C program passes through 3 phases.

1. Pre- processing,
2. Compiling,
3. Linking
* exe generate.

Preprocessor is a program which pre processes your program before it compiles.

We use pre-processor directives or pre-processor command to pre process.

**pre-processor directives**

source code are being examine before compilation if it has any pre-processor directies.

**Preprocessor Command**

They starts with # command.

They are not program lines and always put in first column in source cod.

No semicolon (;) needed to put last for preprocessor command.

Eg.

#include<stdio.h>

[include stdio.h file before compiling. File inclusion command]

#define used to define macro.

#undef used to undefined macro.

#if

#else

#endif

**There are 3 categories pre processor directives :**

1. **Macro substitution directives ( used for macro)**
2. **File inclusion directives ( used for including file)**
3. **Compiler control directives ( for controlling condition during compilation .. eg. Skiping the f line. )**

 **Macro substitution directives ( used for macro)**

We are defining substitute value for identifier.

Syntax :

#define identifier value

Common form where to use macro:

* Simple Macro substitution :
* Argumented Macro substitution
* Nested Macro substituion

**Simple Macro substitution**

#define VALUE 10

d= VALUE – 5; // (10-5)

#define AREA 50\*2

#define SIZE sizeof(int)\*4

#define A 50-10

#define B 10-2

C = A \* B; //C= 50-10 \* 10-2); // according operator precedent multiplication will be done before subtraction. **Problem**

 **Right way :**

#define A (50-10)

#define B (10-2)

C = A \* B; // 40 \* 8

[make sure you always use bracates () if you use expression in macro.

#include<stdio.h>

#define LIKES 10000

#define MESSAGE “Hi”

int main()

{

int n = 2000;

if (LIKES>n)

{

printf(MESSAGE);

}

return 0;

}

**Compiler Control Directives**

**Condtional compilation : if same programme for two different machine than you can skip few lines during compilation.**

**#ifdef // uses**

**#else**

**#endif**

**#if (**

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**Ex 1.**

**#define X 100 // stored in macro.c**

**#ifndef X**

**#define X 200 // as X is already defined in macro.c so this line will be skipped.**

**#endif**

 **\*\*\*\*\*\*\*\*\*\*Ex 2\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**#define y 100 // stored in macro.c**

**#ifndef X**

**#define X 200 // this line will be executed in this case as X is not defined earlier.**

**#endif**

**File inclusion directives ( used for including file)**

**Compiler control directives ( for controlling condition during compilation .. eg. Skiping the f line. )**