Precompiled headers in clang

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Introduction

The doc describes precompiled headers (pch) in clang, their internals and how they can be used

The source code for examples can be found in the article git repository [1] in the folder **pch/src**.

1 User guide

Generate you pch file is simple. Suppose you have a header file with name **header.h**:

```
#pragma once

#include <iostream>

void foo() {
  std::cout << "foo" << std::endl;
}
```

then you can generate a pch for it with

```
clang -x c++-header header.h -o header.pch
```

the option **-x c++-header** was used there. The option says that the header file has to be treated as a c++ header file. The output file is **header.pch**.

The precompiled headers generation is not enough and you may want to start using them. Typical C++ source file that uses the header may look like

```
// test pchs

#include "header.h"

int main() {
  foo();
```

```
  return 0;
}
```

As you may see, the header is included as follows

```
  ...
#include "header.h"
  ...
```

By default clang will not use a pch at the case and you have to specify it explicitly with

```
clang -include-pch header.pch main.cpp -o main -lstdc++
```

2 PCH internals

References

[1] Ivan Murashko. Articles git repository, 2022.