Assignment 37: What is a C Preprocessor?

The C Preprocessor is a program that processes the source code before it is passed to the compiler. It handles directives beginning with #, such as #include for including header files, #define for defining macros, #ifdef and #ifndef for conditional compilation, and more. The preprocessor performs text manipulation on the source code based on these directives.

- The #define preprocessor directive is used to define macros in C. It has the following syntax:

```
#define macro_name replacement_text
```

- macro_name: This is the name of the macro being defined. It can be any valid C identifier.
- replacement_text: This is the text that will be substituted for the macro whenever it is encountered in the code. It can be any sequence of characters, including other macros or parts of code.

For example:

```
#define PI 3.14159
#define MAX(a, b) ((a) > (b) ? (a) : (b))
```

In this example:

- PI is defined as a macro with the replacement text 3.14159.
- MAX(a, b) is defined as a macro with the replacement text ((a) > (b) ? (a) : (b)). This macro takes two arguments a and b, and returns the maximum of the two values. Note the use of parentheses to ensure correct evaluation of expressions.