Homework 4

Remember if you are using protostar you cannot use serialise_word to output values, you need to use hints instead.

1. In the Cairo Playground use the Hello playground example

a) Run the program and see the output in the console

b) Debug the program, look at the memory and the watch window, do you understand how the output_ptr is being used ?

output_ptr points to a location in memory which contains the output value

2. Install Protostar, instructions are below, today we are only going to use programs, so you do not need to write or deploy contracts.

3. Complete exercises in `cairo/exercises/programs` directory in this repo, follow the instructions in the README file in the `cairo` directory. If you have problems running the exercises, you can instead copy the code into the Cairo playground and run them there.

Setting up Protostar

See documentation and this useful medium article

LINUX / MAC

1.

```
curl -L https://raw.githubusercontent.com/software-mansion/protostar/master/install.sh | bash
```

2. Restart the terminal.
3. Run `protostar -v` to check Protostar and cairo-lang version.
   It adds to your PATH in .bashrc, you may need to move that line to .bash_profile If it doesn't find protostar.
   You may also need to update your version of git

WINDOWS

Windows is not supported.

To create a new project use

```
protostar init
```

This will give a directory structure similar to this

```
drwxr-xr-x   7 laurencekirk   staff   224 16 Jul 05:39 ./
drwxr-xr-x   3 laurencekirk   staff    96 16 Jul 05:39 ../
drwxr-xr-x   9 laurencekirk   staff   288 16 Jul 05:39 .git/
drwxr-xr-x   2 laurencekirk   staff    64 16 Jul 05:39 lib/
-rw-r--r--   1 laurencekirk   staff   148 16 Jul 05:39 protostar.toml
drwxr-xr-x   3 laurencekirk   staff    96 15 Jul 10:03 src/
drwxr-xr-x   3 laurencekirk   staff    96 15 Jul 10:03 tests/
```

Configuration

This is specified in the .toml file

```
["protostar.config"]
protostar_version = "0.4.2"


["protostar.project"]
libs_path = "./lib"              # a path to the dependency directory
```

```
# This section is explained in the "Project compilation" guide.
["protostar.contracts"]
main = [
  "./src/main.cairo",
]
```

Compiling your programs / contracts

once you have specified the contracts in the protostar.toml file, run

```
protostar build
```

to compile them.

Deploying your programs / contracts

You need to specify the path to the compilation results.

```
$ protostar deploy ./build/main.json --network alpha-goerli
```

Testing your programs / contracts

Protostar will find the test file using its name, checking if it begins with `test_` prefix, and has `@external` functions, which names begin with `test_` .

A test looks like

```
@external
func test_sum{syscall_ptr : felt*, range_check_ptr}():
    let (r) = sum_func(4,3)
    assert r = 7
    return ()
end
```

You can run the tests, specifying the test directory

```
protostar test ./tests
```