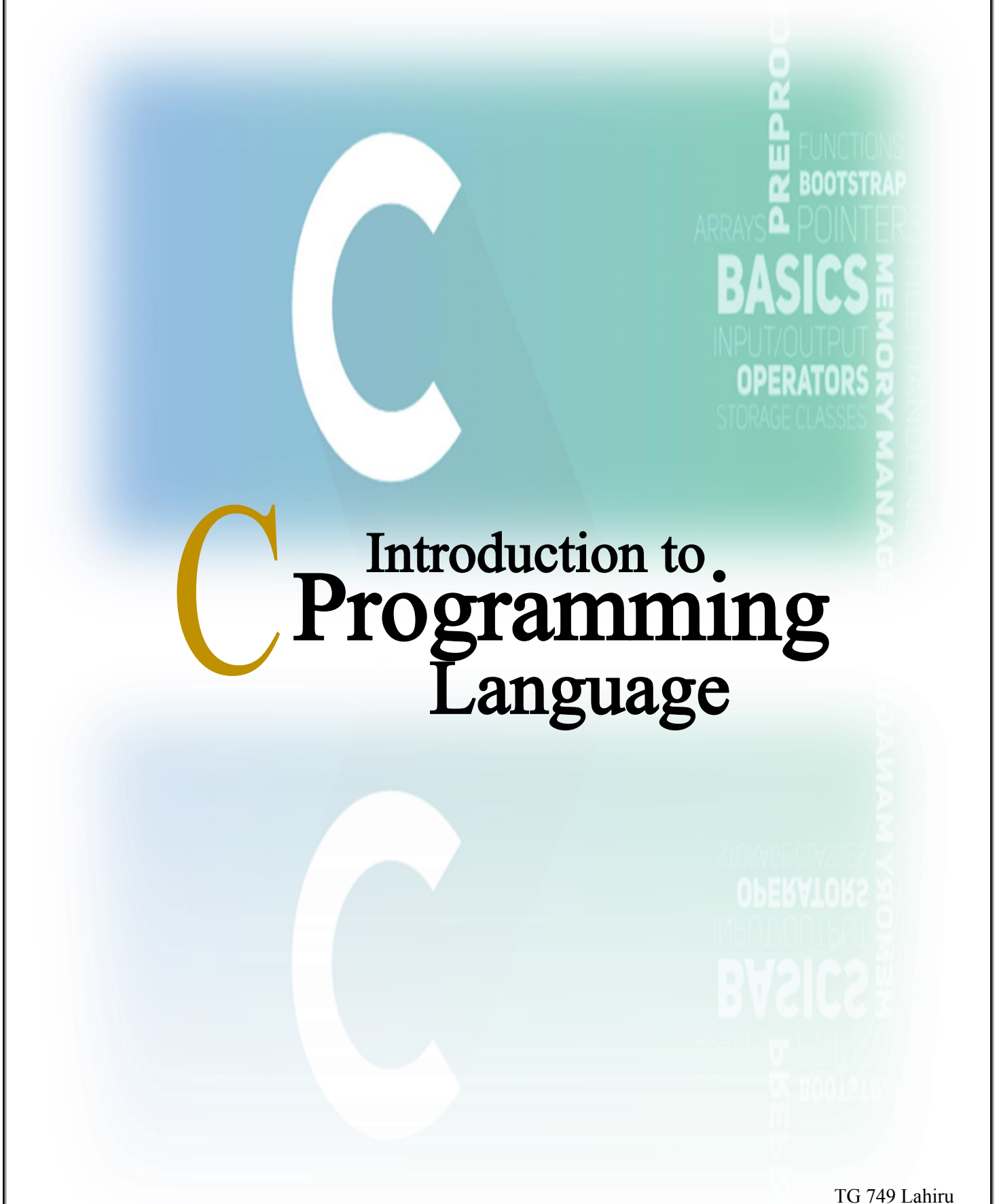

Introduction to C Programming Language

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C-Language Keywords

- C is very **"compact"** language (**32 keywords** in ANSI C = **27 keywords** in K&R C + **5 keywords** which were added by ANSI committees)

32 Keywords in C Programming Language with their Meaning

S.No	Keyword	Meaning
1	auto	Used to represent automatic storage class
2	break	Unconditional control statement used to terminate swicth & looping statements
3	case	Used to represent a case (option) in switch statement
4	char	Used to represent character data type
5	const	Used to define a constant
6	continue	Unconditional control statement used to pass the control to the begining of looping statements
7	default	Used to represent a default case (option) in switch statement
8	do	Used to define do block in do-while statement
9	double	Used to present double datatype
10	else	Used to define FALSE block of if statement
11	enum	Used to define enumarated datatypes
12	extern	Used to represent external storage class
13	float	Used to represent floating point datatype
14	for	Used to define a looping statement
15	goto	Used to represent unconditional control statement
16	if	Used to define a conditional control statement
17	int	Used to represent integer datatype
18	long	It is a type modifier that alters the basic datatype
19	register	Used to represent register storage class
20	return	Used to terminate a function execution
21	short	It is a type modifier that alters the basic datatype
22	signed	It is a type modifier that alters the basic datatype
23	sizeof	It is an operator that gives size of the memory of a variable
24	static	Used to create static variables - constants
25	struct	Used to create structures - Userdefined datatypes
26	switch	Used to define switch - case statement
27	typedef	Used to specify temporary name for the datatypes
28	union	Used to create union for grouping different types under a name
29	unsigned	It is a type modifier that alters the basic datatype
30	void	Used to indicate nothing - return value, parameter of a function
31	volatile	Used to creating volatile objects
32	while	Used to define a looping statement

- All the keywords are in lowercase letters
- Keywords can't be used as userdefined name like variable name, function name, lable, etc...
- Keywords are also called as **Reserved Words**

C- Program Structure

- a C-program basically has the following form

i) Preprocessor Commands
ii) Functions
iii) Variables
iv) Statements & Expressions
v) Comments

First C-Program

```
//File: welcome.c
//A program to print a welcoming message

#include <stdio.h>   //preprocessor
int main () {      // main function

printf("Welcome to Ruhuna\n") ;   //statement

return 0;
}  //close main function
```

i) Comments of the program.
ii) The include file is **stdio.h**
iii) The **main()** function has a return value.
iv) The use of **printf()** for outputting to the monitor.
v) The use of **\n** for new line.
vi) The use of **return 0** for exiting the program without errors.

// File: welcome.c
// A program to print a welcoming message

- In C there are two types of comments
  1. Line comments
  2. Delimited comments

More on Comments

1. Line comments begin with // and continue for the rest of the line.
2. Delimited comments begin with /* and end with */

→ Inline comments

```
// This is an inline comment
```

→ Block comments

```
/* This is a block comment.
   It can span multiple lines. */
```

#include

- **#include** is a preprocessor directive. Lines beginning with # are processed by the preprocessor before the program is compiled.
- This specific line tells the preprocessor to include in the program the contents of the input/output stream header file **<stdio.h>**
- This file must be included for any program that **outputs data to the screen** or **inputs data from the keyboard** using C style stream input/output.

int main( )

- **int main()** is a part of every C program.
- C programs can contain one or more functions, but only one main function.
- The parentheses after main indicate that it is a program building block called a function and it is similar to other functions.
- The only difference is that the main function is "called" by the operating system when the user runs the program.
- The keyword **int** indicates that main function returns an integer value.
- The { indicates the begin of the main function.

printf( )

- **printf("Welcome to Ruhuna\n");**
- It instructs the computer to print on the screen the string of characters contained between the quotation marks.
- Here **\n** is the new line control character; this moves the cursor to the next line.
- Every statement in C must end with a semicolon (**;**).

return 0;

- The return statement is used to return a value from a function.
- The value 0 indicates that the program has terminated successfully.
- The right brace **}**, indicates the end of the main function.

Free Format

- A language has free format if statements can appear anywhere on one or several lines.
- Blank lines are ignored. Extra spaces are ignored.
- Multiple statements can be placed on the same line.
- Statements can be broken over more than one line anywhere other than in the middle of a string literal, operator, or identifier.

Program Style

- Use **blank lines** to separate parts of the program.
- Use **indentation** to align curly braces and **match the opening and closing braces** by placing them under each other.
- Use **blank spaces** to separate the parts of a statement to make it easier to read.