

Pre-processing in Software synthesis

In this section is intended to explain step by step how a c programmed code is getting pre-processed for the synthesis procedure.

1. Comments removal:

```
1  /*****
2
3      Online C Compiler.
4      Code, Compile, Run and Debug C program online.
5      Write your code in this editor and press "Run" button to compile and execute it.
6
7  *****/
8
9  #include <stdio.h>
10 #define GRAV 9.8
11 int main()
12 {
13     int a=4; //accleration
14     int v=43; //velocity
15     printf("Value of the Gravity is: %f ",GRAV);
16
17     if (v>a){
18         printf("\n%d",v);
19     }
20
21     return 0;
22 }
23
```

Comments are used to give a general idea of the code and its function to the coders(humans).

Therefore, there is no reason to keep them to use by the computers. Comments are represented by `//` or `/* */` in c language.

```
1
2
3  #include <stdio.h>
4  #define GRAV 9.8
5  int main()
6  {
7      int a=4;
8      int v=43; |
9      printf("Value of the Gravity is: %f ",GRAV);
10
11     if (v>a){
12         printf("\n%d",v);
13     }
14
15     return 0;
16 }
17
```

2. Macros expansion:

Macros are constant values or definitions defined by the `#define` directives in C Language.

`#define` can be removed and instead of that it will be declared inside the `main()` function.

```
1
2
3 #include <stdio.h>
4 int main()
5 {
6     int a=4;
7     int v=43;
8     int GRAV= 9.8;
9     printf("Value of the Gravity is: %f ",GRAV);
10
11     if (v>a){
12         printf("\n%d",v);
13     }
14
15     return 0;
16 }
17
```

3. File inclusion:

```

1
2 int main()
3 {
4     int a=4;
5     int v=43;
6     int GRAV= 9.8;
7     printf("Value of the Gravity is: %f ",GRAV);
8
9     if (v>a){
10         printf("\n%d",v);
11     }
12
13     return 0;
14 }
15

```

File Inclusion like <stdio.h> can be removed since the libraries are already fed to the synthesizing software.

4. Conditional compilation:

Suppose in this example if condition is removed. Then there will be two alternative codes.

First one is: `printf("%d",v);`

second one is: `printf("%d",a);`

In order to handle this codes there are specific formal proven techniques that can be deal with such kind of codes. [1]

References

- [1] [Program synthesis - Wikipedia](#)