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Basics of Programming

WEDNESDAY, 6 MARCH 2013

Assembler, Compiler, Interpreter, Linker, Loader

Assembler: A computer will not understand any program written in a language, other than its machine language. The programs written in other languages must be translated into the machine language. Such translation is performed with the help of software. A program which translates an assembly language program into a machine language program is called an assembler. If an assembler which runs on a computer and produces the machine codes for the same computer then it is called self assembler or resident assembler. If an assembler that runs on a computer and produces the machine codes for other computer then it is called Cross Assembler.

Assemblers are further divided into two types: One Pass Assembler and Two Pass Assembler. One pass assembler is the assembler which assigns the memory addresses to the variables and translates the source code into machine code in the first pass simultaneously. A Two Pass Assembler is the assembler which reads the source code twice. In the first pass, it reads all the variables and assigns them memory addresses. In the second pass, it reads the source code and translates the code into object code.

Compiler: It is a program which translates a high level language program into a machine language program. A compiler is more intelligent than an assembler. It checks all kinds of limits, ranges, errors etc. But its program run time is more and occupies a larger part of the memory. It has slow speed. Because a compiler goes through the entire program and then translates the entire program into machine codes. If a compiler runs on a computer and produces the machine codes for the same computer then it is known as a self compiler or resident compiler. On the other hand, if a compiler runs on a computer and produces the machine codes for other computer then it is known as a cross compiler.

Interpreter: An interpreter is a program which translates statements of a program into machine code. It translates only one statement of the program at a time. It reads only one statement of program, translates it and executes it. Then it reads the next statement of the program again translates it and executes it. In this way it proceeds further till all the statements

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are translated and executed. On the other hand, a compiler goes

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occupies less memory space, so it can be used in a smaller system which has limited memory space.

Linker: In high level languages, some built in header files or libraries are stored. These libraries are predefined and these contain basic functions which are essential for executing the program. These functions are linked to the libraries by a program called Linker. If linker does not find a library of a function then it informs to compiler and then compiler generates an error. The compiler automatically invokes the linker as the last step in compiling a program.

Not built in libraries, it also links the user defined functions to the user defined libraries. Usually a longer program is divided into smaller subprograms called modules. And these modules must be combined to execute the program. The process of combining the modules is done by the linker.

Loader: Loader is a program that loads machine codes of a program into the system memory. In Computing, a **loader** is the part of an Operating System that is responsible for loading programs. It is one of the essential stages in the process of starting a program. Because it places programs into memory and prepares them for execution. Loading a program involves reading the contents of executable file into memory. Once loading is complete, the operating system starts the program by passing control to the loaded program code. All operating systems that support program loading have loaders. In many operating systems the loader is permanently resident in memory.

posted by Vijay Kumar @ 00:24 40 comments

40 Comments:

At 22 August 2013 at 18:18 , Remanika E said...

Thank you so much. This was very helpful. :)

At 27 December 2013 at 05:33 , Karan Diwan said...

Thank you very much sir for explaining the translators in a comprehendible language,

At 4 February 2014 at 03:40 , Amar Nath Dishilva said...

Its nice , thanks

At 5 February 2014 at 23:41 , anees irshad said...

thanx bro... it is a very easy...

At 22 February 2014 at 05:58 , Pooja LV said...

Thankq so much for the awesome explanation..

At 21 May 2014 at 10:01 , vish said...

thnx for easy explanation!

At 26 May 2014 at 05:25 , Chandra Prabhat Maurya said...

Thanks really nice ! I can prepare well for IBPS exam from this..

At 17 July 2014 at 10:54 , N.A.Abhijeeth said...

Thanq so much.
It was helpfull

At 2 November 2014 at 01:05 , Shweta Patel said...

Thank You !!! Really helpfull...

At 6 November 2014 at 03:43 , Naval Mehta said...

very useful

At 18 November 2014 at 06:03 , jerin martin said...

Simple and easy to understand . Thank u

At 29 November 2014 at 18:03 , RAhuL tHaKuR said...

Thanxx

At 8 December 2014 at 04:35 , Ahmadshah shaker said...

Thank you too much helpful and simple to easy understand.

At 9 December 2014 at 01:30 , Dinesh Kumar said...

thnx bro.. u save my xams. ;)

At 11 December 2014 at 07:15 , Reet Sharma said...

Awesume Explanation!!
It goes direct into the brain.

At 12 December 2014 at 15:13 , David Agbo said...

Good piece tho....straight forward!!easy to remember...Thanks #Short_GH

At 13 December 2014 at 23:45 , puneet gupta said...

Thanks to you for providing easy language explation.

At 30 January 2015 at 21:23 , Cindy Dy said...

Well done! Nice post! This really helps me to find the answers to my

question.

Sorn
www.gofastek.com

At 13 February 2015 at 09:33 , @myself said...

thanks for ur short and crispy note

At 1 March 2015 at 20:35 , Satish Ekka said...

thanks for easy and simple explanation.

At 27 April 2015 at 07:10 , khushboo jumani said...

Nicely explained

At 8 May 2015 at 10:07 , Akash said...

thanks for difinition...

At 6 July 2015 at 05:34 , abhi said...

Thanks Dear,,,, very good explanation..

At 18 July 2015 at 09:45 , Suresh Kumar said...

Good say

At 18 July 2015 at 09:45 , Suresh Kumar said...

Good say

At 19 July 2015 at 19:16 , Leslie Lim said...

Wow. Awesome article. Please do more articles like this in the future. Very informational and knowledgeable. I will expect more from you in the future. For now i will just bookmark your page and surely I'm gonna come back later to read more. Thank you to the writer!

Rica
www.imarksweb.org

At 18 August 2015 at 02:49 , aseem goel said...

this post is so intensive...cleared all of my concepts covering all the necessary details..thanks..

At 30 August 2015 at 00:24 , raj said...

thank you so much, that helped a lot!! :)

At 8 September 2015 at 11:32 , Gaurav Patel said...

Easy to understand. ...

At 8 September 2015 at 11:32 , Gaurav Patel said...

Easy to understand. ...

At 8 September 2015 at 11:32 , Gaurav Patel said...

Easy to understand. ...

At 11 September 2015 at 11:35 , vardhan s said...

great job man...

At 10 October 2015 at 08:28 , Abdul Samad Ali said...

Great it helps in my assignment

At 13 October 2015 at 11:33 , Unknown said...

Thanku so much

At 13 October 2015 at 11:33 , Unknown said...

Thanku so much

At 16 October 2015 at 03:28 , beauti of king said...

thanks.....

At 21 November 2015 at 23:52 , anurag kumar said...

it was really very helpful....thnx bro

At 26 November 2015 at 09:41 , prasandika bhagya said...

great carry on

At 4 December 2015 at 06:21 , rob said...

simple language.welll

At 29 December 2015 at 21:44 , Wasiur Rahman said...

easy explanation, very nice

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