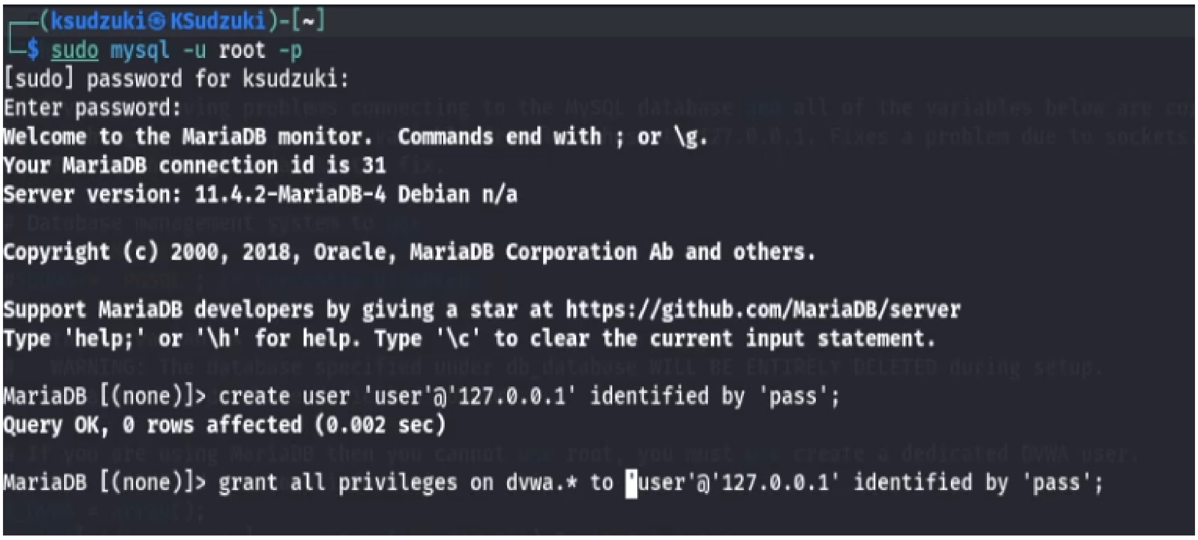
```
● mariadb.service - MariaDB 11.4.2 database server
     Loaded: loaded (/usr/lib/systemd/system/mariadb.service; disabled; preset: disabled)
     Active: active (running) since Sat 2024-09-21 20:42:55 MSK; 37s ago
 Invocation: 0f9e52dd8a9a4a189dc2d3be25d0db47
       Docs: man:mariadbd(8)
             https://mariadb.com/kb/en/library/systemd/
    Process: 3041 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /var/run/mysqld (code=exited, status=0/SUCCESS)
    Process: 3043 ExecStartPre=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=0/SUCCESS)
    Process: 3046 ExecStartPre=/bin/sh -c [ ! -e /usr/bin/galera_recovery ] && VAR= ||   VAR=`cd /usr/bin/..; /usr/bin/galera_recovery`; [ $? -eq 0 ]   && systemctl set-envi
    Process: 3119 ExecStartPost=/bin/sh -c systemctl unset-environment _WSREP_START_POSITION (code=exited, status=0/SUCCESS)
    Process: 3121 ExecStartPost=/etc/mysql/debian-start (code=exited, status=0/SUCCESS)
   Main PID: 3105 (mariadbd)
     Status: "Taking your SQL requests now..."
      Tasks: 14 (limit: 30401)
     Memory: 241.5M (peak: 246.1M)
        CPU: 1.170s
     CGroup: /system.slice/mariadb.service
             └─3105 /usr/sbin/mariadbd

Sep 21 20:42:54 KSudzuki mariadbd[3105]: 2024-09-21 20:42:54 0 [Note] Plugin 'wsrep-provider' is disabled.
Sep 21 20:42:54 KSudzuki mariadbd[3105]: 2024-09-21 20:42:54 0 [Note] InnoDB: Buffer pool(s) load completed at 240921 20:42:54
Sep 21 20:42:55 KSudzuki mariadbd[3105]: 2024-09-21 20:42:55 0 [Note] Server socket created on IP: '127.0.0.1'.
Sep 21 20:42:55 KSudzuki mariadbd[3105]: 2024-09-21 20:42:55 0 [Note] mariadbd: Event Scheduler: Loaded 0 events
Sep 21 20:42:55 KSudzuki mariadbd[3105]: 2024-09-21 20:42:55 0 [Note] /usr/sbin/mariadbd: ready for connections.
Sep 21 20:42:55 KSudzuki mariadbd[3105]: Version: '11.4.2-MariaDB-4'  socket: '/run/mysqld/mysqld.sock'  port: 3306  Debian n/a
Sep 21 20:42:55 KSudzuki systemd[1]: Started mariadb.service - MariaDB 11.4.2 database server.
Sep 21 20:42:55 KSudzuki /etc/mysql/debian-start[3124]: Upgrading MariaDB tables if necessary.
Sep 21 20:42:55 KSudzuki /etc/mysql/debian-start[3136]: Checking for insecure root accounts.
Sep 21 20:42:55 KSudzuki /etc/mysql/debian-start[3140]: Triggering myisam-recover for all MyISAM tables and aria-recover for all Aria tables
```

13. Зашел в mysql



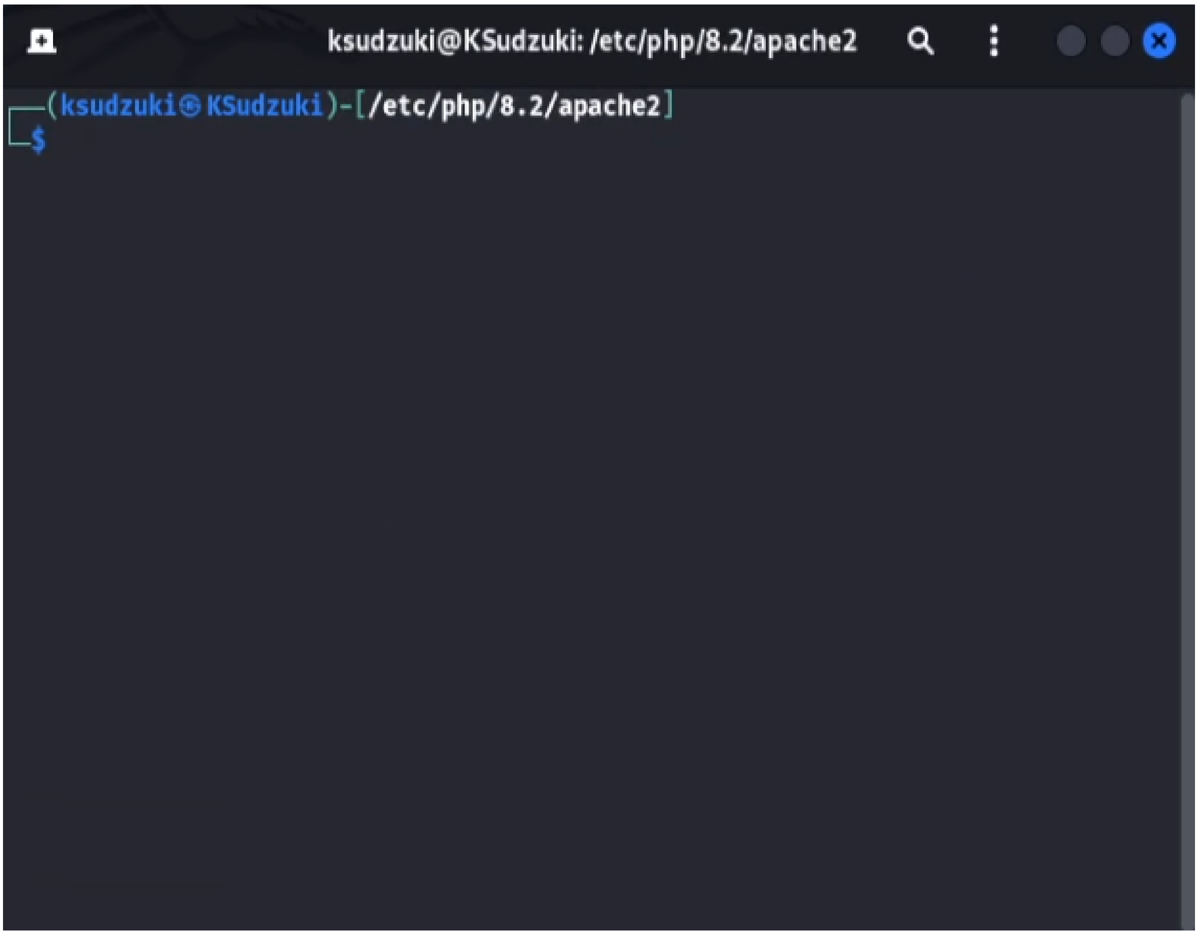
```
┌──(ksudzuki㉿KSudzuki)-[~]
└─$ sudo mysql -u root -p
[sudo] password for ksudzuki:
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 31
Server version: 11.4.2-MariaDB-4 Debian n/a

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Support MariaDB developers by giving a star at https://github.com/MariaDB/server
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> █
```

14. Создал пользователя и дал ему все права



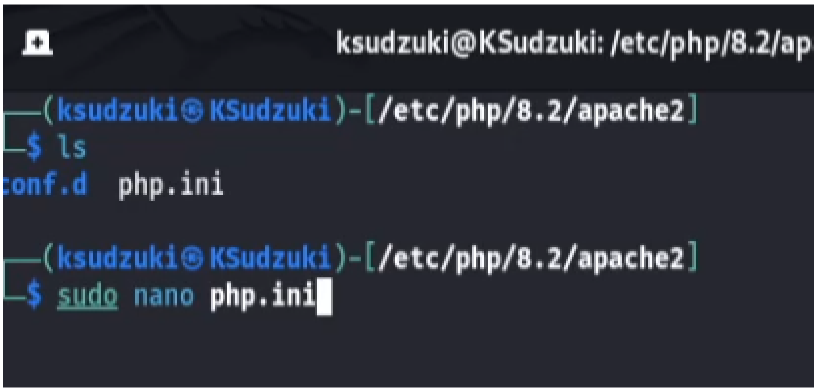
```
┌──(ksudzuki㉿KSudzuki)-[~]
└─$ sudo mysql -u root -p
[sudo] password for ksudzuki:
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 31
Server version: 11.4.2-MariaDB-4 Debian n/a

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Support MariaDB developers by giving a star at https://github.com/MariaDB/server
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create user 'user'@'127.0.0.1' identified by 'pass';
Query OK, 0 rows affected (0.002 sec)

MariaDB [(none)]> grant all privileges on dvwa.* to 'user'@'127.0.0.1' identified by 'pass';
```

15. Зашёл в папку /etc/php/8.2/apache2



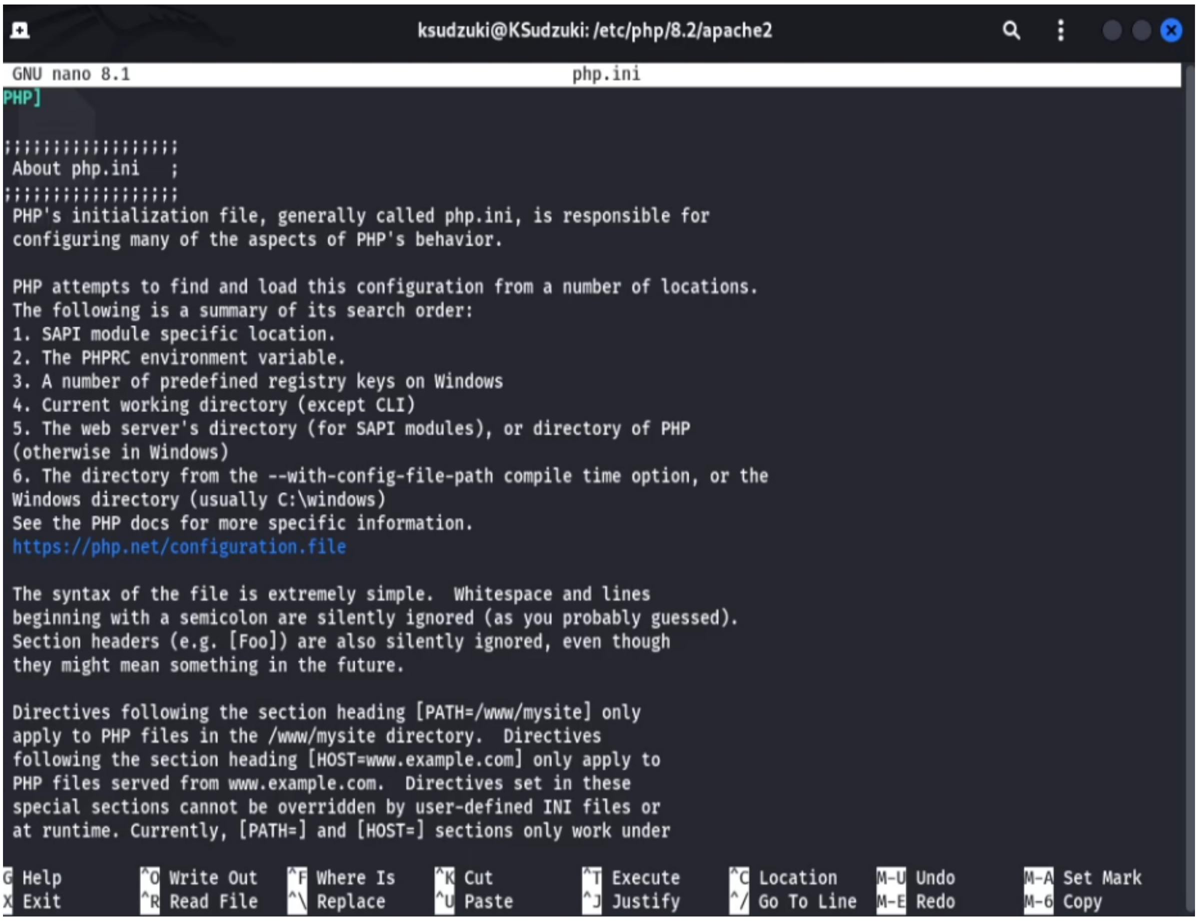
```
┌──(ksudzuki㉿KSudzuki)-[/etc/php/8.2/apache2]
└─$
```

16. Посмотрел что в ней есть и открыл файл php.ini



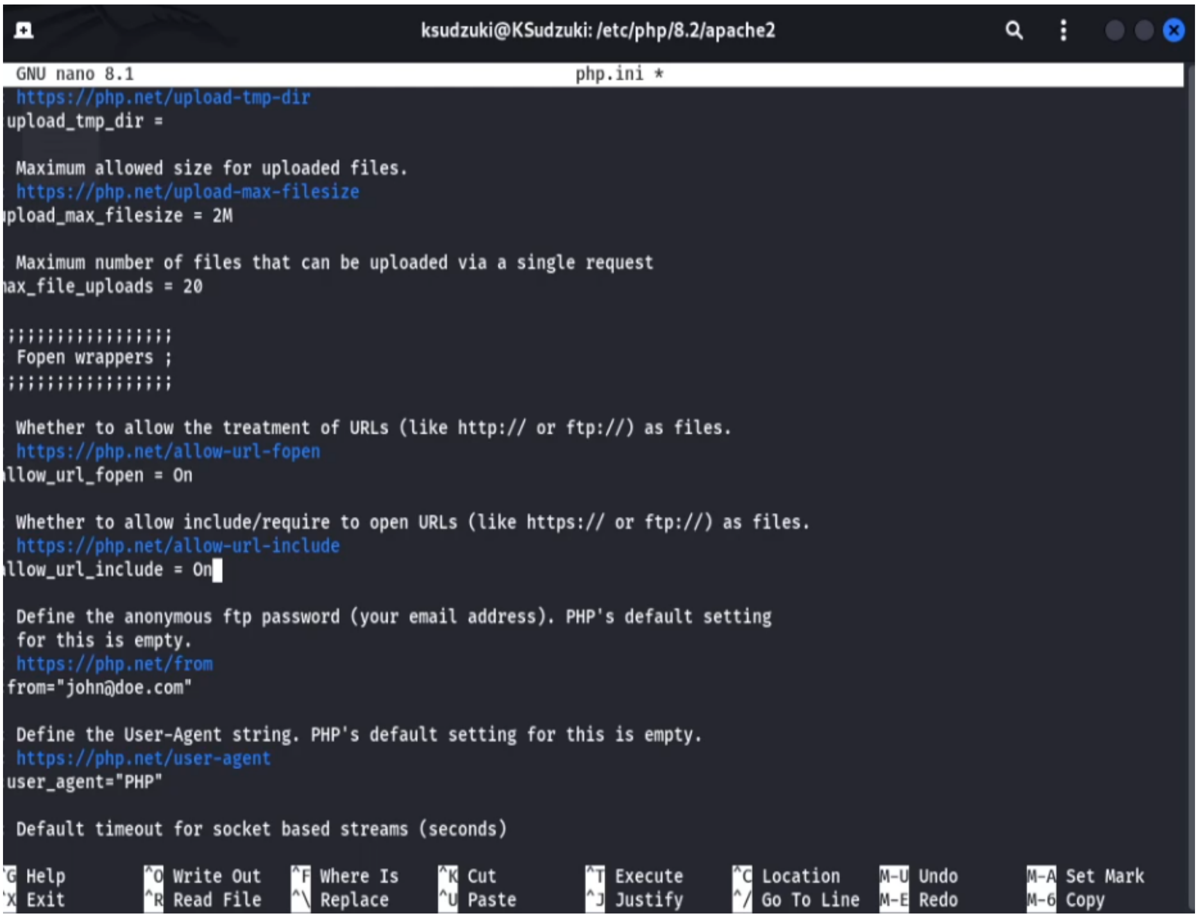
```
ksudzuki@KSudzuki: /etc/php/8.2/ap

┌──(ksudzuki㉿KSudzuki)-[/etc/php/8.2/apache2]
└─$ ls
conf.d  php.ini

┌──(ksudzuki㉿KSudzuki)-[/etc/php/8.2/apache2]
└─$ sudo nano php.ini
```

17. Файл php.ini



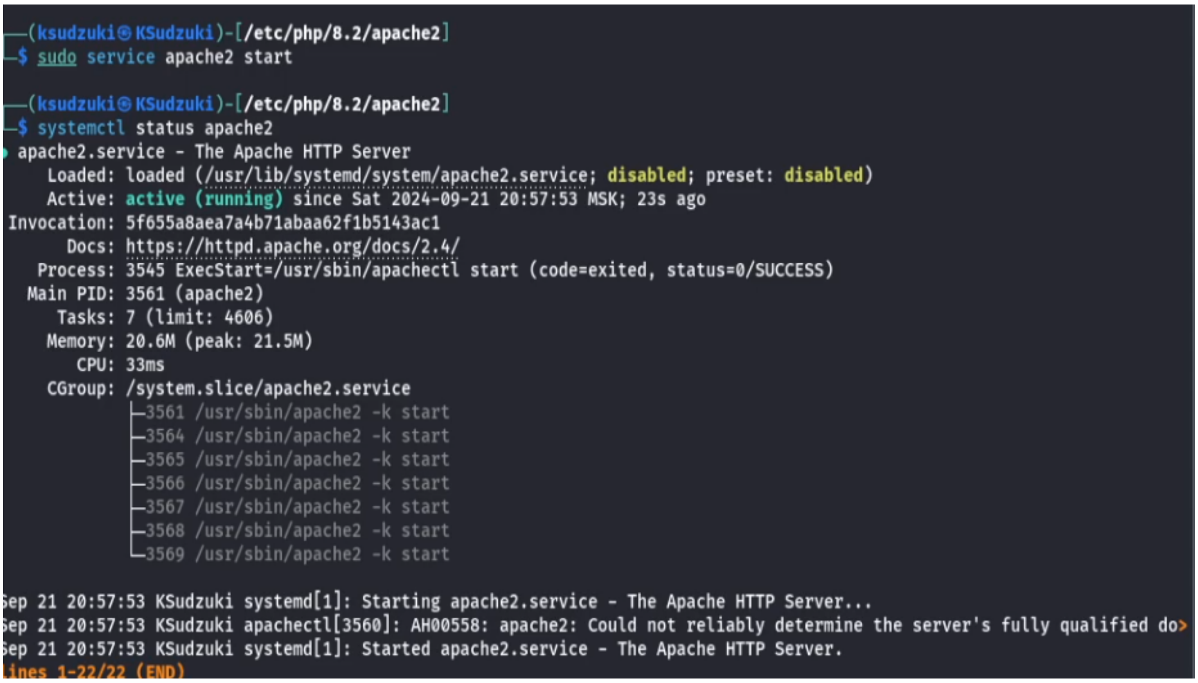
```
ksudzuki@KSudzuki: /etc/php/8.2/apache2
 GNU nano 8.1                                      php.ini
PHP]

;;;;;;;;;;;;;;;;;;
 About php.ini   ;
;;;;;;;;;;;;;;;;;;
 PHP's initialization file, generally called php.ini, is responsible for
 configuring many of the aspects of PHP's behavior.

 PHP attempts to find and load this configuration from a number of locations.
 The following is a summary of its search order:
 1. SAPI module specific location.
 2. The PHPRC environment variable.
 3. A number of predefined registry keys on Windows
 4. Current working directory (except CLI)
 5. The web server's directory (for SAPI modules), or directory of PHP
 (otherwise in Windows)
 6. The directory from the --with-config-file-path compile time option, or the
 Windows directory (usually C:\windows)
 See the PHP docs for more specific information.
 https://php.net/configuration.file

 The syntax of the file is extremely simple.  Whitespace and lines
 beginning with a semicolon are silently ignored (as you probably guessed).
 Section headers (e.g. [Foo]) are also silently ignored, even though
 they might mean something in the future.

 Directives following the section heading [PATH=/www/mysite] only
 apply to PHP files in the /www/mysite directory.  Directives
 following the section heading [HOST=www.example.com] only apply to
 PHP files served from www.example.com.  Directives set in these
 special sections cannot be overridden by user-defined INI files or
 at runtime. Currently, [PATH=] and [HOST=] sections only work under

G Help       ^O Write Out  ^F Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo      M-A Set Mark
X Exit       ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^/ Go To Line M-E Redo      M-6 Copy
```

18. Нашел в нем allow_url_fopen и allow_url_include и поменял на “On”



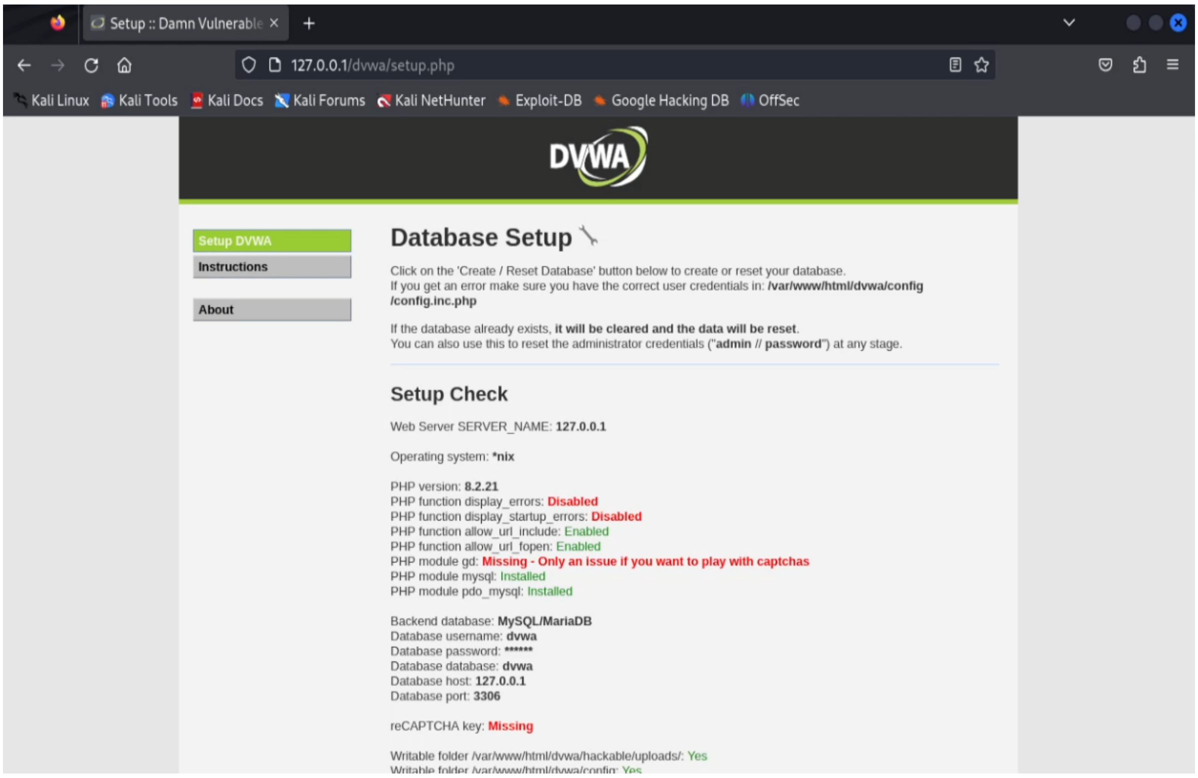
```
 GNU nano 8.1                                        php.ini *
 https://php.net/upload-tmp-dir
upload_tmp_dir =

 Maximum allowed size for uploaded files.
 https://php.net/upload-max-filesize
pload_max_filesize = 2M

 Maximum number of files that can be uploaded via a single request
ax_file_uploads = 20

;;;;;;;;;;;;;;;;;
 Fopen wrappers ;
;;;;;;;;;;;;;;;;;

 Whether to allow the treatment of URLs (like http:// or ftp://) as files.
 https://php.net/allow-url-fopen
llow_url_fopen = On

 Whether to allow include/require to open URLs (like https:// or ftp://) as files.
 https://php.net/allow-url-include
llow_url_include = On

 Define the anonymous ftp password (your email address). PHP's default setting
 for this is empty.
 https://php.net/from
from="john@doe.com"

 Define the User-Agent string. PHP's default setting for this is empty.
 https://php.net/user-agent
user_agent="PHP"

 Default timeout for socket based streams (seconds)
```

19. Запустил apache2 и проверил его статус



```
┌──(ksudzuki㉿KSudzuki)-[/etc/php/8.2/apache2]
└─$ sudo service apache2 start

┌──(ksudzuki㉿KSudzuki)-[/etc/php/8.2/apache2]
└─$ systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/apache2.service; disabled; preset: disabled)
     Active: active (running) since Sat 2024-09-21 20:57:53 MSK; 23s ago
 Invocation: 5f655a8aea7a4b71abaa62f1b5143ac1
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 3545 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 3561 (apache2)
      Tasks: 7 (limit: 4606)
     Memory: 20.6M (peak: 21.5M)
        CPU: 33ms
     CGroup: /system.slice/apache2.service
             ├─3561 /usr/sbin/apache2 -k start
             ├─3564 /usr/sbin/apache2 -k start
             ├─3565 /usr/sbin/apache2 -k start
             ├─3566 /usr/sbin/apache2 -k start
             ├─3567 /usr/sbin/apache2 -k start
             ├─3568 /usr/sbin/apache2 -k start
             └─3569 /usr/sbin/apache2 -k start

Sep 21 20:57:53 KSudzuki systemd[1]: Starting apache2.service - The Apache HTTP Server...
Sep 21 20:57:53 KSudzuki apachectl[3560]: AH00558: apache2: Could not reliably determine the server's fully qualified do>
Sep 21 20:57:53 KSudzuki systemd[1]: Started apache2.service - The Apache HTTP Server.
lines 1-22/22 (END)
```

20. Зашёл на Localhost 127.0.0.1/dvwa/setup.php



Database Setup

Click on the 'Create / Reset Database' button below to create or reset your database.
If you get an error make sure you have the correct user credentials in: **/var/www/html/dvwa/config/config.inc.php**

If the database already exists, **it will be cleared and the data will be reset**.
You can also use this to reset the administrator credentials ("**admin // password**") at any stage.

Setup Check

Web Server SERVER_NAME: **127.0.0.1**

Operating system: ***nix**

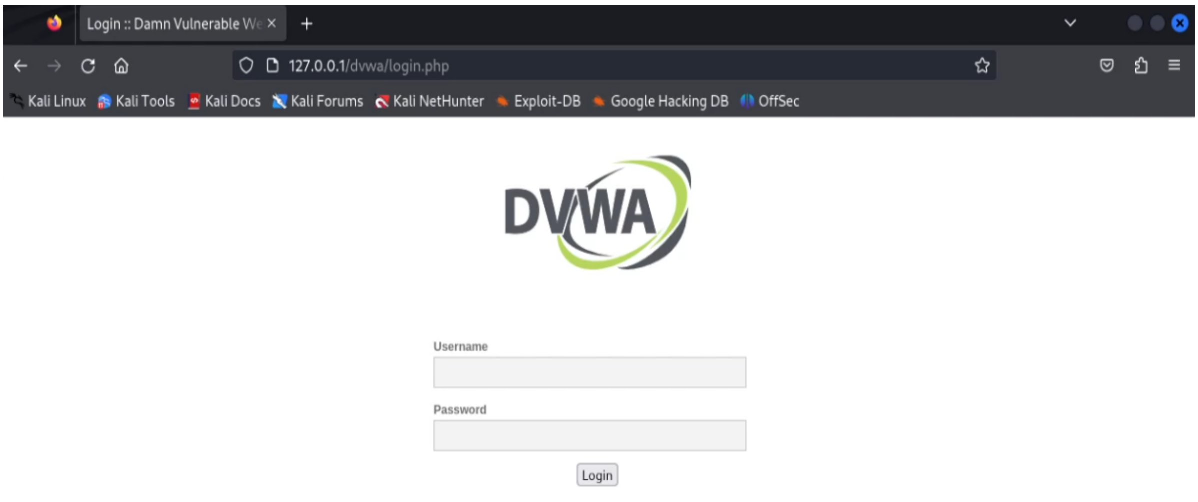
PHP version: **8.2.21**
PHP function display_errors: **Disabled**
PHP function display_startup_errors: **Disabled**
PHP function allow_url_include: Enabled
PHP function allow_url_fopen: Enabled
PHP module gd: **Missing - Only an issue if you want to play with captchas**
PHP module mysql: Installed
PHP module pdo_mysql: Installed

Backend database: **MySQL/MariaDB**
Database username: **dvwa**
Database password: **********
Database database: **dvwa**
Database host: **127.0.0.1**
Database port: **3306**

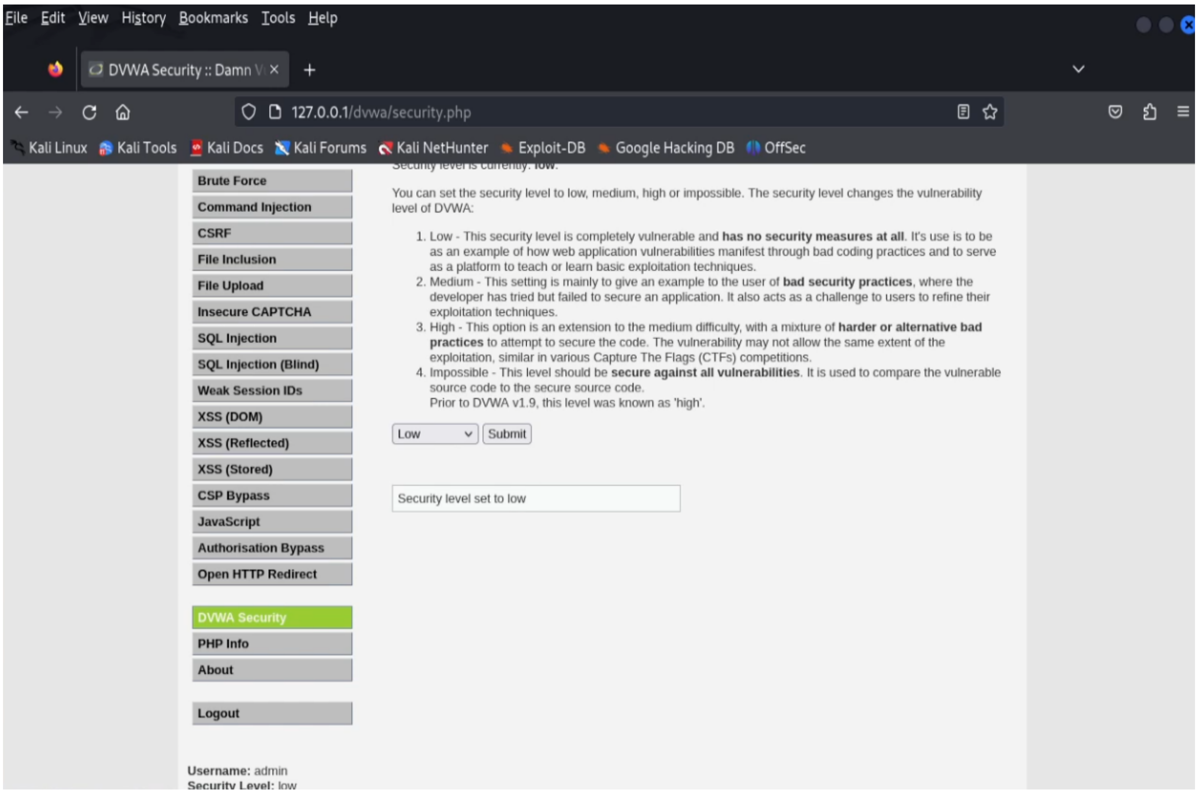
reCAPTCHA key: **Missing**

Writable folder /var/www/html/dvwa/hackable/uploads/: Yes
Writable folder /var/www/html/dvwa/config: Yes

21. Ввёл логин и пароль admin password



22. Поменял защиту на low



Security level is currently: **low**.

You can set the security level to low, medium, high or impossible. The security level changes the vulnerability level of DVWA:

1. Low - This security level is completely vulnerable and **has no security measures at all**. It's use is to be as an example of how web application vulnerabilities manifest through bad coding practices and to serve as a platform to teach or learn basic exploitation techniques.
2. Medium - This setting is mainly to give an example to the user of **bad security practices**, where the developer has tried but failed to secure an application. It also acts as a challenge to users to refine their exploitation techniques.
3. High - This option is an extension to the medium difficulty, with a mixture of **harder or alternative bad practices** to attempt to secure the code. The vulnerability may not allow the same extent of the exploitation, similar in various Capture The Flags (CTFs) competitions.
4. Impossible - This level should be **secure against all vulnerabilities**. It is used to compare the vulnerable source code to the secure source code.
   Prior to DVWA v1.9, this level was known as 'high'.

Low Submit

Security level set to low

Username: admin
Security Level: low

Выводы

- Установил и настроил DVWA на Kali linux