FY BBA-CA (Semester I) – C Programming

C Programming Basics

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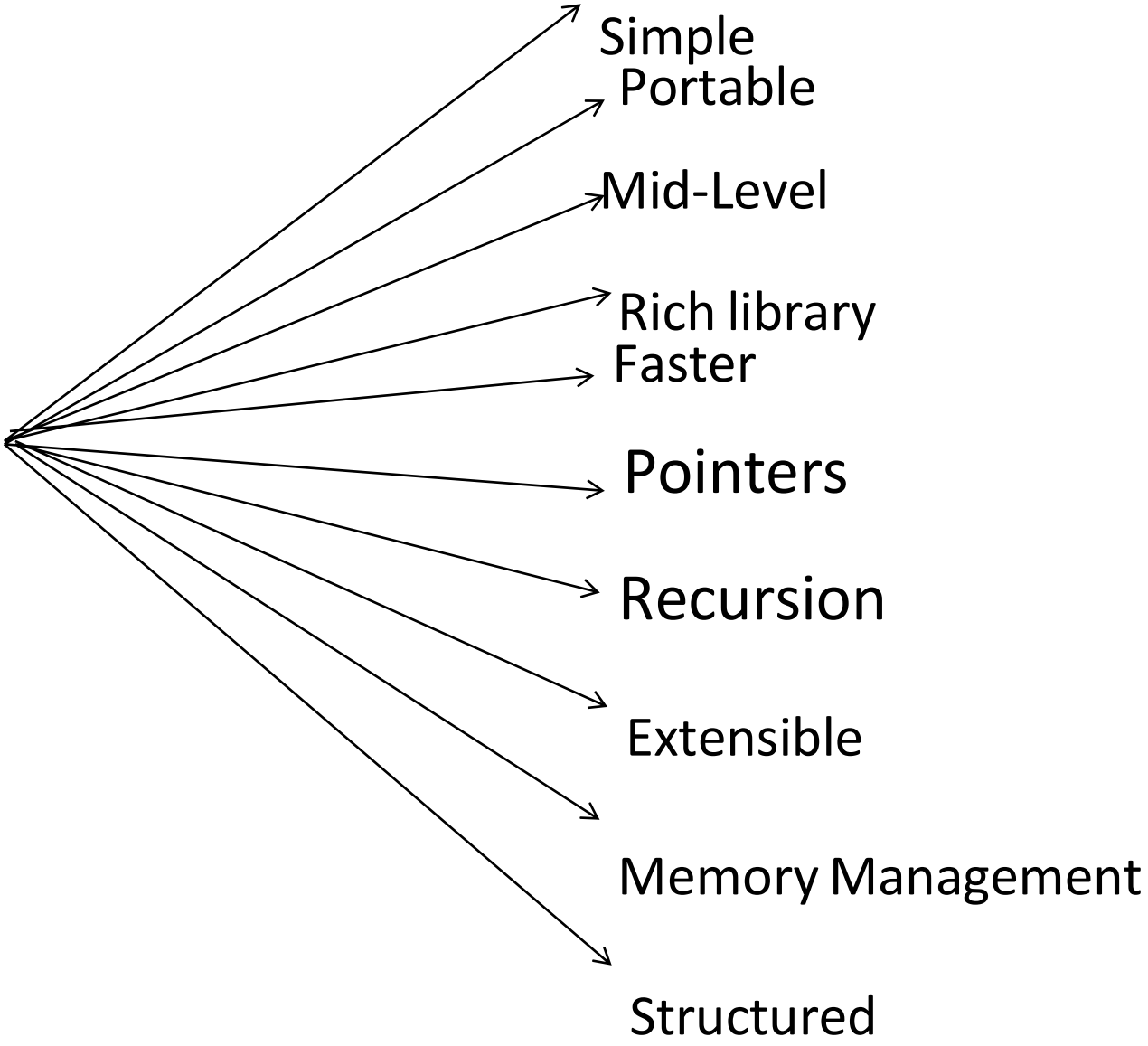
History of C Language

- **C programming language** was developed in 1972 by Dennis Ritchie at bell laboratories of AT&T (American Telephone & Telegraph), located in the U.S.A.
- **Dennis Ritchie** is known as the **founder of the c language**.
- It was developed to overcome the problems of previous languages such as B, BCPL, etc.
- Initially, C language was developed to be used in **UNIX operating**
- **system**. It inherits many features of previous languages such as B and BCPL.

FEATURES


Simple
Portable
Mid-Level
Rich library
Faster
Pointers
Recursion
Extensible
Memory Management
Structured

- **Simple:** As C is providing a structured approach it is very simple language.

- **Mid-Level:** C supports both high-level programming and low level programming hence it is call as mid-level language.

- **Structured:** We can break a single c program into multiple parts using functions. So it is very easy to understand and modify.

- **Rich-Library:** C provides many inbulit function using which we can make development faster.

- **Memory mangement:** C supports dynamic memory allocation i.e we are able to free the allocated memory at any time using free() function.

- **Recursion:** We can call function within a function in C. Recursion allow us for back tracking

- **Portable:** C programs are able to execute on different machines with some changes according to that specific machine hence C is also called as machine independent language.

- **Speed:** Due to lesser inbuilt functions c is having less overhead results in fast compilation and execution.

- **Extensible:** Having ability to adopt new features easily.

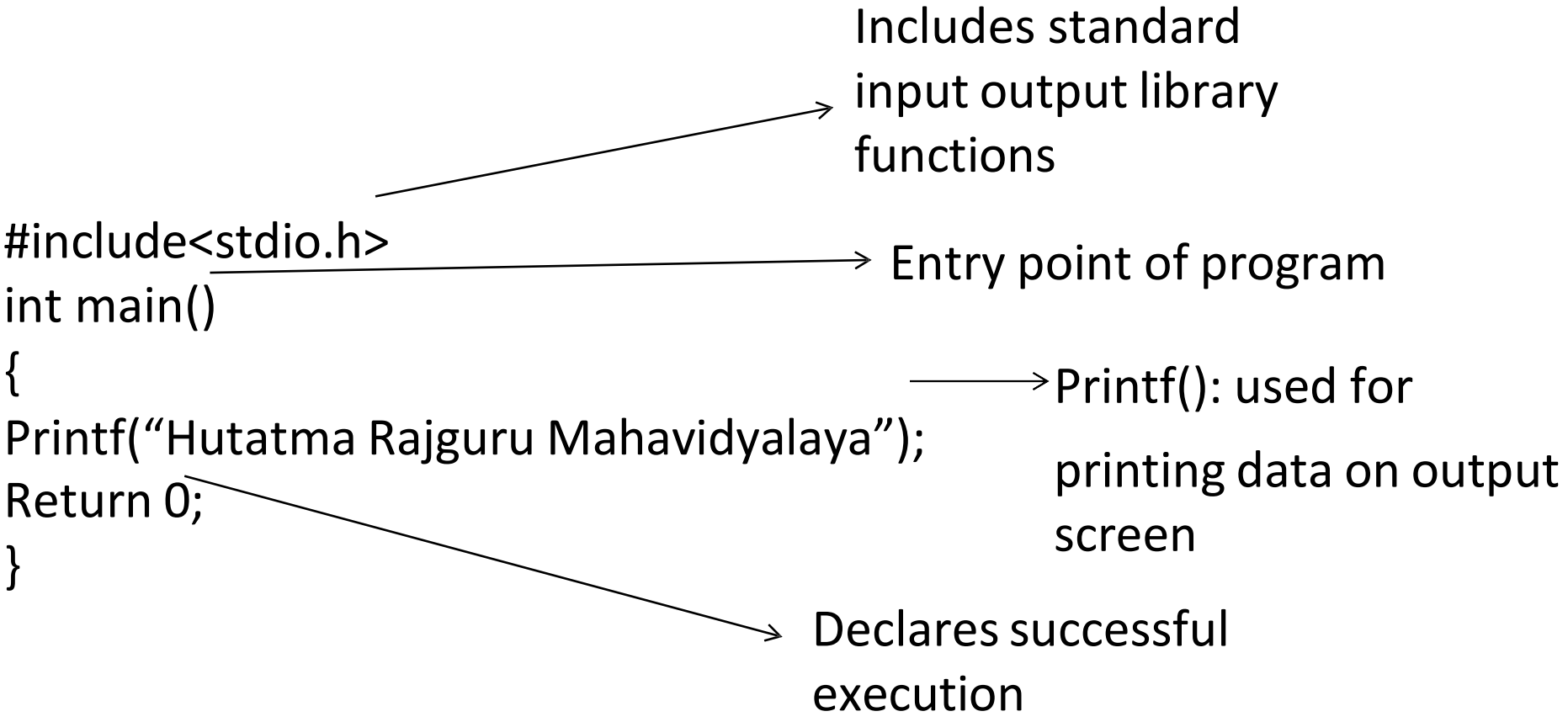
Structure of C Program:

```
Global declaration
int main(parameter list)
{
        Statements;
        Statements;
}

return_type fun1(parameter list)
{
        Statements;
}

return_type fun2(parameter list)
{Statements;}
```

First C Program:



Output:Hutatma Rajguru Mahavidyalaya

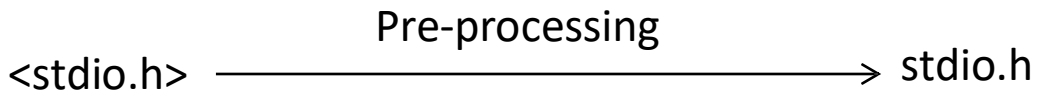
What is compilation:

In compilation process the source code is converted into object code .

Compiler helps to convert source code into object code.

There are four steps in compilation process.

1. **Preprocessing:** in this process the whole code is taken as input ,and all the comment will be removed from code.



2. **Compilation:** Compiler will convert pre processed code into assembly code

3. **Assembler:** In this processes the assembly code is converted to object code with the help of assembler.

4. **Linker:** if we are using printf() function in a program, then the linker adds its associated code in an output file. Output of linker is executable file.

Compiling and Linking:

Linking is the process of putting together other program files and functions that are required by the program.

e.g.

If our program uses printf() and scanf() functions.

then object code of this function should be brought from standard Input or Output Library of system and linked to the main program.

For Unix: Linking is done automatically.

For DOS: It can be done by command / editor menu option.

Compilers Vs Interpreters:

While executing, a program can be either compiled or interpreted.

Compiler: It reads the entire program (Source code) and converts it into object code. Which computer can understand and execute.

Interpreter: It reads the source code one line at a time, perform the instruction specified by that line.

Interpreted program runs slower than a compiled program.

Compilation is one time cost, while Interpretation increases overhead each time program is runs.

printf() and scanf():

- printf() and scanf() are used for input and output.
- Both printf() and scanf() are inbuilt library function.
- printf():Used for output. Whatever statement is written inside the printf() will printed to the console.
- Syntax: printf("format string",argument_list);
- The format string can be %d (integer), %c (character), %s (string), %f (float) etc.

- scanf():Used for input.Help to read the data from console.

- Syntax:

scanf("format string",argument_list);

References:

https://www.javatpoint.com/c-programming-language-tutorial

www.google.com

THANK YOU…

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