Dr.SNS RAJALAKSHMI COLLEGE OF ARTS AND SCIENCE,

(AUTONOMOUS)

COIMBATORE-641049

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DEPARTMENT OF COMPUTER APPLICATIONS

Course Code / Course Name: **23UCU401 /Programming in C**

YEAR   :**2023-2024**

CLASS   : **BCA "A"**

STAFF NAME : **Dr.A.DEVI**

Topic   **: Character set**

Character set

A character denotes any alphabet, digit or special symbol used to represent information.
Valid alphabets, numbers and special symbols allowed in C are

Alphabets	A, B, ….., Y, Z a, b, ……, y, z
Digits	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
Special symbols	~ ' ! @ # % ^ & * ( ) _ - + = | \ { } [ ] : ; " ' < > , . ? /

The alphabets, numbers and special symbols when properly combined formconstants, variables and keywords.

Identifiers

Identifiers are user defined word used to name of entities like variables, arrays,functions, structures etc. Rules for naming identifiers are:

1) name should only consists of alphabets (both upper and lower case), digits and underscore (_) sign.

2) first characters should be alphabet or underscore

3) name should not be a keyword

4) since C is a case sensitive, the upper case and lower case considered differently, for example code, Code, CODE etc. are different identifiers.

5) identifiers are generally given in some meaningful name such as value,net_salary, age, data etc. An identifier name may be long, some implementationrecognizes only first eight characters, most recognize 31 characters. ANSI standard compiler recognize 31 characters. Some invalid identifiers are 5cb, int,res#, avg no etc.

Keyword

There are certain words reserved for doing specific task, these words are known as **reserved word** or **keywords.** These words are predefined and alwayswritten in lower case or small letter. These keywords cann't be used as a variable name as it assigned with fixed meaning. Some examples are **int, short, signed, unsigned, default, volatile, float, long, double, break, continue, typedef, static, do, for, union, return, while, do, extern, register, enum, case, goto, struct, char, auto, const etc.**

Data types

Data types refer to an extensive system used for declaring variables or functions ofdifferent types

before its use. The type of a variable determines how much space itoccupies in storage and how the bit pattern stored is interpreted. The value of a variable can be changed any time.

C has the following 4 types of data types
basic built-in data types: int, float, double, char
Enumeration data type: enum
Derived data type: pointer, array, structure, union
Void data type: void

A variable declared to be of type int can be used to contain integral values only—that is, values that do not contain decimal places. A variable declared to be of type float can be used for storing floating- point numbers (values containing decimal places). The double type is the same as type float, only with roughly twicethe precision. The char data type can be used to store a single character, such as theletter *a*, the digit character *6*, or a semicolon similarly A variable declared char canonly store character type value.

There are two types of type qualifier in c

Size qualifier: short, long

Sign qualifier: signed, unsigned
 When the qualifier unsigned is used the number is always positive, and when signed is used number may be positive or negative. If the sign qualifier is not mentioned, then by default sign qualifier is assumed. The range of values for signed data types is less than that of unsigned data type. Because in signed type, the left most bit is used to represent sign, while in unsigned type this bit is also used to represent the value. The size and range of the different data types on a 16 bit machine is given below:

Basic data type	Data type with type qualifier	Size (byte)	Range
char	char or signed char Unsigned char	1 1	-128 to 127 0 to 255
int	int or signed int	2	-32768 to 32767
	unsigned int	2	0 to 65535
	short int or signed short int	1	-128 to 127
	unsigned short int	1	0 to 255
	long int or signed long int	4	-2147483648 to 2147483647
	unsigned long int	4	0 to 4294967295
float	float	4	-3.4E-38 to 3.4E+38
double	double	8	1.7E-308 to 1.7E+308
	Long double	10	3.4E-4932 to 1.1E+4932