HOMEWORK 7

Question 1:

added productions

var$Decl \rightarrow typedef$

$typedef \rightarrow TYPEDEF\ STRUCT\ id\ id\ SEMICOLON$

$| TYPEDEF\ id\ id\ SEMICOLON$

$type \rightarrow id$

Question 2:

a. What information should be stored with each name in the symbol table?

Name	Type	isType	SymTable for STUCT
MonthDayYear	struct	false	Name: month, day, year Type: int, int, int
date	MonthDayYear	true	
today	date	false	
dollars	int	true	
salary	dollars	false	
moreDollars	dollars	true	
md	moreDollars	false	
d	int	false	

b. What should be done to process a typedef: typedef T xxx;?

(1) Check xxx in Name field in current scope→ Once found: ErrMsg.fatal("multiply declared")

(2) Then check T in name fields → T' = T if it's not "struct ttt"; otherwise T' = ttt

If T' doesn't exist → ErrMs.fatal("not declared type")

Else if found T' in symbol table with a "false" in its "isType" field → ErrMsg.fatal("not defined type)

Else → Add in the entry as follow if no error found

Name	Type	isType (bool)	SymTable for STUCT
xxx	T'	true	

c. What should be done to process a declaration of a variable, function, or parameter?

For declarations:

(1) Firstly check its name in “Name” field → Once found: ErrMsg.fatal(“multiply declared name”)

(2) Then check its type

If it is “int”, “bool” or “void” → Add new entry following into the symbol table

Name	Type	isType (bool)	SymTable for STUCT
Id_name	ID_type(int || bool || void)	false	

Else check the type in “Name” field →

If not found in the table: ErrMsg.fatal(“not declared type”)

Else if found in the table but isType == fasle: ErrMsg(“not decalred type”)

Else add new entry following into the symbol table

Name	Type	isType (bool)	SymTable for STUCT
Id_name	ID_Type	false	

d. What should be done to process the use of a name xxx in a statement?

(1) Check xxx in Name field in global scope →

If not found in the table: ErrMsg.fatal(“Use of non-declared variable”)