

# **A Very Quick View Into a Compiler**

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# What is a Compiler?



# Front End

**PREPROCESSOR**

**LEXER**

**PARSER**

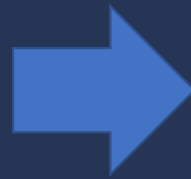
**ANALYZER**

# Front End

**PREPROCESSOR**

# Preprocessor

```
#include "file.h"  
#define FOO foo  
#define BAR bar  
#define BAZ 1  
FOO BAR  
#if BAZ  
BAZ IS TRUE  
#else  
BAZ IS FALSE  
#endif
```



```
#include "file.h" */  
#define FOO foo  
#define BAR bar  
#define BAZ 1  
FOO BAR  
#if BAZ  
BAZ IS TRUE  
#else  
BAZ IS FALSE  
#endif
```

# Front End

**PREPROCESSOR**

**LEXER**

# Lexer

```
int add()  
{  
    return 5 + 10;  
}
```

**KEYWORD**

**IDENTIFIER**

**PUNCTUATOR**

**LITERAL**

**OPERATOR**



# Front End

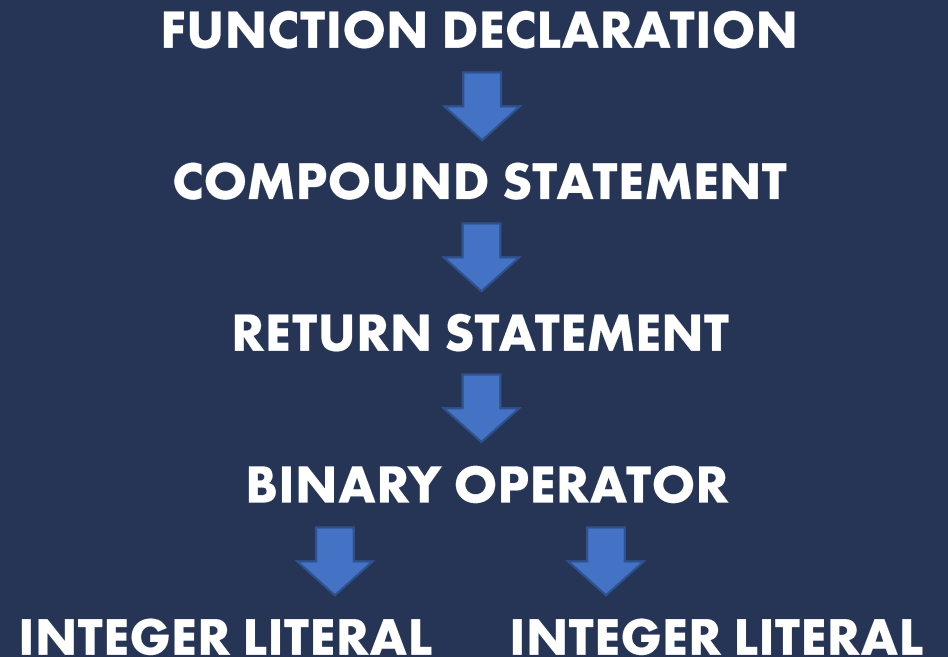
**PREPROCESSOR**

**LEXER**

**PARSER**

# Parser

```
int add()  
{  
    return 5 + 10;  
}
```



# Front End

**PREPROCESSOR**

**LEXER**

**PARSER**

**ANALYZER**

**Middle End**

# Optimizations

**Constant Propagation**

**Inline Expansion**

**Loop Unrolling**

**Dead-Code Elimination**

**Parallelization**

**And many more ...**

# Analysis

**Alias Analysis**

**Dependency Analysis**

**Data Flow Analysis**

**And many more ...**

**Back End**

# Back End

**INSTRUCTION  
SELECTION**



# Back End

**INSTRUCTION  
SELECTION**

**REGISTER  
ALLOCATION**

# Back End

**INSTRUCTION  
SELECTION**

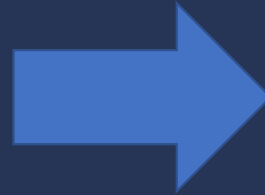
**REGISTER  
ALLOCATION**

**INSTRUCTION  
SCHEDULING**

# **Assembling & Linking**

# Assembling & Linking

```
add eax, 5  
mul edx
```



```
83 c0 05  
f7 e2
```

# Assembling & Linking



# Thank You!

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