CS536 Homework 4 Solution

Question 1:

program → MAIN LPAREN RPAREN LCURLY list RCURLY	program.trans = list.trans
list → list oneItem	$list_1$.trans = $list_2$.trans ∪ oneItem.trans
list → epsilon	list.trans = { }
oneItem → decl	oneItem.trans = { }
oneItem → stmt	oneItem.trans = stmt.trans
decl → BOOL ID SEMICOLON	no translation rule needed
decl → INT ID SEMICOLON	no translation rule needed
stmt → ID ASSIGN exp SEMICOLON	stmt.trans = exp.trans
stmt → IF LPAREN exp RPAREN stmt	$stmt_1$.trans = exp.trans ∪ $stmt_2$.trans
stmt → LCURLY list RCURLY	stmt.trans = list.trans
exp → exp PLUS exp	exp_1.trans = exp_2.trans ∪ exp_3.trans
exp → exp LESS exp	exp_1.trans = exp_2.trans ∪ exp_3.trans
exp → exp EQUALS exp	exp_1.trans = exp_2.trans ∪ exp_3.trans
exp → ID	exp.trans = { }
exp → BOOLLITERAL	exp.trans = { BOOLLITERAL.value }
exp → INTLITERAL	exp.trans = { INTLITERAL.value }

Question 2:

Parse tree