C program

1.preprocessed statement: - # include <stdio.h>

2.function: - int main ()

3.variable declaration: - it is an identity given to a reserve a memory in ram. For example: -int a, b; int a=1;

Flow of c program

1.preprocessing

2.compilation

3.assembly

4.linking: - dynamic linking(.dll) & static linking

5.loading: - it occurs in RAM , program i.e. .exe file loads on ram here ram acts as a memory

Tokens: - keyword, identifier, string lateral, constant, symbol

Keywords: - 32 total key words for example int, return… (can’t be used as variable , identifier etc)

Identifiers: - name given to variable functions & constants

String lateral: - for example “hello world\n”

Variables and rule for declaring variables

1. Can’t use reserved keywords for example int main; (this throws an error)
2. Does not allow white spaces for example int hello world;
3. The variable can start with alphabets and underscores only for example char mark; int \_new;
4. It can’t start with a digit and symbols for example char 99hello; int $hello;

Data types

1. Basic data types: - fundamental data units for example int, char, float, double
2. Derived data types: - the data units derived from basic data types for example array, pointer, structure, union
3. Enumeration data types: - emum
4. Void data type: - void

Basic operators and function

1. Arithmetic Operators (+, -, \*, /, %) add, subtract, multiply, divide, modulus

modulus (gives reminder of division) for example 8%3 modulus = 2

1. Rational operators It returns 1 for true & 0 for false

== (is equal to)

!= (is not equal to)

< (greater than)

>(lesser than)

<= (greater than)

>= (lesser than)

True = 1 and False =0

1. Logic operator

AND operator (&&): - For both true it gives true.

OR operator (||): - For any true it gives true.

NOT operator (!): - For true it gives false and vice versa.

1. Bitwise operator

<< binary left shift operator

>> binary right shift operator

~ binary one’s complement operator

1. Assignment operator

= : - at simply assigns values of Left side to the Right side

+= , -= , \*= , /= :- simply adds, subtracts, multiply, divide and assigns the values

1. Miscellaneous operator

Sizeof(): - returns a constant integer value representing the size of memory occupied

&: - returns the address of the variable

\*: - pointer to a variable

? : : -example: - if the condition is true ? then value X: otherwise value Y

Operator Precedence in C

|  |  |  |
| --- | --- | --- |
| Postfix | () [] -> . ++ - - | Left to right |
| Unary | + - ! ~ ++ - - (type)\* & sizeof | Right to left |
| Multiplicative | \* / % | Left to right |
| Additive | + - | Left to right |
| Shift | << >> | Left to right |
| Relational | < <= > >= | Left to right |
| Equality | == != | Left to right |
| Bitwise AND | & | Left to right |
| Bitwise XOR | ^ | Left to right |
| Bitwise OR | | | Left to right |
| Logical AND | && | Left to right |
| Logical OR | || | Left to right |
| Conditional | ?: | Right to left |
| Assignment | = += -= \*= /= %=>>= <<= &= ^= |= | Right to left |
| Comma | , | Left to right |

Format specifier

%d integer

%c character

%f float (number with decimal)

%e long

%lf double

%IF long double

Escape sequences

|  |  |  |
| --- | --- | --- |
| \a | Alarm or Beep | It is used to generate a bell sound in the C program. |
| \b | Backspace | It is used to move the cursor one place backward. |
| \f | Form Feed | It is used to move the cursor to the start of the next logical page. |
| \n | New Line | It moves the cursor to the start of the next line. |
| \r | Carriage Return | It moves the cursor to the start of the current line. |
| \t | Horizontal Tab | It inserts some whitespace to the left of the cursor and moves the cursor accordingly. |
| \v | Vertical Tab | It is used to insert vertical space. |
| \\ | Backlash | Use to insert backslash character. |
| \’ | Single Quote | It is used to display a single quotation mark. |
| \” | Double Quote | It is used to display double quotation marks. |
| \? | Question Mark | It is used to display a question mark. |
| \ooo | Octal Number | It is used to represent an octal number. |
| \xhh | Hexadecimal Number | It represents the hexadecimal number. |
| \0 | NULL | It represents the NULL character. |