

Data Structures



Operators and Expressions

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Last Class Summary

- **Introduction to Pointers**
- **Format Specifier**
- **Scan Formatted – scanf**
- **Program**

Escape Sequence

Escape sequence	Description
<code>\n</code>	Newline. Position the cursor at the beginning of the next line.
<code>\t</code>	Horizontal tab. Move the cursor to the next tab stop.
<code>\a</code>	Alert. Produces a sound or visible alert without changing the current cursor position.
<code>\\</code>	Backslash. Insert a backslash character in a string.
<code>\"</code>	Double quote. Insert a double-quote character in a string.

Operators

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- **Expression – operands and operators**
 - **Unary, Binary, Ternary Operators**

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- **Symbols helps to implement mathematical operations**
- **Expression – operands and operators**
 - **Unary, Binary, Ternary Operators**
- **Types of Operators**
 - **Unary**
 - **Arithmetic**
 - **Relational Operators**
 - **Logical**
 - **Assignment**
 - **Conditional**
 - **Bitwise**

Operators

	Operators	Type
Unary Operator →	++, --	Unary Operator
Binary Operator {	+, -, *, /, %	Arithmetic Operator
	<, <=, >, >=, ==, !=	Rational Operator
	&&, , !	Logical Operator
	&, , <<, >>, ~, ^	Bitwise Operator
	=, +=, -=, *=, /=, %=	Assignment Operator
Ternary Operator →	?:	Ternary or Conditional Operator

Arithmetic Operators

C operation	Arithmetic operator	Algebraic expression	C expression
Addition	+	$f + 7$	<code>f + 7</code>
Subtraction	-	$p - c$	<code>p - c</code>
Multiplication	*	bm	<code>b * m</code>
Division	/	x / y or $\frac{x}{y}$ or $x \div y$	<code>x / y</code>
Remainder	%	$r \bmod s$	<code>r % s</code>

Operators Precedence

Operator(s)	Operation(s)	Order of evaluation (precedence)
()	Parentheses	Evaluated first. If the parentheses are nested, the expression in the <i>innermost</i> pair is evaluated first. If there are several pairs of parentheses “on the same level” (i.e., not nested), they’re evaluated left to right.
*	Multiplication	Evaluated second. If there are several, they’re evaluated left to right.
/	Division	
%	Remainder	
+	Addition	Evaluated third. If there are several, they’re evaluated left to right.
-	Subtraction	
=	Assignment	Evaluated last.

Relational Operators

Algebraic equality or relational operator	C equality or relational operator	Example of C condition	Meaning of C condition
<i>Equality operators</i>			
=	==	x == y	x is equal to y
≠	!=	x != y	x is not equal to y
<i>Relational operators</i>			
>	>	x > y	x is greater than y
<	<	x < y	x is less than y
≥	>=	x >= y	x is greater than or equal to y
≤	<=	x <= y	x is less than or equal to y

Operators Precedence and Associativity

Operators	Associativity
()	left to right
* / %	left to right
+ -	left to right
< <= > >=	left to right
== !=	left to right
=	right to left

Questions?

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Today's Course Outcomes

- **CO1 – Implement C programs from algorithms and flowcharts with error handling. – K3**
- **CO2 – Implement programming fundamentals, decision and looping statements – K3**
- **CO3 – Implement C programs with pointers, arrays, and strings – K3**
- **CO4 – Implement C programs with structures, union, file-handling concepts, and additional features – K3**
- **CO5 – Analyze, breakdown, and solve large computational problems using functions – K4**

Summary

- **Escape Sequence**
- **Operators**
- **Arithmetic Operators**
- **Operators Precedence**
- **Relational Operators**
- **Operators Precedence and Associativity**
- **Today's Course Outcome**

References

- **Kernighan, B.W and Ritchie, D. M, “The C Programming language”, 2nd edition, Pearson Education, 2006**

THANK YOU

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