



МИНОБРНАУКИ РОССИИ

Федеральное государственное бюджетное образовательное учреждение
высшего образования

«МИРЭА – Российский технологический университет»

РТУ МИРЭА

Институт Информационных технологий

Кафедра Математического обеспечения и стандартизации информационных
технологий

Отчет по практической работе №2

по дисциплине «Технологии разработки программных приложений»

Тема практической работы: «Основы работы с Bash Scriptами»

Выполнил:

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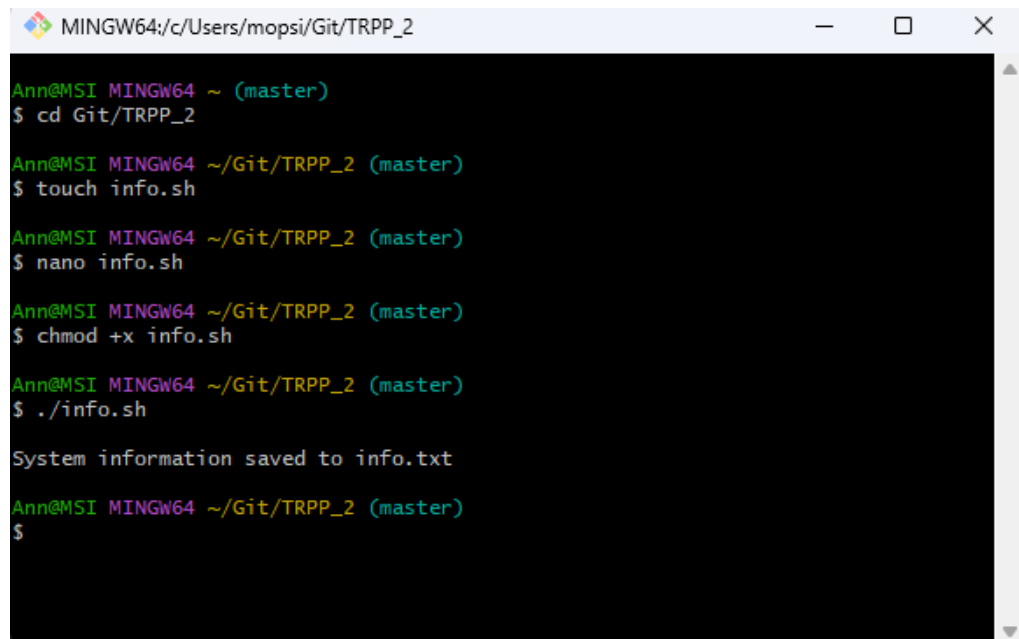
Москва 2025

Задание

1. Напишите сценарий, который выводит дату, время, список зарегистрировавшихся пользователей, и uptime системы и сохраняет эту информацию в файл.
2. Напишите сценарий, который выводит содержимое любого каталога или сообщение о том, что его не существует.
3. Напишите сценарий, который с помощью цикла прочитает файл и выведет его содержимое.
4. Напишите сценарий, который с помощью цикла выведет список файлов и директорий из текущего каталога, укажет, что есть файл, а что директория.
5. Напишите сценарий, который подсчитает объем диска, занимаемого директорией. В качестве директории можно выбрать любую директорию в системе.
6. Напишите сценарий, который выведет список всех исполняемых файлов в директории, для которых у текущего пользователя есть права на исполнение.

Часть 1. Базовые Bash скрипты

На рисунках 1–4 изображена реализация заданий 1 и 2. Текст скрипта изображен в листингах 1–2.



```
MINGW64:/c/Users/mopsi/Git/TRPP_2
Ann@MSI MINGW64 ~ (master)
$ cd Git/TRPP_2

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ touch info.sh

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ nano info.sh

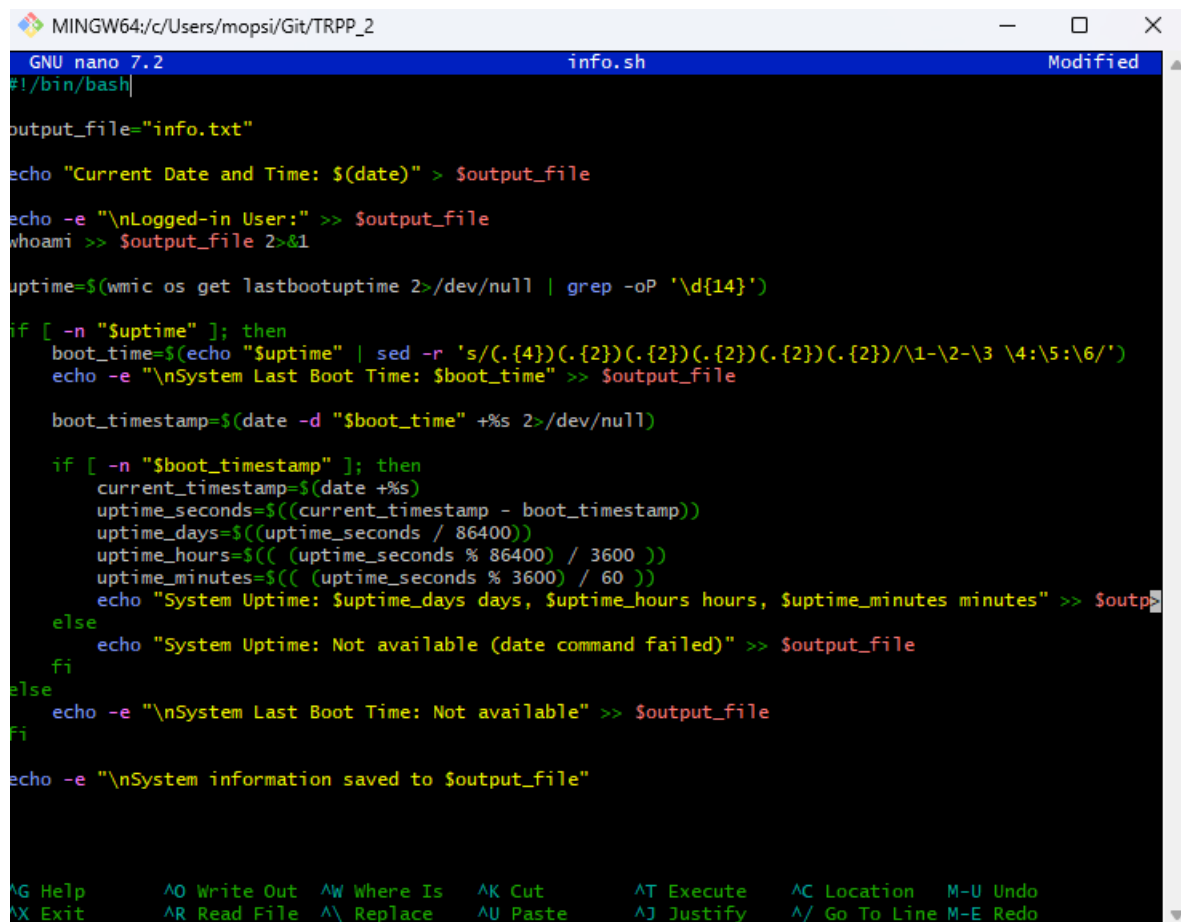
Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ chmod +x info.sh

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ ./info.sh

System information saved to info.txt

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$
```

Рисунок 1 – создание, изменение и запуск файла



```
GNU nano 7.2 info.sh Modified
#!/bin/bash

output_file="info.txt"

echo "Current Date and Time: $(date)" > $output_file

echo -e "\nLogged-in User:" >> $output_file
whoami >> $output_file 2>&1

uptime=$(wmic os get lastbootuptime 2>/dev/null | grep -oP '\d{14}')

if [ -n "$uptime" ]; then
    boot_time=$(echo "$uptime" | sed -r 's/(.{4})({2})({2})({2})({2})({2})/1-2-3 4:5:6/')
    echo -e "\nSystem Last Boot Time: $boot_time" >> $output_file

    boot_timestamp=$(date -d "$boot_time" +%s 2>/dev/null)

    if [ -n "$boot_timestamp" ]; then
        current_timestamp=$(date +%s)
        uptime_seconds=$((current_timestamp - boot_timestamp))
        uptime_days=$((uptime_seconds / 86400))
        uptime_hours=$(( (uptime_seconds % 86400) / 3600 ))
        uptime_minutes=$(( (uptime_seconds % 3600) / 60 ))
        echo "System Uptime: $uptime_days days, $uptime_hours hours, $uptime_minutes minutes" >> $output_file
    else
        echo "System Uptime: Not available (date command failed)" >> $output_file
    fi
else
    echo -e "\nSystem Last Boot Time: Not available" >> $output_file
fi

echo -e "\nSystem information saved to $output_file"
```

Рисунок 2 – Содержимое файла info.sh

```
Current Date and Time: Sat Apr 5 14:23:14 RTZ 2025
Logged-in User:
Ann
System Last Boot Time: 2025-04-02 13:50:14
System Uptime: 3 days, 0 hours, 33 minutes
```

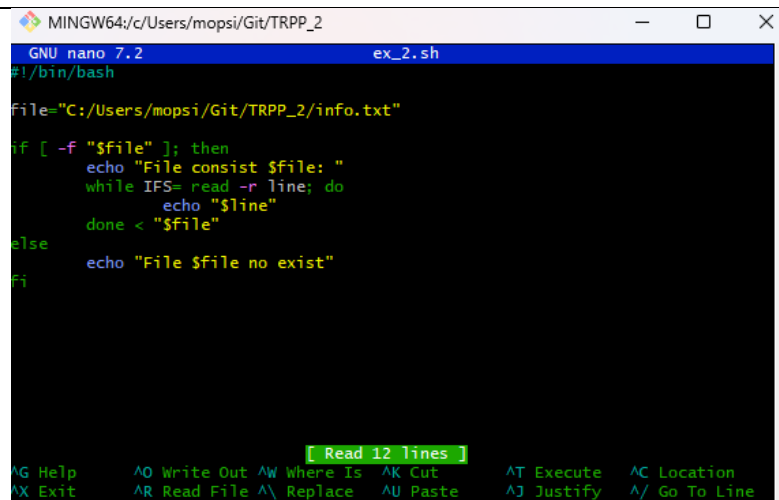
```
Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ nano ex_2.sh

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ ./ex_2.sh
In directory C:/Users/mopsi/Git/TRPP_2:
ex_2.sh info.sh info.txt

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$
```

Рисунок 3 – Изменение и запуск файла ex_2.sh

```
#!/bin/bash
directory = "C:\Users\mopsi\Git\TRPP_2"
if [-d "$directory"]; then
    echo "In directory $directory: "
    ls "$directory"
else
    echo "Directory $directory no exist"
fi
```



```
MINGW64/c/Users/mopsi/Git/TRPP_2
GNU nano 7.2 ex_2.sh
#!/bin/bash
File="C:/Users/mopsi/Git/TRPP_2/info.txt"
if [ -f "$file" ]; then
    echo "File consist $file: "
    while IFS= read -r line; do
        echo "$line"
    done < "$file"
else
    echo "File $file no exist"
fi
```

Рисунок 4 – Содержимое обновленного файла ex_2.sh

На рисунках 5–7 изображена реализация заданий 3 и 4. Текст скриптов изображен в листингах 3–4.

```

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ ./ex_2.sh
File consist C:/Users/mopsi/Git/TRPP_2/info.txt:
Current Date and Time: Sat Apr 5 14:23:14 RTZ 2025

Logged-in User:
Ann

System Last Boot Time: 2025-04-02 13:50:14
System Uptime: 3 days, 0 hours, 33 minutes

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ |

```

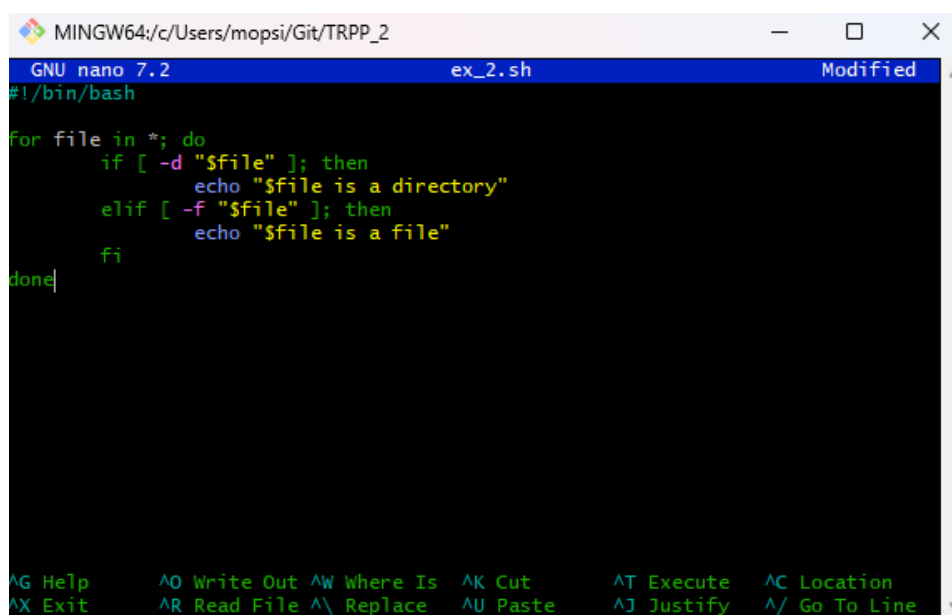
Рисунок 5 – Изменение второго скрипта и запуск

Листинг 3 – Содержимое обновленного файла *ex_2.sh*

```

#!/bin/bash
file="c:/Users/mopsi/Git/TRPP_2/info.txt"
if [ -f "$file" ]; then
    echo "File consist $file: "
    while IFS= read -r line; do
        echo "$line"
    done < "$file"
else
    echo "File $file no exist"
fi

```



```

MINGW64:/c/Users/mopsi/Git/TRPP_2
GNU nano 7.2 ex_2.sh Modified
#!/bin/bash

for file in *; do
    if [ -d "$file" ]; then
        echo "$file is a directory"
    elif [ -f "$file" ]; then
        echo "$file is a file"
    fi
done

```

Рисунок 6 – Изменение файла *ex_2.sh*

```

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ nano ex_2.sh

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ ./ex_2.sh
ex_2.sh is a file
info.sh is a file
info.txt is a file

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$

```

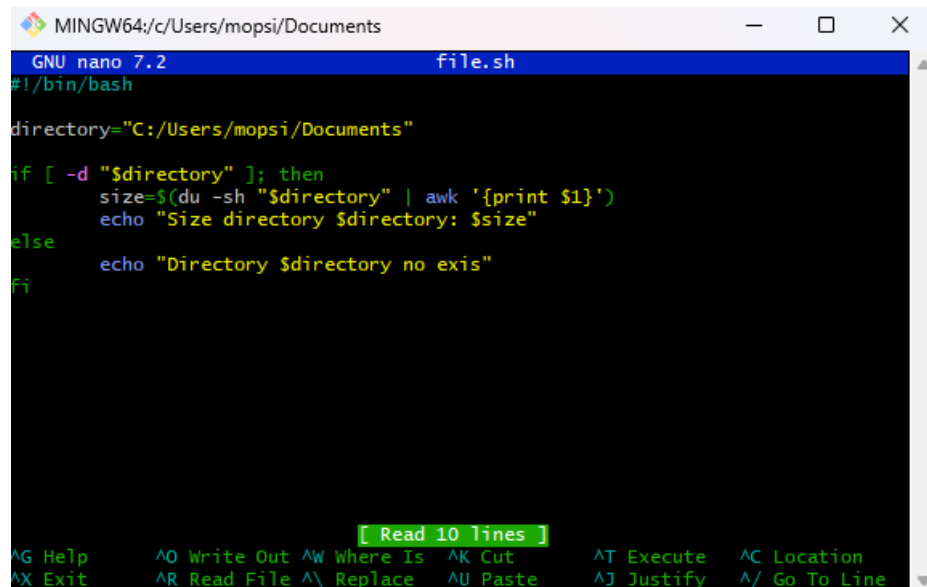
Рисунок 7 – Результат запуска файла *ex_2.sh*

Листинг 4 – Содержимое обновленного файла *ex_2.sh*

```
#!/bin/bash

for file in *; do
    if [ -d "$file" ]; then
        echo "$file is a directory"
    elif [ -f "$file" ]; then
        echo "$file is a file"
    fi
done
```

На рисунках 8–10 изображена реализация заданий 5–6.



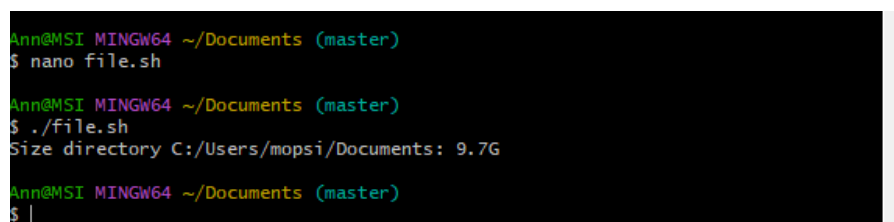
```
MINGW64/c/Users/mopsi/Documents
GNU nano 7.2 file.sh
#!/bin/bash

directory="C:/Users/mopsi/Documents"

if [ -d "$directory" ]; then
    size=$(du -sh "$directory" | awk '{print $1}')
    echo "Size directory $directory: $size"
else
    echo "Directory $directory no exis"
fi

[ Read 10 lines ]
AG Help  AO Write Out  AW Where Is  AK Cut      AT Execute  AC Location
AX Exit  AR Read File  AL Replace  AU Paste   AJ Justify  ^/ Go To Line
```

Рисунок 8 – Содержимое файла file.sh



```
Ann@MSI MINGW64 ~/Documents (master)
$ nano file.sh

Ann@MSI MINGW64 ~/Documents (master)
$ ./file.sh
Size directory C:/Users/mopsi/Documents: 9.7G

Ann@MSI MINGW64 ~/Documents (master)
$
```

Рисунок 9 – Изменение и запуск файла file.sh

Листинг 5 – Содержимое файла file.sh

```
#!/bin/bash

directory="C:/Users/mopsi/Documents"

if [ -d "$directory" ]; then
    size=$(du -sh "$directory" | awk '{print $1}')
    echo "Size directory $directory: $size"
else
    echo "Directory $directory no exis"
fi
```

```
#!/bin/bash

# Укажите путь к директории
directory="C:\dz2"

# Проверка существования директории
if [ -d "$directory" ]; then
    echo "Executable files in $directory:"
    for file in "$directory"/*; do
        if [ -x "$file" ]; then
            echo "$file"
        fi
    done
else
    echo "Directory $directory does not exist."
fi
```

Рисунок 10 – Содержимое файла для 6 задания

Часть 2. Развертка и запуск проекта при помощи Bash Script

На рисунках 11–12 показан результат установки и распаковки архива.

```
Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ curl -L -o blocknote-master.tar.gz "https://www.dropbox.com/s/ija7ax3sj6ysb0p/blocknote-master.tar.gz?dl=1"
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left     Speed
100  140    100  140    0     0   262      0  --:--:-- --:--:-- --:--:--   262
100  17    100  17     0     0   15      0  0:00:01 0:00:01 --:--:--   15
100  475    100  475    0     0  222      0  0:--:--:-- 0:00:02 --:--:--   558
100 12.0M    100 12.0M    0     0 494k      0 0:00:25 0:00:25 --:--:--  620k

Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ |
```

Рисунок 11 -Установка архива blocknote-master

```
Ann@MSI MINGW64 ~/Git/TRPP_2 (master)
$ tar -xvf blocknote-master.tar.gz
blocknote-master/
blocknote-master/..DS_Store
blocknote-master/.DS_Store
blocknote-master/appengine/
blocknote-master/.gitignore
blocknote-master/static/
blocknote-master/.gitattributes
blocknote-master/templates/
blocknote-master/..manage.py
blocknote-master/manage.py
blocknote-master/apps/
blocknote-master/apps/..DS_Store
```

Рисунок 12 – Распаковка архива

На рисунках 13–17 изображен результат активации виртуального окружения, установка зависимостей, применение миграций, а также запуск

```

Ann@MSI MINGW64 ~/Git/TRPP_2/blocknote-master (master)
$ python -m venv blocknote_env

Ann@MSI MINGW64 ~/Git/TRPP_2/blocknote-master (master)
$ source blocknote_env/Scripts/activate
bash: source: command not found

Ann@MSI MINGW64 ~/Git/TRPP_2/blocknote-master (master)
$ source blocknote_env/Scripts/activate
(blocknote_env)
Ann@MSI MINGW64 ~/Git/TRPP_2/blocknote-master (master)
$ |

```

Рисунок 13 – Создание и активация виртуального окружения

```

Ann@MSI MINGW64 ~/Git/TRPP_2/blocknote-master (master)
$ pip install -r requirements.txt
Collecting asgiref==3.7.2 (from -r requirements.txt (line 1))
  Using cached asgiref-3.7.2-py3-none-any.whl.metadata (9.2 kB)
Collecting Django==5.0.3 (from -r requirements.txt (line 2))
  Downloading Django-5.0.3-py3-none-any.whl.metadata (4.2 kB)
Collecting django-ckeditor==6.7.1 (from -r requirements.txt (line 3))
  Downloading django_ckeditor-6.7.1-py3-none-any.whl.metadata (32 kB)
Collecting django-js-asset==2.2.0 (from -r requirements.txt (line 4))
  Downloading django_js_asset-2.2.0-py3-none-any.whl.metadata (3.5 kB)
Collecting django-simple-history==3.5.0 (from -r requirements.txt (line 5))
  Downloading django_simple_history-3.5.0-py3-none-any.whl.metadata (21 kB)
Collecting django-tinymce (from -r requirements.txt (line 6))
  Downloading django_tinymce-4.1.0-py3-none-any.whl.metadata (3.8 kB)
Collecting python-dotenv==1.0.1 (from -r requirements.txt (line 7))
  Downloading python_dotenv-1.0.1-py3-none-any.whl.metadata (23 kB)
Collecting pytz==2024.1 (from -r requirements.txt (line 8))
  Downloading pytz-2024.1-py2.py3-none-any.whl.metadata (22 kB)
Collecting sqlparse==0.4.4 (from -r requirements.txt (line 9))
  Downloading sqlparse-0.4.4-py3-none-any.whl.metadata (4.0 kB)

```

Рисунок 14 – Установка зависимостей

```

$ python manage.py makemigrations
System check identified some issues:

WARNINGS:
?: (ckeditor.W001) django-ckeditor bundles CKEditor 4.22.1 which isn't supported anymore and which
does have unfixed security issues, see for example https://ckeditor.com/cke4/release/CKEditor-4.24.
0-LTS . You should consider strongly switching to a different editor (maybe CKEditor 5 respectively
django-ckeditor-5 after checking whether the CKEditor 5 license terms work for you) or switch to t
he non-free CKEditor 4 LTS package. See https://ckeditor.com/ckeditor-4-support/ for more on this.
(Note! This notice has been added by the django-ckeditor developers and we are not affiliated with
CKSource and were not involved in the licensing change, so please refrain from complaining to us. T
hanks.)
main.Article: (models.W042) Auto-created primary key used when not defining a primary key type, by
default 'django.db.models.AutoField'.
  HINT: Configure the DEFAULT_AUTO_FIELD setting or the MainConfig.default_auto_field attribu
te to point to a subclass of AutoField, e.g. 'django.db.models.BigAutoField'.
main.GroupArticles: (models.W042) Auto-created primary key used when not defining a primary key typ
e, by default 'django.db.models.AutoField'.
  HINT: Configure the DEFAULT_AUTO_FIELD setting or the MainConfig.default_auto_field attribu
te to point to a subclass of AutoField, e.g. 'django.db.models.BigAutoField'.
todoapp.Task: (models.W042) Auto-created primary key used when not defining a primary key type, by
default 'django.db.models.AutoField'.
  HINT: Configure the DEFAULT_AUTO_FIELD setting or the BaseConfig.default_auto_field attribu
te to point to a subclass of AutoField, e.g. 'django.db.models.BigAutoField'.
Migrations for 'auth':
  blocknote_env\Lib\site-packages\django\contrib\auth\migrations\0013_historicaluser.py
    - Create model HistoricalUser
Migrations for 'main':
  apps\main\migrations\0002_alter_historicalarticle_options_and_more.py
    - Change Meta options on historicalarticle
    - Change Meta options on historicalgrouparticles
    - Alter field history_date on historicalarticle
    - Alter field history_date on historicalgrouparticles
(blocknote_env)
Ann@MSI MINGW64 ~/Git/TRPP_2/blocknote-master (master)

```

Рисунок 15 – Применение миграций


```

Ann@MSI MINGW64 ~/Git/TRPP_2/blocknote-master (master)
$ python manage.py migrate
System check identified some issues:

WARNINGS:
?: (ckeditor.W001) django-ckeditor bundles CKEditor 4.22.1 which isn't supported anymore and which
does have unfixed security issues, see for example https://ckeditor.com/cke4/release/CKEditor-4.24.
0-LTS . You should consider strongly switching to a different editor (maybe CKEditor 5 respectively
django-ckeditor-5 after checking whether the CKEditor 5 license terms work for you) or switch to t
he non-free CKEditor 4 LTS package. See https://ckeditor.com/ckeditor-4-support/ for more on this.
(Note! This notice has been added by the django-ckeditor developers and we are not affiliated with
CKSource and were not involved in the licensing change, so please refrain from complaining to us. T
hanks.)
main.Article: (models.W042) Auto-created primary key used when not defining a primary key type, by
default 'django.db.models.AutoField'.
      HINT: Configure the DEFAULT_AUTO_FIELD setting or the MainConfig.default_auto_field attribu
te to point to a subclass of AutoField, e.g. 'django.db.models.BigAutoField'.
main.GroupArticles: (models.W042) Auto-created primary key used when not defining a primary key typ
e, by default 'django.db.models.AutoField'.
      HINT: Configure the DEFAULT_AUTO_FIELD setting or the MainConfig.default_auto_field attribu
te to point to a subclass of AutoField, e.g. 'django.db.models.BigAutoField'.
todoapp.Task: (models.W042) Auto-created primary key used when not defining a primary key type, by
default 'django.db.models.AutoField'.
      HINT: Configure the DEFAULT_AUTO_FIELD setting or the BaseConfig.default_auto_field attribu
te to point to a subclass of AutoField, e.g. 'django.db.models.BigAutoField'.
Operations to perform:
  Apply all migrations: admin, auth, contenttypes, main, sessions, todoapp
Running migrations:
  Applying contenttypes.0001_initial... OK
  Applying auth.0001_initial... OK
  Applying admin.0001_initial... OK
  Applying admin.0002_logentry_remove_auto_add... OK
  Applying admin.0003_logentry_add_action_flag_choices... OK
  Applying contenttypes.0002_remove_content_type_name... OK
  Applying auth.0002_alter_permission_name_max_length... OK
  Applying auth.0003_alter_user_email_max_length... OK
  Applying auth.0004_alter_user_username_opts... OK
  Applying auth.0005_alter_user_last_login_null... OK
  Applying auth.0006_require_contenttypes_0002... OK
  Applying auth.0007_alter_validators_add_error_messages... OK
  Applying auth.0008_alter_user_username_max_length... OK
  Applying auth.0009_alter_user_last_name_max_length... OK
  Applying auth.0010_alter_group_name_max_length... OK
  Applying auth.0011_update_proxy_permissions... OK
  Applying auth.0012_alter_user_first_name_max_length... OK
  Applying auth.0013_historicaluser... OK
  Applying main.0001_initial... OK
  Applying main.0002_alter_historicalarticle_options_and_more... OK
  Applying sessions.0001_initial... OK
  Applying todoapp.0001_initial... OK
  Applying todoapp.0002_auto_20210316_1013... OK
(blocknote env)

```

Рисунок 16 – Применение миграций и запуск сервера

The screenshot shows a web browser window displaying a login page. The page has a light gray background. At the top, the text 'Please sign in' is centered in a bold, dark font. Below this, there are two input fields: the first is labeled 'Email address (Username)' and the second is labeled 'Password'. To the right of the password field, there is a blue link that says 'Sign Up'. Below the input fields, there is a button labeled 'Sign in'.

Рисунок 17 – Результат выполнения

Вывод

В процессе выполнения задачи были освоены ключевые навыки разработки Bash-скриптов и развёртывания приложений с внешними зависимостями в среде Linux. Основной целью было автоматизировать процесс настройки и запуска проекта, что включало скачивание исходного кода, установку зависимостей, создание виртуального окружения и запуск сервера.