```
[1]
     <PROGRAM>
                             → <IDENT><ENV><DATA><PROC>
[2]
                                 identification division <END INST> program-id.
     <IDENT>
                                 ID < END \quad INST > author. \quad WORDS < END \quad INST >
                                 date-written. WORDS <END INST>
[3]
     <WORDS>
                                 ID < WORDS LR>
[4]
     <WORDS LR>
                                 ID < WORDS LR
[5]
[6]
                                 ID
[7]
     <END INST>
                                 \cdot n
                             \rightarrow
[8]
     <\!\!\mathrm{ENV}\!\!>
                                 environment division<END INST> configuration
                                 section<END INST> source-computer.
                                 WORDS<END INST> object-computer.
                                 WORDS<END INST>
[9]
     <DATA>
                                 data division<END INST> working-storage
                                 section {<} END \quad INST {>} < VAR \quad LIST {>}
[10]
     <VAR LIST>
                                 <VAR DECL> <VAR LIST>
[11]
                             \rightarrow \varepsilon
[12]
     <VAR DECL>
                             → <LEVEL> ID pic IMAGE <VAR DECL TAIL>
[13]
     <VAR DECL TAIL>
                             → value INTEGER<END INST>
                                 value INTEGER<END INST>
[14]
     <LEVEL>
[15]
                                 INTEGER
[16]
     <PROC>
                                 procedure division<END INST> ID
                                 section<END INST> <LABELS> end program ID.
[17]
     <LABELS>
                                 <LABEL><END INST> <INSTRUCTION LIST>
                                 <LABELS LR>
[18]
                                 <LABEL><END INST> <INSTRUCTION LIST>
     <LABELS LR>
                                 <LABELS_LR>
[19]
[20]
                                 <LABEL><END INST> <INSTRUCTION LIST>
[21]
     <LABEL>
[22]
     <INSTRUCTION LIST>
                                 <INSTRUCTION> <INSTRUCTIONLIST>
[23]
[24]
    <INSTRUCTIONS>
                                 <ASSIGNATION>
[25]
                                \langle IF \rangle
[26]
                                <CALL>
[27]
                                \langle \text{READ} \rangle
[28]
                                 <WRITE>
[29]
                                 stop run<END INST>
[30]
     <ASSIGNATION>
                                 move <EXPRESSION> to ID<END INST>
[31]
                                 compute ID = <EXPRESSION><END INST>
[32]
                                 add <EXPRESSION> to ID<END INST>
[33]
                                 subtract <EXPRESSION> from ID<END INST>
[34]
                                 multiply <ASSING END><END INST>
[35]
                                 divide <ASSING END><END INST>
[36]
     <ASSIGN END>
                                 <EXPRESSION>,<EXPRESSION> giving ID
[37]
     <EXPRESSION>

ightarrow <EXP AND> <EXPRESSION_LR>
[38]
     <EXPRESSION_LR>
                             \rightarrow or <EXP AND> <EXPRESSION LR>
[39]
```

```
[40]
    \langle \text{EXP\_AND} \rangle
                            \rightarrow <EXP_EQUAL> <EXP_AND_LR>
[41]
    <EXP AND LR>
                                and <EXP EQUAL> <EXP AND LR>
[42]
[43]
    <EXP EQUAL>
                            \rightarrow <EXP ADD> <EXP EQUAL LR>
                            \rightarrow = <EXP ADD> <EXP EQUAL LR>
[44]
                               < <EXP_ADD> <EXP_EQUAL_LR>
[45]
                            \rightarrow > <EXP ADD> <EXP EQUAL LR>
[46]
[47]
                            \rightarrow <= <EXP ADD> <EXP EQUAL LR>
[48]
                                >= <EXP ADD> <EXP EQUAL LR>
[49]
[50]
    <EXP ADD>
                               <EXP MULT> <EXP ADD LR>
[51]
    <EXP ADD LR>
                            \rightarrow + <EXP MULT> <EXP ADD LR>
                               [52]
[53]
                            \rightarrow \varepsilon
    <EXP MULT>
                               <EXP NOT> <EXP MULT LR>
[54]
[55]
    <EXP MULT LR>
                            /<EXP NOT><EXP MULT LR>
[56]
[57]
[58]
    <EXP NOT>
                                -<EXP NOT>
                               not <EXP NOT>
[59]
[60]
                                <EXP PARENTHESIS>
[61]
    <EXP PARENTHESIS>
                            \rightarrow (\langle EXPRESSION \rangle)
                               <EXP\_TERM>
[62]
                            \rightarrow
[63]
    <EXP_TERM>
                            \rightarrow ID
                            → INTEGER
[64]
[65]
                               \operatorname{true}
[66]
                               false
    <IF>
[67]
                                if <EXPRESSION> then <INSTRUCTION LIST>
                                <IF END>
[68]
    <IF_END>
                                else <INSTRUCTION LIST> end-if
[69]
                                end-if
[70]
    <CALL>
                                perform ID < CALL TAIL>
                                until < \!\!EXPRESSION \!\!> < \!\!END\_INST \!\!>
[71]
    <CALL TAIL>
                                <END INST>
[72]
[73]
    <READ>
                            \rightarrow accept ID<END_INST>
[74]
    <WRITE>
                                display <WRITE TAIL>
[75]
    <WRITE_TAIL>
                            → <EXPRESSION><END INST>
[76]
                            → STRING<END INST>
```