Date:

Baba Gurunanak University

Assignment 02

Submitted by: Hamna Shahzadi

Submitted to: Sir Waseem

Department: BSCS (Morning) 1st Semester

Roll no: F240222236

Subject: Programing Fundamental

Date:

Introduction to C++

C++ is an object oriented programming language. It was developed by Bjarne Stroustrup in 1980.

Bjarne Stroustrup wants to develop a language that support object oriented-programming features of C language, and hence C++ evolved. **C++** consists of C language features along with class-object construct features of Simula 67 Initially C++ is named as "**C with classes**" by Bjarne Stroustrup but later in **1993**, it was renamed to C++ language (indicating an increment to C) proposed by Rick Mascitti.

- It is a superset of C language, i.e, C++ contains features of C language and adds some of its own. Almost all programs written in C program are also C++ program. **C++ programming language** provids many essential features including polymorphism, virtual and friend functions, templates, namespaces and operator overloading etc.

Features and Advantages of C++ Language

Simple: C++ is a simpler to understand as the style is

Date:

almost same to C language with very little changes.

Portable language: It is a portable language. It means that C++ programs written for a computing environment can easily run on another computer having the same environment

Object Oriented: It follows the concept of oops like polymorphism, inheritance, encapsulation, abstraction. This makes development and maintenence easier.

Structured pargraming language: C++ is a structured programming language, the whole code is divided into smaller parts (modules) with the help of functions, classes or objects. Such codes are easy to understand and can easily be modify.

Mid level language: C++ is a middle level language as it has features of both high level and low level language (direct interaction with hardware)

Rice Library: C++ provids a lots of in-built functions This saves time and makes development faster.

Better memory management: C++ provides better memory management. It supports dynamic memory allocation and we can allocate and deallocate the allocated memory at any time whenever needed.

Exception handling: C++ provides exception handling mechanism to deal with the runtime exceptions.

Date:

Some drawbacks of C++

- C++ provides data security but it is not up to the mark, hence there are security issues with the C++.
- Exception handling mechanism provided by C++ is not that much reliable.
- C++ is not a strictly typed language, we can pass an int type value to a floating-type variable or vice-versa
- C++ does not provide automatic memory management mechanism.
- C++ doesn't not provide built-in multi-Threading mechanism.

Application and Products that uses C++

1- Game engines
2- Browser
3- Databases
4- GUI based application
5- Advance Graphics Software
6- Operating system
7- Programing Language.

Game Engines: C++ is one of the best at the field of game development many game engines including visual pinball (pinball), Frostbite (Need for Speed), RE Engine (The Witcher), Shiva (Prince of persia 2) amy many more are developed using C++

GUI Based Application: Most of the Adobe applications including Illustrator, photoshop etc. are developed in C++. Windows meedia player is also developed by using C++.

Date:

Browser: Mozilla Firefox is developed in C++. Also, google's chrome browser have some part written in C++.

Advance Graphics Software: Alias system's Maya 3D software that is used for animation 3D graphics and virtual graphics reality, is developed in C++.

Databases: The world's most popular databases Oracle database, My SQL etc are codded with C++ along with C.

Operating System: Most of the windows OS have there huge portion written in C++. Some part of Apple OS is also codded in C++.

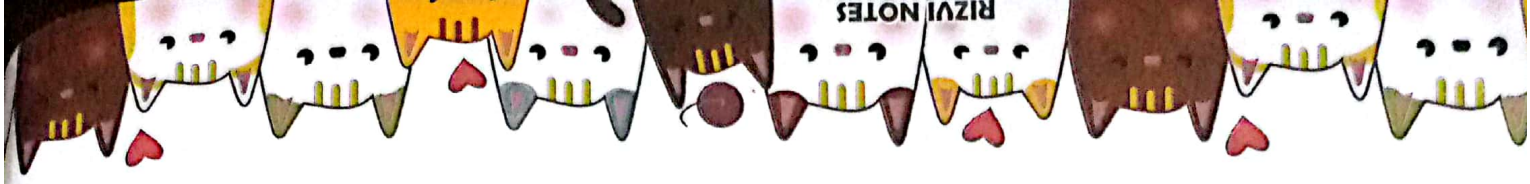
Programing Language: Many modern programing langu including **C#**, **Java**, **PHP** **Python**, **Limba** are influenced by C++ language and they have their initial and partial implementa

C++ KEYWORDS

KEYWORDS	DESCRIPTION
alignas	Used to specify the alignment requisement of a type / object
alignof	returns the alignment in terms of bytes
and	Alternative to && operator

Date:

and_eq	Alternative to && operator
asm	Used to insert an assembly instruction
auto	Used to define a local (automatic) variable
Bitand	Alternative to bitwise & operator
Bitor	Alternative to bitwise | operator
bool	Boolean datatype
break	Used to pass the control out of while, do, for, switch statement
case	Used in switch statement to define a particular case value
catch	Used ism exception handling, along with try block.
char	Basic data type. Used to indicate character type
char16_t	Datatype For UTF-16 char representation.
char32_t	Datatype for UTF-32 char representation.
class	Used to declare a class
compl	Alternative to ~ operator.
concept	Used to declare a named set of requirements
constexpr	Used to declare a constant expression.
const_cast	Used to cast const variables
continue	Used to skip certain statements inside loop.
decltype	Returns the type of expression
default	Used in switch case. Default case get executed when the value doesn't match any of 'case' values.



default	Used in switch case. Default case get excetud when value doesn't match
do	do-while loop
dynamic_cast	Used to implement runtime casting
enum	Used to define enumerated type data, ie integer constant
export	Used to seperate templete definition from dellaration
false	Represents a booleun false value
for	For loop
goto	Unconditiun Jump statemet
inline	To define an inline function
long	Type modifier ⇒ Used to alter base data type
namespace	To define a new scope in order to prevent name conflicts
noexcept	Function or operator will throw exceptions or not
not_eq	Alternative to != operator

delete	Used to allocate dynnamic memory.
double	Data type for floating type variable
else	Decision making statement (used with if)
explicit	Used to define the construct that don't allow implicit conve
extern	tell the compiler that variable is already declared somewhere
float	Data type for floating type variable.
friend	define → Friend function. It can private members of a class
if	Decision making statements
int	Basic data type ⇒ used to indicate integer type
mutable	To define mutable variable inside const function
new	used to allocate dynamic memory for new variable
not	Alternative to ! operator
nullptr	Pointer literal

Date:

Date:

operator	To define overloaded operator function
or_eq	Alternative to |= operator
protected	Access specifier. Declare protected member of class
register	Tell the compiler to store the variable in a CPU register
short	Type modifier. Used to alter meaning of Base type
static	Indicate static storage class. Variable stay at the end of program
void	Means nothing.
while	While loop

or	Alternative to || operator
private	Access specifier. Declare private protected member of class
public	Access specifier. Declare public member of class
return	return the flow of control back to the calling funct to called fun.
signed	Type modifier. Used to alter meaning of Base data type.
switch	static variable stay alive until the end of program
wchar_t	wide-char variable → declare
Xor	Alternative to ^ operator

Xor_eq Alternative to ^= operator.

Operator	Meaning of Operator	Associativity	Rank
::	Scope Resolution	Left-to-Right	
.* ->*	Pointer to member	Left-to-Right	4
* /	Multiplication Division	Left-to-Right	5

Date:

%	Remainder (modulo-division)		
+ -	Addition Subtraction	Left-to-Right	6
<< >>	Bitwise left Shift Bitwise Right Shift	Left-to-Right	7
< <= > >=	Less-than Less than or equal Greather than Greater then or equal	Left-to-Right	8
== !=	Equal to Not equal to	Left-to-Right	9
&	Bitwise AND	Left-to-Right	10
^	Bitwise XOR (exclusive OR)	Left-to-Right	11
|	Bitwise OR (inclusive OR)	Left to Right	12
&&	Logical AND	Left-to-Right	13
||	Logical OR	Left-to-Right	14
?:	Conditional Operator	Right-to-left	15
=	Assignment	Right-to-left	16

*= /= %= += -= &= ^= |= <<= >>=	Operator Short-Hand Assignment Operators		
throw	throw Operator	Right-to-left	17
,	Comma	Left-To-Right	18

ASCII TABLE

Non Operating characters:

Null	0
SOH (start of Heading)	1
STX (start of TEXT)	2
ETX	3
EOT (End of Transmition)	4
ENQ (enquiry)	5
ACK (acknowlege)	6
BEL (Bell)	7
BS (Backspace)	8
TAB (horizontal tab)	9
LF (NL line feed new line)	10
VT (vertical tab)	11
FF (NP from feed new page)	12
CR (carriage return)	13
SO (Shift out)	14
SI (Shift in)	15
DLE (data link escape)	16
DC1	17
DC2	18
DC3	19
DC4	20
NAK (negative acknowleg cment)	21
SYN (Synchronous idle)	22
ETB (Ends of trans Block)	23
CAN (cancel)	24
EM (end of medium)	25
SUB (substitude)	26
ESC (escape)	27
FS (file seperator)	28
GS (group seperator)	29
RS (Record seperator)	30
US (Unit seperator)	31

Printing Characters

space	32
!	33
"	34
#	35
$	36
%	37
&	38
'	39
(	40
)	41
*	42
+	43
,	44
-	45
.	46
/	47
0	48
1	49
2	50
3	51
4	52
5	53
6	54
7	55
8	56
9	57
:	58
;	59
<	60
=	61
>	62

?	63	X	88	q	131
@	64	Y	89	r	132
A	65	Z	90	s	133
B	66	[	91	t	134
C	67	\	92	u	135
D	68	]	93	v	136
E	69	^	94	w	137
F	70	_	95	x	138
G	71	`	96	y	139
H	72	a	97	z	140
I	73	b	98	{	141
J	74	c	99	|	142
K	75	d	100	}	143
L	76	e	101	~	144
M	77	f	102	DEL	145
N	78	g	103		146
O	79	h	104		147
P	80	i	105		148
Q	81	j	106		149
R	82	k	107		150
S	83	l	108		151
T	84	m	109		152
U	85	n	120		153
V	86	o	121		154
W	87	p	122		155