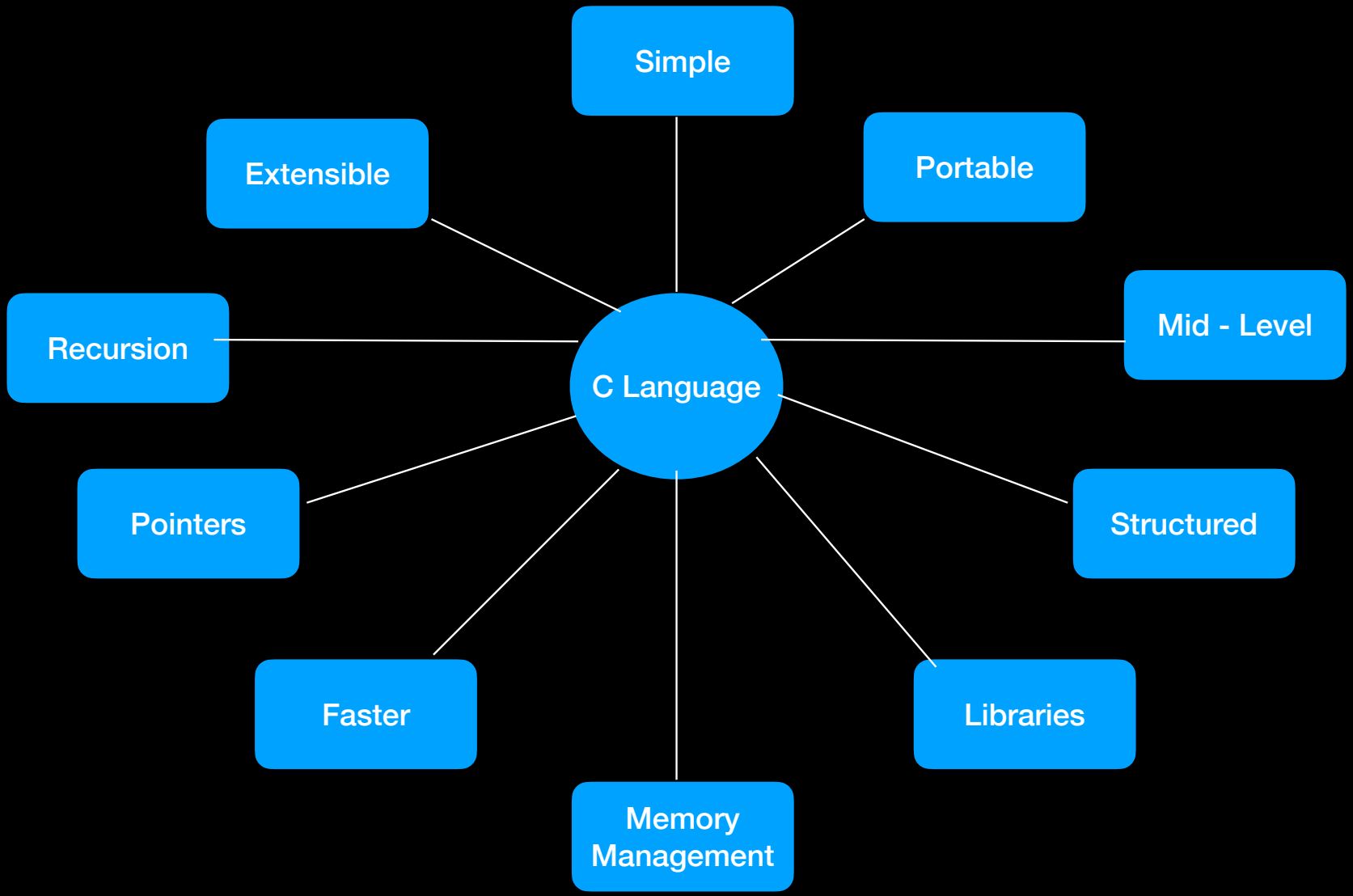
C-Language

History of C

- Who developed ?
- It was developed by Dennis Ritchie 1972 in Bell labs (At&T)
- Why it is developed?
  - disadvantages of B, BCPL
- What disadvantages?
  - ALGOL, B, BCPL are linear programming languages - Instructions are executed in linear format.
- What was it's actual purpose?
  - For Unix OS and C includes it's predecessors properties too.

Features of C



Data types in C

- Primitive Data types
- Void Types
- User defined Data types
- Derived Types

Data types in C

- Primitive types
  - These are arithmetic types
  - These include Integer, floating point, character
- Derived types
  - Data types that are derived from primitive Data types
- Void type
  - These types has no value and return nothing.
  - These come under primitive type.
- User defined Data types
  - These are used to assign names to constants, which make programs easy to read.

Data types in C

- Primitive Data types
  - Integer - int
  - Floating point - float
  - Double floating point - double
  - Character - char

Data types in C - Primitive DataTypes

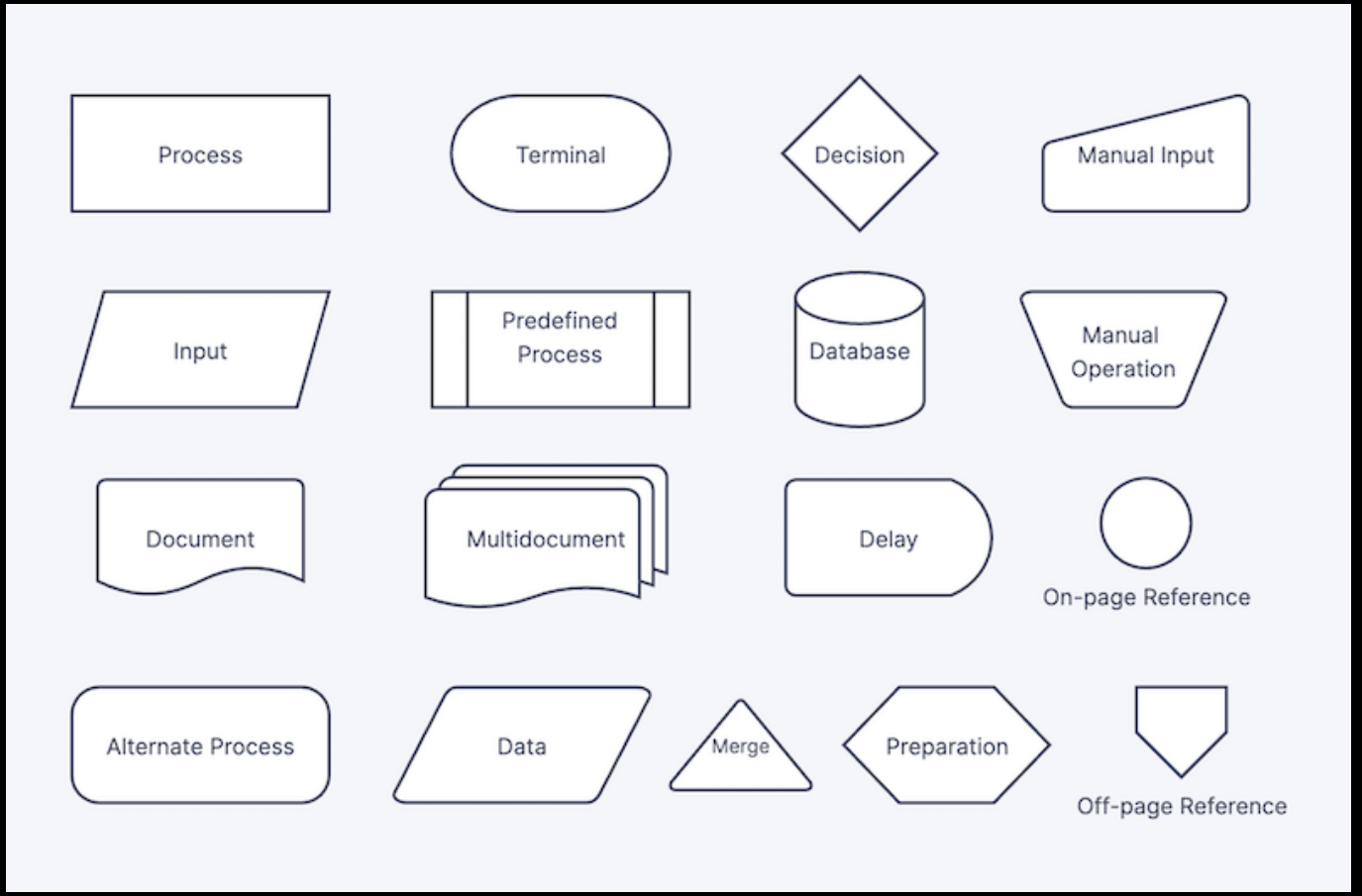
Data Type	Memory (bytes)	Range	Format Specifier
short int	2	-32768 to 32767	%hd
unsigned short int	2	0 to 65,335	%hu
unsigned int	4	0 to 4,294,967,295	%u
int	4	-2,147,483,648 to 2,147,483,647	%d
long int	4	-2,147,483,648 to 2,147,483,647	%ld
Unsigned long int	4	0 to 4,294,967,295	%lu
long long int	8	-(2^63) to (2^63)-1	%lld
unsigned long long int	8	0 to 18,446,744,073,709,551,615	%llu
Signed char	1	-128 to 127	%c
unsigned char	1	0 to 255	%c
float	4	1.2E-38 to 3.4E+38	%f
double	8	1.7E-308 to 1.7E+308	%lf
long double	16	3.4E-4932 to 1.1E+4932	%Lf

Data types in C - Primitive

- Write a program to print an Integer, float and a character
    - Print the size of a variable
- Let x be a variable assigned with 32767, what would be the output if we add one to it?
- Using character primitive type, print alphabets from a to z
- Using character primitive type print only consonants.

Flow Chart

A Flow chart is used for a pictorial representation of a logic.



Flow Chart and Algorithm

```
// Algorithm UserLogin
Function userLogin(username, password):
    string user: username;
    string pass: password;
    bool isUservalid : validteUser(user, pass)
    if userValid = true
        doLogin()
    else
        throw error;
```