Compiler for LISP in C [Sec 6F - CD Lab]

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# Context Free Grammar

1. S -> LINE SPACE S | SPACE S | λ
2. SPACE -> \nSPACE | SPACE | \tSPACE | λ
3. LINE -> (IF) | (LOOP) | (FOR) | (EXP)
4. IF -> if (EXP) SPACE THEN S
5. THEN -> then | λ
6. LOOP -> loop S
7. FOR -> loop for VAR IN DO | loop for VAR FROM DO
8. VAR -> CHAR VAR | λ
9. IN -> in LIST
10. FROM -> from NUM to NUM
11. DO -> do S
12. LIST -> ‘(LISTELEM)
13. LISTELEM -> STR LISTELEM

| NUM LISTELEM

| LIST LISTELEM

| LIST

| NUM

| STR

| λ

1. NUM -> DIGIT NUM | λ
2. STR -> CHAR STR | DIGIT STR | SPECIALCHAR STR | λ
3. EXP -> SETQ | PRINT | DATA | COMP | AOP
4. DATA -> LIST | STR | NUM | FLOAT
5. SETQ -> setq VAR VAR  
    | setq VAR STR  
    | setq VAR NUM  
    | setq VAR FLOAT
6. PRINT -> print DATA
7. COMP -> COP VAR VAR  
    | COP VAR STR  
    | COP VAR NUM  
    | COP VAR FLOAT  
    | COP STR VAR  
    | COP STR STR  
    | COP NUM VAR  
    | COP NUM NUM  
    | COP NUM FLOAT  
    | COP FLOAT VAR  
    | COP FLOAT NUM  
    | COP FLOAT FLOAT
8. AOP -> OP VAR VAR  
    | OP VAR STR  
    | OP VAR NUM  
    | OP VAR FLOAT  
    | OP STR VAR  
    | OP STR STR  
    | OP NUM VAR  
    | OP NUM NUM  
    | OP NUM FLOAT  
    | OP FLOAT VAR  
    | OP FLOAT NUM  
    | OP FLOAT FLOAT
9. COP -> = | > | >= | < | <= | /=
10. OP -> + | - | \* | /

# Tokens

1. Keywords <keyword,lexeme>
2. Identifier <id,lexeme,value,line\_number>
3. Operators <op,lexeme,type=[relOp,u\_op,arithmetic]>
4. Punctuators <punc,lexeme,

type=[INDENT,COLON,DEDENT,

ESCAPECHARACTERS,PARENTHESES,QUOTES]>

1. Literal <literal,lexeme,type>