```
 1    Esercizio 3.2
 2    Ming Su
 3    912239
 4
 5    FIRST:
 6    ANNULLABILI: statlistp , whenlistp , exprlistp
 7
 8    FIRST(prog) =         FIRST(statlist)                      ={print,read,cond,while,{,=}
 9    FIRST(statlist) =     FIRST(stat)(statlistp non conta perche stat non e
       annulabile)           ={print,read,cond,while,{,=}
10    FIRST(statlistp) =    FIRST ;(stat)(statlistp)|ε          ={;}
11    FIRST(stat) =         FIRST( = ID(expr))
12                              (print(<exprlist>))
13                              (read(ID))
14                              (cond(whenlist))(else(<stat>)) =(mi tengo solo cond per la
                                2condizione dell algoritmo )
15                              (while(bexpr))
16                              ({<statlist>})                  ={print,read,cond,while,{,=}
17
18    FIRST(whenlist) =     FIRST(whenitem)(whenlistp)          ={when}
19    FIRST(whenlistp) =    FIRST(whenitem)(whenlistp)|ε        ={when}
20    FIRST(whenitem) =     FIRST(when(bexpr))(do(stat))        ={when}
21    FIRST(bexpr) =        FIRST(RELOP(expr)(expr))            ={RELOP}
22    FIRST(expr) =         FIRST(+(exprlist))
23                              (*(exprlist))
24                              (-(expr)(expr))
25                              (/(expr)(expr))
26                              (NUM)(ID)
                                ={NUM,ID,+,-,*,/}
27    FIRST(exprlist) =     FIRST(expr)(exprlistp)              ={NUM,ID,+,-,*,/}
28    FIRST(exprlistp) =    FIRST(expr)(exprlistp)              ={NUM,ID,+,-,*,/}
29    //----------------------------------------------------------------------------
       --------------
30    FOLLOW:
31    FIRST(EOF)<=FOLLOW(STATLIST)
32
33    FOLLOW(STATLIST)<=FOLLOW(STAT)
34    FIRST(STATLISTP)<=FOLLOW(STAT)
35    FOLLOW(STATLIST)<=FOLLOW(STATLISTP)
36
37    FOLLOW(STATLISTP)<=FOLLOW(STAT)
38    FIRST(STATLISTP)<=FOLLOW(STAT)
39    //FOLLOW(STATLISTP)<=FOLLOW(STATLISTP)
40
41    FOLLOW(STAT)<=FOLLOW(EXPR)
42    FIRST(")")<=FOLLOW(EXPRLIST)
43    FIRST("else")<=FOLLOW(WHENLIST)
44    FIRST(")")<=FOLLOW(BEXPR)
45    FIRST("}")<=FOLLOW(STATLIST)
46
47    FOLLOW(WHENLIST)<=FOLLOW(WHENITEM)
48    FIRST(WHENLISTP)<=FOLLOW(WHENITEM)
49    FOLLOW(WHENLIST)<=FOLLOW(WHENLISTP)
50
51    FIRST(")")<=FOLLOW(BEXPR)
52    FOLLOW(WHENITEM)<=(STAT)
53
54    FOLLOW(BEXPR)<=FOLLOW(EXPR)
55    //FIRST(EXPR)<=FOLLOW(EXPR)
56
57    FOLLOW(")")<=FOLLOW(EXPRLIST)
58
59    FIRST(EXPRLISTP)<=FOLLOW(EXPR)
60    FOLLOW(EXPRLIST)<=FOLLOW(EXPR)
61    FOLLOW(EXPRLIST)<=FOLLOW(EXPRLISTP)
62
63    ANNULLABILI: statlistp , whenlistp , exprlistp
64    //----------------------------------------------------------------------------
       -------
65    TAB:           X:
66
67    PROG           $
68    STATLIST       ("}" "EOF")
```

```
69   STATLISTP        ("}" "EOF")
70   STAT             FOLLOW(STATLIST)FIRST(STATLISTP)FOLLOW(STATLISTP)FOLLOW(WHENITEM) =
     ("}" ";" "EOF" "ELSE" "WHEN")
71   WHENITEM         FOLLOW(WHENLIST)FIRST(WHENLISTP)                              =
     ("ELSE" "WHEN" ";")
72   WHENLIST         ("ELSE" "WHEN")
73   WHENLISTP        ("ELSE")
74   BEXPR            (")")
75   EXPR             FOLLOW(BEXPR)FOLLOW(STAT) =("}" ")" ";" "EOF" "ELSE" "WHEN")
76   EXPRLIST         (")")
77   EXPRLISTP        (")")
78
79
80   GUIDA:
81   $FOLLOW(PROG)
82   PROG       = FIRST(STATLIST EOF)                        ={print,read,cond,while,{,=}
83   STATLIST   = FIRST(<STAT><STATLISTP>)                   ={print,read,cond,while,{,=}
84   STATLISTP  = FIRST(";" <STAT><STATLISTP>)               ={";"}
85                FIRST(ε) U FOLLOW(STATLISTP)               ={"}" EOF }//
86   STAT       = FIRST("=" ID <EXPR>)                       ={"="}
87                FIRST(PRINT (<EXPRLIST>))                  ={"PRINT"}
88                FIRST(READ (ID))                           ={"READ"}
89                FIRST(COND <WHENLIST> ELSE <STAT>)         ={"COND"}
90                FIRST(WHILE (<BEXPR>)<STAT>)               ={"WHILE"}
91                FIRST({<STATLIST>})                        ={"{"}
92   WHENLIST   = FIRST(<WHENITEM><WHENLISTP>)               ={"WHEN"}
93   WHENLISTP  = FIRST(<WHENITEM><WHENLISTP>)               ={"WHEN"}
94                FIRST(ε)U FOLLOW(WHENLISTP)                ={"ELSE"}
95   WHENITEM   = FIRST(when(<BEXPR>) do <STAT>)             ={"WHEN"}
96   BEXPR      = FIRST(RELOP <EXPR><EXPR>)                  ={RELOP}
97   EXPR       = FIRST(+(<EXPRLIST>))                       ={"+"}
98                FIRST(-(<EXPRLIST>))                       ={"-"}
99                FIRST(* <EXPR><EXPR>)                      ={"*"}
100               FIRST(/ <EXPR><EXPR>)                      ={"/"}
101               FIRST(NUM)                                 ={"NUM"}
102               FIRST(ID)                                  ={"ID"}
103  EXPRLIST   = FIRST(<EXPR><EXPRLISTP>)                   ={NUM,ID,+,-,*,/}
104  EXPRLISTP  = FIRST(<EXPR><EXPRLISTP>)                   ={NUM,ID,+,-,*,/}
105  EXPRLISTP  = FIRST(ε) U FOLLOW(EXPRLISTP)               ={")"}
106
107
```