EXTERN

Understanding “extern” keyword in C

I’m sure that this post will be as interestring and infor mative to C virgins (i.e beginners) as it will be to those who are well versed in C. So let me start by saying that extern keyword applies to C variables (data objects) and C functions. Basically extern keywird extends the visibility of the c variables and C function. Probably that’s is the reason why it was named as extern.

Though (almost) everyone knows the meaning of declaration and definition of a variable/function yet for the sake of completeness of this post, I would like to clarify them. Declaration of a variable/function simply declares that the variables/function exists somewhere in the program but the memory is not allocated for them. But the declar role. And ation of a variables/function serves an important role. And that is the type of the variable/function.therefore, when a variable is declared. The program knows what are the arguments to that functions, their data types, the order of arguments and the return type of the function. So that’s all ablut the declaration. Coming to the definition as a superset of the declaration (pr declaration as a subset of definition). From this explanation, it should be obvious that a variable/function can be deckared any number of times but it can be defined only once. Remenber the basic principle that you can’t have two lacations of the same variable/function. So that’s all about declaration and definition.

Now coming back to out main objective: understanding “extern” keyword in c. I’vs explained the role of declaration/definition because it’s mandatory to understand them to understand the “extern” keyword. Let us first take the easy case. Use of extern with c functions. By default, the declaration of a c function have “extern” prepended with them . it means even though we don’t use extern with the declaration/definition of c functions, it is present there. For example

Int foo(int arg1, char, arg2);

There’s an extern present at the beginning which is hidden and the compiler treats is as below:

Extern int foo(int arg1, char arg2);

Same is the case with the definitaion of a c function (definition of a c function means writing the body of the function). Therefore whenever we define a c function, an extern is present there in the beginning of the function definition. Since the declareation can be done any number of times and definition can be done only once, we can notice that declaration of a function can be added in several C/H files or in a single C/H file several times. But we noticethe actual definition of the function only once. And as the extern extends the visibility to the whole program, the function can be used anywhrer in any of the files of the whole program provided the declaration of the function is known. (by knowing the declaration of the function, C compiler knows that the definition of the function exits and it goes ahead to compile the program). So that’s all about extern with C function

Now let us then take the second and final case use of extern with C variables. I feel that it more interesting and informative than the previous case where extern is present by default with C functions. So let me ask the question, how would wou declare a C variable without defining it? Many of you would see it trivial but it’s an important question to understand extern with C variables. The answer goes as follows

Extern int var;

Here an interger type variable called var has been declared (remember no definition no memory allocation for var so far). And we can do this declaration as many times as needed. (remember that declaration can be done any number of times). So far so good.

Now how would you define a variable? Now I agree that it is the most trivial question in programming and the answer is as follows.

Int var;

Here, an integer type variables called var has been declared as well as defined (remember that definition is the superset of declaration). Here the memory for var is also allocated. Now here comes the surprise, when we declared/defined a C function. We saw that an extern was prese int by default