C

Introduction to Programming Languages:

- Program is a set of instructions, which are used to communicate with the system for performing certain task.

- What is language?

•Programming languages are two types.

- **Low level languages.**

  Machine level languages.

  Assembly level languages.

  high level languages.

  C,C++,PASCAL

1st genration:

- These are machine languages.
- Code consists of 0's and 1's.
- It is highly efficient and allows direct control of each operation.
- Program is difficult to write.
- Its time consuming and error prone.

2nd genration:

•This generation of languages are also called assembly level languages.

•This is micro proccesor dependent.

•According to the micro processor instruction set we need to writ a program

ADD 12,8

SUB 12,8

3rd genration:

- These are high level programming languages.
- Compiler comes into the picture in this generation only.
- Compiler converts high-level instruction to machine level instructions.

Ex: COBAL, PL/I, C.

4th genration:

•These languages are used for accessing databases.

Ex: SAS, PL/SQL, FOCUS

5th generation:

•These languages are used for developing the visual graphic application.

Ex: VB, ICAD

Assembler:

It converts assembly level instructions to machine level instructions.

Compiler:

It converts high level code to assembly level code.

It converts the code at a time.

Interpreter:

It executes line by line.

If any error occur in the line, it stops the execution and shows the error.

History of C

- ✓BCPL (**B**asic **C**ombined **P**rogramming **L**anguage, Martin Richards)
- ✓B (Thompson, 1970)
- ✓C K&R C (Ritchie, 1972)
- ✓ANSI C American National Standards Institute C
- ✓C99

Features of C

ISM
We inspire you to learn

- C program can run in limited memory.
- C is a structured langauge.
- C is extensively used for operating systems programming.
- Has a rich set of Library functions.
- Has only 32 keywords.
- 3D computer games are developed in C.

HOW DOES A C PROGRAM LOOKS?

✓ main() is a function defined in each program. This function is the starting point of program execution

```
#include<stdio.h>
int main()
{
    /* THIS IS COMMENT */
    PRINTF("HELLO ISM");
    statement 1;
    statement 1;
    statement 1;
    return 0;
}
```

header file

main starts from here

Comment

Statement terminator

main ends here

INSIDE MAIN


```
#include<stdio.h>

int main()

{

        int number;
        float amount;

      number=100;
      amount=30.75+78.87;

       printf(" %d",number);
       printf(" %5.2f",amount);

       return 0;

}
```

variable declaration

assignments

printing values

KEYWORD

- ✓A word in a c program is either a keyword or an identifier
- ✓Keywords have fixed meaning and these meanings cannot be changed
- ✓keywords must be written in lowercase
- ✓C is a case sensitive language

KEYWORDS

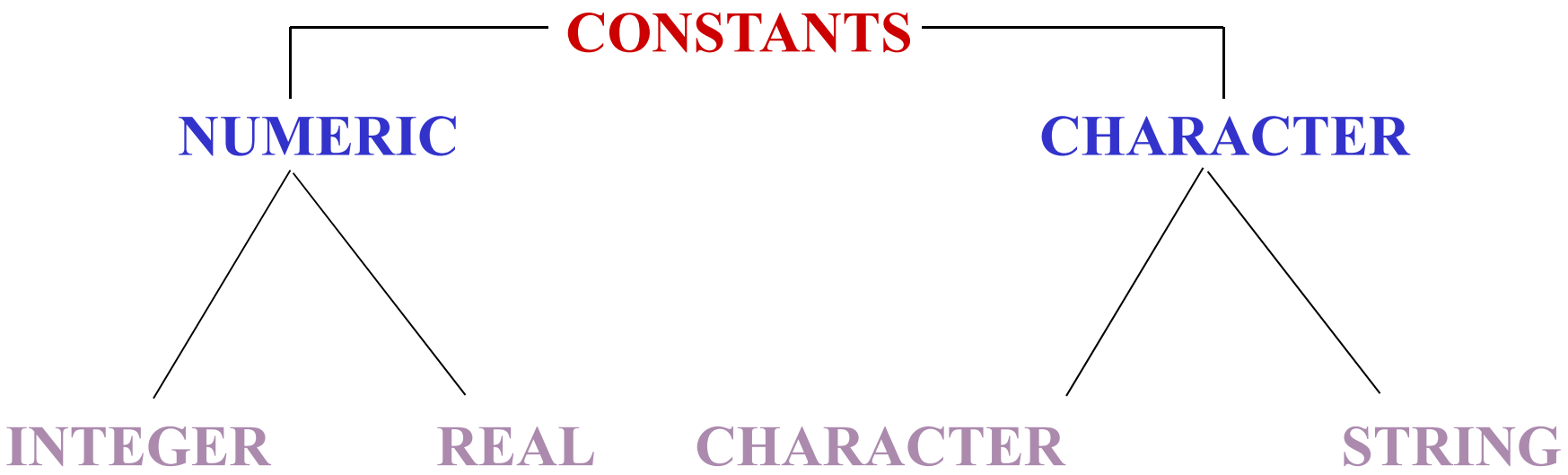
char	short	int	float
double	long	void	auto
static	register	if	else
switch	while	do	for
break	continue	goto	const
default	enum	struct	volatile
case	typedef	unions	unsigned
signed	sizeof	extern	return

IDENTIFIERS

- ✓Identifiers refer to the names of variables, functions and arrays
- ✓Identifiers are user-defined names and consist of a sequence of letters and digits
- ✓Only underscore (_)special symbol is permitted in identifier
- ✓An identifier can not be a keyword
- ✓Case sensitive

CONSTANTS

✓Fixed values that do not change during execution of the program



Basic Data Types

int – integer (4 Bytes)

float – real numbers (4 Bytes)

char – character (1 Byte)

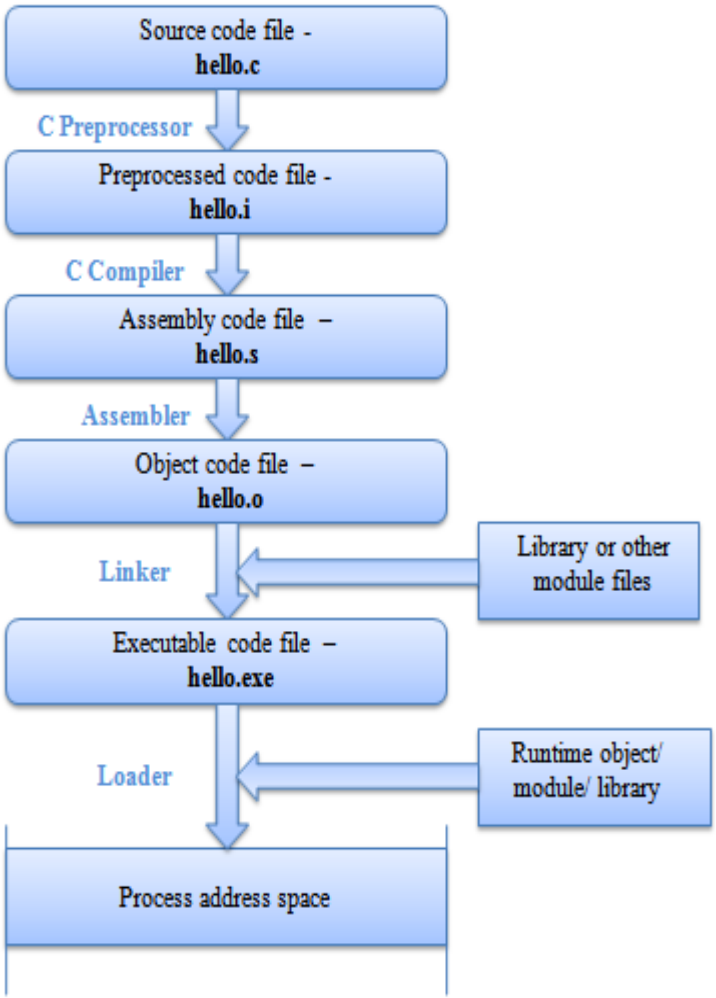
double – double precision real numbers(8 Bytes)

DATA TYPE MODIFIERS

INTEGER		CHARACTER
SIGNED	UNSIGNED	
int	unsigned int	signed char
short int	unsigned short int	unsigned char
long int		
long long int	unsigned long int	

FLOATING POINT TYPE
float
long double
double

Type modifier	Size (bytes)	Range
int	4	−2,147,483,648 to + 2,147,483,647
signed int	4	−2,147,483,648 to + 2,147,483,647
unsigned int	4	0 to 4,294,967,295
short int	2	-32,768 to +32,767
long int	4=>32bit 8=>64bit	−2,147,483,648 to + 2,147,483,647 - 9223372036854775808 to 9223372036854775807
float	4	-3.4E+48 to +3.4E+47
double	8	-1.7E+308 to +1.7E+307
char	1	-128 to +127
signed char	1	-128 to +127
unsigned char	1	0 to 255
unsigned short int	2	0 to 65535
unsigned long int	4=>32bit 8=>64bit	0 to 4,294,967,295 0 to 18446744073709551615
long double	12	-3.4E+4932 to +1.1E+4931


Source code file -
hello.c
C Preprocessor
Preprocessed code file -
hello.i
C Compiler
Assembly code file –
hello.s
Assembler
Object code file –
hello.o
Linker
Library or other
module files
Executable code file –
hello.exe
Loader
Runtime object/
module/ library
Process address space