**Assignment 4**

**Compilation process**

C is a high level language and it needs a compiler to convert it into an executable code so that the program can be run on our machine. Compiling a C program is a multi-stage process. At an overview level, the process can be split into four separate stages:

1. Preprocessing

2. Compilation

3. Assembly

4. Linking

1. ***Pre-processing****:-* The C Compilation begins with pre-processing of source file. Pre-processor is a small software that accepts C source file and performs below tasks:-

-> Remove comments

-> Macro expansion

-> Expansion of include header file

Temporarily pre-processing creates file with .i extension.

2. ***Compilation:-*** In the phase of C compilation the compiler comes into action. It accepts temporary pre processed file generated by the pre-processor and check C program for syntax error and translate it into assembly language.

3. ***Assembly:***- In this phase assembler accepts the compiled source code(.s extension) and translate to low level machine code. After successfully assembling it generates .obj file.

4*.* ***Linking:****-* In this phase linker comes into action. It accepts the intermediate file(.obj) generated by assembler and link all the function call with their original

definitation. It generates the final executable file(.exe extension).

**Compiling and linking to generate Dll and exe**

Steps for compiling and linking dll and exe file are as follows:-

* Create a library file with extension library.h where SayHello ( ) function prototype is declared.
* Again create another file where definitation of the SayHello( ) function is defined by including our library.h file**(#include “library.h”).**
* Compile our library.c file - **cl /LD library.c**

After compilation, it generates .dll and .obj file**(library.dll and library.obj).**

* We have to write another file (hello.c) where we just call the SayHello() function.

Include header file library.h.

* We need to compile hello.c file and library.obj file at a same time.

**cl hello.c library.obj**

This command used to compile hello.c file as well as linker gets the link from library.obj and resolve SayHello() function.

* To run the code type **– hello.exe**

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