Character Set:

A character refers to the digit, alphabet or special symbol used to data representation.

Alphabets:	A-Z, a-z
Digits:	0-9
Special Characters:	~ ! @ # $ % ^ & * ( ) _ + { } [ ] - < > , . / ? \ | : ; " '
White Spaces :	Horizontal tab, Carriage return, New line, form feed

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Keywords

- Keywords are the system defined identifiers.
- All keywords have fixed meanings that do not change.
- White spaces are not allowed in keywords.
- Keyword should not be used as an identifier.
- It is strongly recommended that keywords should be in lower case letters.

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

Data Types in C++:

- Data Types refers to an extensive system for declaring variables of different types.
- Size of variable, constant and array are determined by data types.
- Data Type is a Data Storage Format that can contain a Specific Type or Range of Values.
- When computer programs store data in variables, each variable must be assigned a specific data type.

We can broadly divide all data type in C in three categories:

- Primitive or fundamental data type
- Derived data type
- User defined data type

Primitive Data Types

A primitive type is predefined by the language and is named by a reserved keyword

for which the programming language provides built-in support.

Primitive data type in C++ can be categorized in Integral and Real groups on the basis of its application.

Integral type:

1. Integer data type:

- Integer data type allows a variable to store numeric values.
- “int” keyword is used to refer integer data type.
- The storage size of int data type is 2 or 4 byte.
- It varies depend upon the processor in the CPU that we use. If we are using 16 bit processor 2 byte and for 32 bit processor 4 byte of memory will be allocated.

2. Character data type

- Character data type allows a variable to store only one character.
- Storage size of character data type is 1.
- “char” keyword is used to refer character data type.

1. Float data type:

- Float data type allows a variable to store decimal values.
- Storage size of float data type is 4.
- We can use up-to 6 digits after decimal using float data type.

2. Double data type

- Double data type is also same as float data type which allows up-to 10 digits after decimal.

S.No	Data types	Storage Size (bytes)	Range (-2^{n-1} to $+2^{n-1}-1$, where n = no of bits)
1	Char	1	–128 to 127
2	Int	2	–32,768 to 32,767
3	Float	4	-3.4*10-38 to +3.4*1038 with six digits of precision
4	Double	8	-1.7*10-308 to +1.7*10308 with ten digits of precision
5	long double	10	-3.4*10-4932 to +1.1*10-4932 with ten digits of precision
6	long int	4	–2,147,483,648 to 2,147,483,647
7	short int	2	–32,768 to 32,767

3.1 Variables:

It is a data name which is used to store data and may change during program execution. Variable name is a name given to memory cells location of a computer where data is stored. A variable definition means to tell the compiler where and how much to create the storage for the variable. A variable definition specifies a data type and contains a list of one or more variables of that type as follows:

type variable_list;

Here, **type** must be a valid C++ data type including char, int, float, double, or any user-defined object, etc., and **variable_list** may consist of one or more identifier names separated by commas.

Int i;
Float f
Char ch;
Double amount;

Rules for Variable Declaration

1. First character should be letter or alphabet.
2. Keywords are not allowed to use as a variable name.
3. White space is not allowed.
4. C++ is case sensitive i.e. UPPER and lower case are significant.
5. Only underscore, special symbol is allowed between two characters.
6. The length of identifier may be up to 31 characters but only the first 8 characters are significant by compiler.

7. (Note: Some compilers allow variable names whose length may be up to 247 characters. But, it is recommended to use maximum 31 characters in variable name. Large variable name leads to occur errors.)

Constants in C++

A constant is an entity that doesn't change during the execution of a program. The constants refer to fixed values that the program may not alter during its execution. These fixed values are also called **literals**.