

## A Context Free Grammar for YASL Statements

### CIN and COUT need to be Completed

<statement>	-->	while expression do <statement>    if expression then <statement> <follow-if>    id <follow-id>    cout <follow-cout>    cin <follow-cin>    begin <follow-begin>
<follow-begin>	-->	end    <statement> <statement-tail> end
<statement-tail>	-->	; <statement> <statement-tail>    $\epsilon$
<follow-if>	-->	else <statement>    $\epsilon$
<follow-id>	-->	= expression    ~ id    ( expression <follow-expression> )    $\epsilon$
<follow-expression>	-->	, expression <follow-expression>    $\epsilon$ <cin> -> <follow-cin> <follow-cin> -> >> id <follow-cin>   E
<follow-cin>	-->	Complete this based on the syntax diagrams.
<follow-cout>	-->	Complete this based on the syntax diagrams, you may wish to add a non-terminal to handle expressions-stringconsts, and endl. <cout> -> << <follow-cout><cout-tail> <follow-cout> -> string-constant  endl   expression <cout-tail> -> << <follow-cout><cout-tail> E

Panel 17

<program> -> program identifier ; <block> .

<block> -> <var-decs> <func-decs> <prog-body>

<prog-body> -> begin <follow-begin>

Panel 18

$$\langle \text{var-decs} \rangle \rightarrow \epsilon \mid \langle \text{type} \rangle \langle \text{ident-list} \rangle ; \langle \text{var-decs} \rangle$$
$$\langle \text{ident-list} \rangle \rightarrow \text{identifier} \langle \text{identifier-tail} \rangle$$
$$\langle \text{identifier-tail} \rangle \rightarrow , \langle \text{ident-list} \rangle \mid \epsilon$$

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$$\langle \text{type} \rangle \rightarrow \text{int} \mid \text{boolean}$$

Panel 23

$\langle \text{func-decs} \rangle \rightarrow \epsilon \mid \text{function identifier } \langle \text{func-dec-tail} \rangle ; \langle \text{block} \rangle ; \langle \text{func-decs} \rangle$

$\langle \text{func-dec-tail} \rangle \rightarrow ( \langle \text{param-list} \rangle ) \mid \epsilon$  key

$\langle \text{param-list} \rangle \rightarrow \langle \text{type} \rangle \langle \text{type-tail} \rangle$

$\langle \text{type-tail} \rangle \rightarrow \text{identifier } \langle \text{ident-tail} \rangle \mid$   
 $\quad \text{ } \& \text{ identifier } \langle \text{ident-tail} \rangle$   
 $\langle \text{ident-tail} \rangle \rightarrow \epsilon \mid$   
 $\quad \text{ } \langle \text{param-list} \rangle$