Chp1-pre-slam

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1. Project Structure

total 17 directories, 57 files

the file system of this project named 'preslam':

- .vscode contains the configure files for VSCode
- bin the binary output directory
    - preslam
- build the cmake binary directory for build
- include the include directory contains cpp head files
    - helloslam.h
- lib the lib output directory
    - libhelloslam.so
- src directory constains cpp source files
    - helloslam.cpp
- .gitignore the gitignore file
- CMakeLists.txt the cmake file
- main.cpp the main source file
- readme.md the readme file

2. Main Apis

1. *CPP*

- ***void hello_slam()***

```
/**
 * @brief a no-return function to print "hello, slam!"
 */
```

2. *CMake*

-
  ```
  # Sets the minimum required version of cmake
  cmake_minimum_required(VERSION 3.10)
  ```

-
  ```
  # Set the name of the project
  project(preslam VERSION 0.0.1)
  ```

-
  ```
  # Add include directories to the build
  include_directories(${CMAKE_SOURCE_DIR}/include)
  ```

-
  ```
  # Add a library to the project using the 'helloslam.cpp'
  add_library(${LIB_NAME} SHARED ${CMAKE_SOURCE_DIR}/src/helloslam.cpp)
  ```

-
  ```
  # Add an executable to the project using the 'main.cpp'
  add_executable(${CMAKE_PROJECT_NAME} ${CMAKE_SOURCE_DIR}/main.cpp)
  ```

-
  ```
  # link the lib to the executable
  target_link_libraries(${CMAKE_PROJECT_NAME} PRIVATE  ${LIB_NAME})
  ```

3. Source Code

1. *CPP*

- helloslam.h

```
#pragma once

#include <iostream>

namespace ns_chp1 {
/**
 * @brief a no-return function to print "hello, slam!"
 */
void hello_slam();
}  // namespace ns_chp1
```

- helloslam.cpp

```cpp
#include "helloslam.h"

namespace ns_chp1 {
void hello_slam() {
  // print "Hello, slam!"
  std::cout << "Hello, slam!" << std::endl;
  return;
}
}  // namespace ns_chp1
```

- main.cpp

```cpp
#include "helloslam.h"

int main(int argc, char const *argv[]) {
  // call 'hello_slam'
  ns_chp1::hello_slam();
  return 0;
}
```

2. CMake

- CMakeLists.txt

```cmake
# Sets the minimum required version of cmake
cmake_minimum_required(VERSION 3.10)

# Set the name of the project
project(preslam VERSION 0.0.1)

# Add include directories to the build
include_directories(${CMAKE_SOURCE_DIR}/include)

# Set a environment variable to the lib name
set(LIB_NAME helloslam)

# set the lib output directory
set(CMAKE_LIBRARY_OUTPUT_DIRECTORY ${CMAKE_SOURCE_DIR}/lib)

# set the bin output directory
set(CMAKE_RUNTIME_OUTPUT_DIRECTORY ${CMAKE_SOURCE_DIR}/bin)

# Add a library to the project using the 'helloslam.cpp'
add_library(${LIB_NAME} SHARED ${CMAKE_SOURCE_DIR}/src/helloslam.cpp)

# Add an executable to the project using the 'main.cpp'
add_executable(${CMAKE_PROJECT_NAME} ${CMAKE_SOURCE_DIR}/main.cpp)

# link the lib to the executable
target_link_libraries(${CMAKE_PROJECT_NAME} PRIVATE  ${LIB_NAME})
```