CS 5-2

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Compiler Construction

Content Free Grammar

$S \rightarrow B|I$

$I \rightarrow$ cout $<<A;$ | cin $>>N;$ | F;S

$A \rightarrow$ "string"

$B \rightarrow CD$

$C \rightarrow$ int | float

$D \rightarrow NE$

$E \rightarrow H|\varepsilon$

$F \rightarrow$ if(H) $\{S\}G$

$G \rightarrow$ else if (H) $\{S\}G$ | else $\{S\}$ | ε

$H \rightarrow IJI$

$I \rightarrow M|N$

$J \rightarrow K|L$

$K \rightarrow +|-|*|/|\%|=$

$L \rightarrow >|<|==|!=$

$M \rightarrow$ number

$N \rightarrow$ variable O

$N \rightarrow \_O$

$O \rightarrow N$

$O \rightarrow$ number O

$O \rightarrow \varepsilon$

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Compiler Construction

First of Context Free Grammar

Variable	First
S	cout, cin, int, float, if
I	cout, cin, if
A	"String"
B	int, float
C	int, float
D	variable, –
E	–, ε
F	if
G	else if, else, ε
H	number, variable, –
I	number, variable, –
J	+, –, *, /, %, =, >, <, ==, ! =
K	+, –, *, /, %, =
L	>, <, ==, ! =
M	number
N	variable, –
O	variable, number, –, ε

Follow of Content Free Grammar

Variable	Follow
S	$, }
I	$, }
A	;
B	$, }
C	variable, -
D	;
E	}, $
F	cout, cin, int, float, if
G	cout, cin, int, float
H	}, $,)
I	+, -, *, /, %, =, >, <, ==, !=, }, $,)
J	number, Variable, -
K	number, variable, -
L	number, variable, -
M	+, -, *, /, %, =, >, <, ==, !=, }, $,)
N	;, =, +, -, *, /, %, ==, !=, <, >, },), $
O	;, =, +, -, *, /, %, ==, !=, <, >, },), $