School of Mathematical and Computational Sciences
Indian Association for the Cultivation of Science

Compiler Construction: COM 5202

Tutorial IV (05 February, 2025)

M. Sc Semester IV: 2024-2025 *Instructor:* Goutam Biswas

Exercise 1. *Consider the following grammar with the set of terminals:*
Σ = {id ; := int float main do else end if print scan then while} $\cup$ {E BE}.
The set of non-terminals: N = {P DL D VL T SL S ES IS WS IOS}
The start symbol is P *and the set of production rules are as follows:*

1	P	$\rightarrow$	main DL SL end
2	DL	$\rightarrow$	D DL | D
4	D	$\rightarrow$	T VL ;
5	VL	$\rightarrow$	id VL | id
7	T	$\rightarrow$	int | float
9	SL	$\rightarrow$	S SL | ε
11	S	$\rightarrow$	ES | IS | WS | IOS
15	ES	$\rightarrow$	id := E ;
16	IS	$\rightarrow$	if BE then SL end |
			if BE then SL else SL end
18	WS	$\rightarrow$	while BE do SL end
19	IOS	$\rightarrow$	scan id ; | print E ;

Transform the grammar to equivalent $LL(1)$ grammar.
Exercise 2. *Compute First of ever production rule and Follow of every non-terminal that can produce* ε *to justify that the grammar is* $LL(1)$.