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UNIT;INTRODUCTION TO PROGRAMMING

1. Define the following terms as used in C programming

a).Compiler-a software tool that translates human readable source code into machine code that can be executed by a computer.

b)Source code-human readable program written in C that consists of instructions and logic that a programmer writes to perfom a specific task.

c)Object code-output generated by a compiler after translating human readable source code consist of machine code and intermediate code that is not directly understandable by humans.

d)Linkers-tools that combine multiple object object codes files generated by the compiler into a single executable file.

2.Compilation Process of a C program

Pre-processing-handles directives like #include and #define.it produces and expanded source without comments.

Compilation-compiler translates the pre processed source code.It checks for errors and generates an objects file containing machine code.

Assembly-the assembler converts the object file into machine code.It handles low-level details like memory addresses and machine specific instructions.

Linkers-the linker combines the objects files that can be run on the target system .

Loading-loader loads the executable file into memory for execution.

Example

#include <stdio.h>

Int main() {

Int num 1=3 ,int num 2=2

Int sum=num 1 +num 2

Printf(“sum;%d\n”,sum)

Return 0; sum=5

}

3.Differences between a compiler and a interpretor

a)Compiler translates entire source code to object code while translator reads source code line by line and translates each at a time.

b)Compilation process happens before execution while interpretation occurs during run time.

c)Compilers often catch syntax errors and some sematic errors in the code during compilation while interpretor detects errors on line ,stops the execution of the program and provides an error message.

d)Compiled code is usually faster in terms of execution because it is directly translated into machine code while interpreted code tends to be slower because it is translated and executed line by line.

e)To run a compiled program on different platforms,the source code needs to be recompiled for each platform while interpreted code is generally more portable as long as there is an interpretor availed for the target platform.

f)Compiled programs often require less memory because they are optimized during the compilation process while interpreted programs might consume more memory as the interpretor needs to be loaded in memory along with the source code.

4.Main categories of operators in C programming

a)Arithmetic operators- + addition

- subtraction

X multiplication

/ division

% modulus-gives remainder of the divison

b)Relational operators- = equal to

=\ not equal to

< less than

* Greater than

<= less than or equal to

>= greater than or equal to

c)Assignment operators- .= assignment

.+= addition assignment

.-= subtraction assignment

\*= multiplication assignment

/= division assignment

%= modulus assignment

&= bitwise AND assignment

d)Logical operaotrs- && logical AND

// logical OR

! logical NOT

e)Bitwise operators - .& bitwise AND

.!- bitwise OR

F) conditional operator-.?: decision making