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Camplier Design

Applications of Compiler Technology

(1) Implementation of High-level Programming Languages
(2) Optimizations of Computer Architectures

· p grallelism - Memory Hierarchies

(3) Design of new computer Architectures - RISC - i legente in

- specialized Architectures

(4) Program Translations

-Binary, Translation

- Hlw Tyntheris

- Database Query Interpreters - Compiled Simulation

(5) High per formance computing

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Page No.	
Dau	
High level Language	7
Lexical Analyzer	
Gualdy Nagle and	Turan a
Syntax Analyzex	Handling
(Symbo) Semantic Analyzer	
Tell 10	
Intermediate (ode	
	; : '
(ode Optimiser	
Taxa al cal	
Generation Generation	
The state of the s	· · · · · · · · · · · · · · · · · · ·
Assembly Code	
There are two phases of Compilers	
(2) Synthesis phase.	,
(2) Synthesis phase.	
u) Analysis phase: -	
THE HOOLWIS Phase of	
representation from the given source code.	
(2) Synthesis phase:	
The synthesis phase Corates	
The synthesis phase (states an equivalent target program from the intermediate	
Symbol table: It is a	
being used and maintained by the structure	,
Symbol table: It is a data structure being used and maintained by the compiler	8

Page No. Date (1) Lexical Analysis:
(1) Lexical Analysis: 1000, 11
t Algoritan on the
" ALSO Known as scanning
This phase reads the source code and
break it into stream of tokens.
- Tokens are basic units of the programming
Language.
e-g
Int main()
in the state of the constant of
the second of the same of the same of the same
10 10 5 100 1 1 1 1 1 1 1 1 1 1 1 1 1 1
(2) Suntax: Analysis & manage and it
(2) Syntax: Analysis : Compiles is Syntax analysis.
analysis.
- This phase takes the stream of tokens general
- This phase takes the stream of tokens general by the lexical analysis phase and checks
whether the grammar correct or not.
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eg i S -> c Adiller social
A DOC O Q OF THE PARTY OF THE P
IP & Cadical and Carried
S.
San Maria Company
C. A. A.
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	3) Semantic Analysis
_	- The third phase of a compiler is semantic
	analysis.
	- This phase checks whether the code is
	Semantically correct.
_	(• 9 •
_	$\frac{1+n-x}{2}$
_	Int - V
_	/ 13/
_	4) Intermediate (ode Generation:
_	the tourth phase of a compiler is intermediate
_	mar destration
	This phase generates an intermedia representation of the src code that can be easily translated
$\overline{\mathbf{y}}$	of the gre code that can be easily translated
_	into machine code
	1 TV 21646 1 3d 1 100 2 2 2011 .
	(3) Code optimited to on all learns sale or
	- The fifth phase of a Compiler 15 - Code
_	Optimization
	- This phase applies various optimization
	techniques to the intermediate code to
	improve the performance of the code.
_	ess. There add we set
	eng. Thre address wde
_	x=p+qxx
	t1 = 9x 8
	$\chi = tz = p+t1$
	X = +2
+	, ,
1	
1	

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	Date
	6) (ode Generation: -
	- The final phase of a compiler is code generation.
	- This phase takes the optimized intermediate
	code and generates the actual machine code
	that can be executed by the target hardware
	6) (ode Generation. - The final phase of a compiler is code generation. - This phase takes the optimized intermediate code and generates the actual machine code that can be executed by the target hordware
	Gumbal Table
	name type side usage.
	Error Handler
	Compile the and Duratting
	Compile time : Runtime
	Color of the of the office of
	Spelling mistalce type error
	Spalling mistalee type emore exceeding limits missing operators wrong operators
	wrong operator
-	
	LA DFA NFA conversion
	VER THE SE LEWIS

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		Date	
	float x1412	, , , ,	
	x=y+z *60	1. 1. 1	
programment of the programment o	11		
	Lexical, Analyzez		
	cid, 1> = Cid, 2> + Cid		
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	18yntox Analyze	,	
	paye Tree	· 41,	
	5	1	
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	id	Carlotte and	
	= E		
	Jemantic Analyzer: - Type	checking.	
		declared variable	
	symentically recified passe - muit	iple decalorion	
	tre tre	15.7 9 1 1 1 1	
	1		
	2 2000 21		
	ICG		
	t1 = 2 # 60.0	1 11: 1 : 1	
	t2= 4+H		
	[x = t2]		
	1		
	*		
	code Optinization		
	t1=2,460.0		-
-	x = y +t1		
	.11.		
	TGG 7		
	100/		

- Tokens are normally identifiers, keywords, Operators, (onstant and special symbol - Jerical parsex - Rend toketh() - Send toketh() - LA helps in giving error messages - LA helps in giving error messages - providing row no. & Column no - LA climinates (omment lines from the given - LA eliminates while (page character (blank, Tab)	Tokens are normally identifiers, keywords, Operators, (onstant and special symbol gettoken() Lexical parser Send toketn() Jaymbol table Jaymbol table LA helps in giving error messages providing row no. & Column no LA climinates (omment lines from the give program LA eliminates white (pace character)	- Tokens are normally identifiers, keywords, Operators, (onstant and special symbol gettoken() Lexical parser Analyze send toketn() send toketn() 1 24 3 id = E - LA helps in giving error messages providing row no. & Column no - LA climinates (omment lines from the given program - LA eliminates while space characters		marul word	ds whi	chils 1	given program into
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- LA eliminates white space character	- LA eliminates white space character	- LA eliminates white space character	1).00	,	· in an	3. 6.7	ge veloui.
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•	LA uses DFA to do tokenization
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	While doing tolunization LA always gives importance to longust matching
	int main() - 4
	1 5
	3
	nota
	7) - >) - >) block
	m
	i (;.)
	(n)
	main) (=) 3
	$\mathbf{x} = \mathbf{a} + \mathbf{b} \cdot \mathbf{c};$
	$\frac{x = a + b \cdot c}{\text{int} \times (a_1b_1c_1)}$
	$\frac{y=x+q}{1}$
	Syntax essor/Semantic essor