Федеральное государственное бюджетное образовательное учреждение высшего образования «Национальный исследовательский университет «МЭИ»

Институт информационных и вычислительных технологий

Кафедра Управления и интеллектуальных технологий

**Отчёт по лабораторной работе № 2**

**По курсу «Разработка ПО систем управления»**

**«Система контроля версий Git»**

Выполнила студентка группы А-01-20

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Проверили

Мохов А. С

Козлюк Д. А

1. **Создаем папки Alice и Bob**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02

$ mkdir alice

u211-09@PROG-12 MINGW32 ~/Desktop/lab02

$ mkdir bob

u211-09@PROG-12 MINGW32 ~/Desktop/lab02

$ cd alice

1. **Создаем папку project в alice**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice

$ mkdir project

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice

$ cd project

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project

$ cd ..

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice

$ cd project

1. **Инициализируем репозитарий в каталоге**

**u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project**

**$ git init**

Initialized empty Git repository in C:/Users/u211-09/Desktop/lab02/alice/project/.git/

1. **Настроим репозитарий Алисы, чтобы коммиты были от ее имени**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git config user.name 'Alice (NikitinaNK)'

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git config user.email 'iiam\_nikitina@icloud.com'

1. **Запустим CodeBlocks и создадим проект в репозитарии Алисы.**

Project title: project

Folder to create project in: C:\Users\user\Desktop\lab02\alice

Project filename: project.cbp

Resulting filename: C:\Users\user\Desktop\lab02\alice\project\project.cbp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git status

On branch master

No commits yet

Untracked files:

(use "git add <file>..." to include in what will be committed)

bin/

main.cpp

obj/

project.cbp

project.depend

nothing added to commit but untracked files present (use "git add" to track)

lab02

├── alice

│ └── project <--------- текущий рабочий каталог

│ ├── .git <--------- создан командой "git init" (не виден)

│ ├── bin <--------- создан CodeBlocks при сборке

│ ├── obj <--------- (то же самое)

│ ├── main.cpp <-- код программы

│ └── project.cbp <-- файл проекта

└── bob

1. **Составление сообщений к коммитам**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'code

[master (root-commit) f6ff1de] code: çàãîòîâêà ïðîãðàììû

1 file changed, 9 insertions(+)

create mode 100644 main.cpp

**7) Добавьте файл project.cbp в индекс и сделайте коммит с ним**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git add project.cbp

warning: LF will be replaced by CRLF in project.cbp.

The file will have its original line endings in your working directory

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'build : добавлен файл проекта’

[master 79fb8ff] build добавлен файл проекта’

1 file changed, 40 insertions(+)

create mode 100644 project.cbp

1. **Заменим тело функции main() на ввод двух чисел**

int main()

{ cout <<"Enter A and B: ";

int a, b;

1. **Проверяем состояние “git status”**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git status

On branch master

Changes not staged for commit:

(use "git add <file>..." to update what will be committed)

(use "git checkout -- <file>..." to discard changes in working directory)

modified: main.cpp

Untracked files:

(use "git add <file>..." to include in what will be committed)

bin/

obj/

project.depend

no changes added to commit (use "git add" and/or "git commit -a")

1. **Добавляем измененный файл в индекс и коммитим**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git add main.cpp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'code: ввод чисел’

[master 63fe46c] code: ввод чисел

1 file changed, 3 insertions(+), 2 deletions(-)

1. **Сумма**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git add -u

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'code: сумма чисел’

[master feea7b3] code: сумма чисел

1 file changed, 2 insertions(+)

1. **Разность**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git add main.cpp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m'code:разность чисел’

[master 82a3a6d] code:разность чисел

1 file changed, 1 insertion(+), 1 deletion(-)

1. **Игнорирование файлов**

Создаем пустой файл со строкой /bin. Сохраняем с именем ‘.gitignore’

Проверям с помощью git status (файл bin должен отсутствовать)

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git status

On branch master

Untracked files:

(use "git add <file>..." to include in what will be committed)

.gitignore

.gitignore.depend

Untitled1.c

obj/

project.depend

nothing added to commit but untracked files present (use "git add" to track)

***Проделываем то же самое для obj***

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git status

On branch master

Untracked files:

(use "git add <file>..." to include in what will be committed)

.gitignore

.gitignore.depend

Untitled1.c

project.depend

nothing added to commit but untracked files present (use "git add" to track)

1. **Создаем коммит с .gitignore**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git add .gitignore

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'ignore'

[master b1312dc] ignore

1 file changed, 2 insertions(+)

create mode 100644 .gitignore

1. **Работа с просмотром истории**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git log --stat

commit b1312dcbad87889631a910e3d6052c29827eab77 (HEAD -> master)

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 15:54:08 2021 +0300

ignore

.gitignore | 2 ++

1 file changed, 2 insertions(+)

commit 82a3a6dc1fafbb5291af513d439c90dccbd39aae

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 15:31:15 2021 +0300

code:разность чисел

main.cpp | 2 +-

1 file changed, 1 insertion(+), 1 deletion(-)

commit feea7b3da88a65d59fa503d210127e5991311b61

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 15:16:41 2021 +0300

code: сумма чисел

:

main.cpp | 2 ++

1 file changed, 2 insertions(+)

commit 63fe46c199dbe5095d421b05d9d7f24dfec5c2f4

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 15:11:27 2021 +0300

code:ввод чисел

main.cpp | 5 +++--

1 file changed, 3 insertions(+), 2 deletions(-)

commit 79fb8ff4fa0a051fe26818beb05da17dbb898a2d

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 14:56:02 2021 +0300

build : разность чисел

project.cbp | 40 ++++++++++++++++++++++++++++++++++++++++

1 file changed, 40 insertions(+)

commit f6ff1de3fed1333fa42921722d6e51904cf4a317

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 14:43:49 2021 +0300

Code:сумма чисел

main.cpp | 9 +++++++++

1 file changed, 9 insertions(+)

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git log --oneline --decorate

b1312dc (HEAD -> master) ignore

82a3a6d code: разность чисел

feea7b3 codeсумма чисел

63fe46c code: ввод чисел

79fb8ff build добавлен файл проекта

f6ff1de code: заготовка программы

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git log -- main.cpp

commit 82a3a6dc1fafbb5291af513d439c90dccbd39aae

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 15:31:15 2021 +0300

code:разность чисел

commit feea7b3da88a65d59fa503d210127e5991311b61

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 15:16:41 2021 +0300

code: сумма чисел

commit 63fe46c199dbe5095d421b05d9d7f24dfec5c2f4

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 15:11:27 2021 +0300

Code:ввод чисел

commit f6ff1de3fed1333fa42921722d6e51904cf4a317

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 14:43:49 2021 +0300

code: заготовка программы

1. **Найдем коммиты по теме build**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git log --grep "build"

commit 79fb8ff4fa0a051fe26818beb05da17dbb898a2d

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 14:56:02 2021 +0300

build : добавлен файл проекта

1. **Найдем коммиты из project.cbp**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git log -- project.cbp

commit 79fb8ff4fa0a051fe26818beb05da17dbb898a2d

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 14:56:02 2021 +0300

build : добавлен файл проекта

1. **Просмотрим последний коммит**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git show HEAD~1

commit 82a3a6dc1fafbb5291af513d439c90dccbd39aae

Author: Alice (NikitinaNK) <iiam\_nikitina@icloud.com>

Date: Mon Mar 1 15:31:15 2021 +0300

code:ðàçíîñòü ÷èñåë

diff --git a/main.cpp b/main.cpp

index bf4d8ac..af8380f 100644

--- a/main.cpp

+++ b/main.cpp

@@ -7,6 +7,6 @@ int main()

int a, b;

cin >>a>>b;

cout << "A + B = " << a + b << '\n';

-

+ cout<< "A - B = " << a - b << '\n';

return 0;

}

**18)Внесем изменения в main.cpp: добавим печать произведения чисел, но не станем пока делать коммит**.

Внесем изменения в main.cpp, добавив произведение.

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git diff

diff --git a/main.cpp b/main.cpp

index af8380f..c22431c 100644

--- a/main.cpp

+++ b/main.cpp

@@ -8,5 +8,6 @@ int main()

cin >>a>>b;

cout << "A + B = " << a + b << '\n';

cout<< "A - B = " << a - b << '\n';

+ cout<<"A\*B= " << a\*b << '\n';

return 0;

}

**19) изменения между самым первым коммитом и коммитом, добавляющим вывод разности.**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git diff f6ff1de 82a3a6d

diff --git a/main.cpp b/main.cpp

index b4392ec..af8380f 100644

--- a/main.cpp

+++ b/main.cpp

@@ -3,7 +3,10 @@

using namespace std;

int main()

-{

- cout << "Hello world!" << endl;

+{ cout <<"Enter A and B: ";

+ int a, b;

+ cin >>a>>b;

+ cout << "A + B = " << a + b << '\n';

+ cout<< "A - B = " << a - b << '\n';

return 0;

}

diff --git a/project.cbp b/project.cbp

new file mode 100644

index 0000000..99bb702

--- /dev/null

+++ b/project.cbp

@@ -0,0 +1,40 @@

:

**20) изменения в рабочей копии (вывод произведения).**

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git add main.cpp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'code : multi'

On branch master

Untracked files:

.gitignore.depend

Untitled1.c

bin/

obj/

project.depend

nothing added to commit but untracked files present

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git reset --hard b1312dc

HEAD is now at b1312dc ignore

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git checkout HEAD -- main.cpp

21) Закоммитим изменения

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'code: произведение чисел'

[master acb609b] code: произведение чисел

1 file changed, 2 insertions(+)

create mode 100644 .gitignore

21) Удалим коммит

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git reset --hard HEAD~1

HEAD is now at e8e903d code: разность чисел

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git checkout HEAD -- main.cpp

22) Создаем репозитарий на github.com с название cs-lab-02

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git remote add origin https://github.com/NikitinaNK/cs-lab02.git

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git push -u origin master

Enumerating objects: 9, done.

Counting objects: 100% (9/9), done.

Delta compression using up to 4 threads

Compressing objects: 100% (8/8), done.

Writing objects: 100% (9/9), 1.37 KiB | 1.37 MiB/s, done.

Total 9 (delta 0), reused 0 (delta 0)

To https://github.com/NikitinaNK/cs-lab02.git

\* [new branch] master -> master

Branch 'master' set up to track remote branch 'master' from 'origin'.

23) Открываем терминал git bash для bob и клонируем проект

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

github.com/NikitinaNK/cs-lab02.git

Cloning into 'project'...

remote: Enumerating objects: 9, done.

remote: Counting objects: 100% (9/9), done.

remote: Compressing objects: 100% (8/8), done.

remote: Total 9 (delta 0), reused 9 (delta 0), pack-reused 0

Unpacking objects: 100% (9/9), done.

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ cd project

24) Добавляем в программу bob печать произведения и коммитим

cout << "A + B = " << a + b << '\n'

<< "A - B = " << a - b << '\n'

<< "A \* B = " << a \* b << '\n';

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git add main.cpp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git commit -m 'code: произведение чисел'

On branch master

Your branch is up to date with 'origin/master'.

nothing to commit, working tree clean

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git commit -m 'code: произведение чисел'

On branch master

Your branch is up to date with 'origin/master'.

Changes not staged for commit:

modified: main.cpp

no changes added to commit

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git add main.cpp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git commit -m 'code: произведение чисел'

[master 6ea6530] code: произведение чисел

1 file changed, 2 insertions(+), 1 deletion(-)

25) Отпраляем на github

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git push

Enumerating objects: 5, done.

Counting objects: 100% (5/5), done.

Delta compression using up to 4 threads

Compressing objects: 100% (3/3), done.

Writing objects: 100% (3/3), 379 bytes | 379.00 KiB/s, done.

Total 3 (delta 1), reused 0 (delta 0)

remote: Resolving deltas: 100% (1/1), completed with 1 local object.

To https://github.com/NikitinaNK/cs-lab02.git

e8e903d..6ea6530 master -> master

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git fetch

remote: Enumerating objects: 5, done.

remote: Counting objects: 100% (5/5), done.

remote: Compressing objects: 100% (2/2), done.

remote: Total 3 (delta 1), reused 3 (delta 1), pack-reused 0

Unpacking objects: 100% (3/3), done.

From https://github.com/NikitinaNK/cs-lab02.git

44cff0c..9bcb849 master -> origin/master

26) Продвинем ветку master к скаченной версии

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git pull --ff-only

Updating 44cff0c..9bcb849

Fast-forward

main.cpp | 2 ++

1 file changed, 2 insertions(+)

27) От имени alice добавим печать деления, сделаем коммит и подгрузим для боба с гитхаба

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git add main.cpp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'code: частное чисел'

[master 44cff0c] code: частное чисел

1 file changed, 4 insertions(+), 3 deletions(-)

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git push

Enumerating objects: 5, done.

Counting objects: 100% (5/5), done.

Delta compression using up to 4 threads

Compressing objects: 100% (3/3), done.

Writing objects: 100% (3/3), 408 bytes | 408.00 KiB/s, done.

Total 3 (delta 1), reused 0 (delta 0)

remote: Resolving deltas: 100% (1/1), completed with 1 local object.

To https://github.com/NikitinaNK/cs-lab02.git

6ea6530..44cff0c master -> master

28) На машине alice делаем печать максимума, коммитим и загружаем на github.

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git add main.cpp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'code: печать максима '

[master 9bcb849] code: печать максима

1 file changed, 2 insertions(+)

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git push

Enumerating objects: 5, done.

Counting objects: 100% (5/5), done.

Delta compression using up to 4 threads

Compressing objects: 100% (3/3), done.

Writing objects: 100% (3/3), 395 bytes | 395.00 KiB/s, done.

Total 3 (delta 1), reused 0 (delta 0)

remote: Resolving deltas: 100% (1/1), completed with 1 local object.

To https://github.com/NikitinaNK/cs-lab02.git

44cff0c..9bcb849 master -> master

29) На Машине Боба делаем печать минимума и коммитим

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git add main.cpp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git commit -m 'code: печать минимума '

[master a98a5fa] code: печать минимума

1 file changed, 2 insertions(+)

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git push

To https://github.com/gorg20121/cs-lab02.git

! [rejected] master -> master (non-fast-forward)

error: failed to push some refs to 'https://github.com/gorg20121/cs-lab02.git'

hint: Updates were rejected because the tip of your current branch is behind

hint: its remote counterpart. Integrate the remote changes (e.g.

hint: 'git pull ...') before pushing again.

hint: See the 'Note about fast-forwards' in 'git push --help' for details.

30) Появился конфликт т.к коммит боба основан не на последнем коммите, подгружаем все на боба

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

/lab02/bob/project (master)

$ git pull

Auto-merging main.cpp

CONFLICT (content): Merge conflict in main.cpp

Automatic merge failed; fix conflicts and then commit the result.

31) При попытке переместить коммит боба выше коммита алисы выпадает ошибка

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git rebase origin/master

main.cpp: needs merge

error: cannot rebase: You have unstaged changes.

error: additionally, your index contains uncommitted changes.

error: Please commit or stash them.

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

(master|MERGING)

$ git add main.cpp

// исправляем конфликт в бобе и получаем

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/bob/project (master)

$ git log --oneline --decorate --all --graph

\* 3c59749 (HEAD -> master) code: обьедениние

|\

| \* 9bcb849 (origin/master, origin/HEAD) code: печать максима

\* | 3b82a05 code: печать минимума

|/

\* 44cff0c code: частное чисел

\* 6ea6530 code: произведение чисел

\* e8e903d code: разность чисел

\* dcc5806 build

\* bb481df code: заготовка программы

32) Создаем на алисе ветку double и переключаемся на нее

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git branch double

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git checkout double

Switched to branch 'double'

33) Заменим тип переменных a и b на double и сделаем коммит

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git add main.cpp

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git commit -m 'code: double a,b'

[double 32b047e] code: double a,b

1 file changed, 1 insertion(+), 1 deletion(-)

34) сливаем ветку double в мастер

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git merge double

Updating 9bcb849..32b047e

Fast-forward

main.cpp | 2 +-

1 file changed, 1 insertion(+), 1 deletion(-)

u211-09@PROG-12 MINGW32 ~/Desktop/lab02/alice/project (master)

$ git log --oneline --decorate

32b047e (HEAD -> master, double) code: double a,b

9bcb849 (origin/master) code: печать максима

44cff0c code: частное чисел

6ea6530 code: произведение чисел

e8e903d code: разность чисел

dcc5806 build

bb481df code: заготовка программы