



ConTExT

title : ConTExT User Module
subtitle : Dead stone calculator for go
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```
1 \writestatus{loading}{Context User Module / Dead stone calculator for go}
```

```
2 \unprotect
```

This is the T_EX version of the dead stone calculator for the go module. They are a copy of the original idea of the algorithm to find dead stones with a few modifications the author needed to make them work.

`\clearboard` The `\clearboard` set all fields with a initial value of 0 for the empty fields and a value of 3 for the margins. The command can also be used to clear a board and remove all set values.

```
3 \def\clearboard
  {\dorecuse{\numexpr\boardsize+\plustwo\relax}
   {\edef\boardrow{\the\numexpr\recurselevel-\plusone\relax}%
    \dorecuse{\numexpr\boardsize+\plustwo\relax}
    {\edef\boardcolumn{\the\numexpr\recurselevel-\plusone\relax}%
     \presetcurrentstone
     {\ifnum\boardrow=\zerocount
      \plusthree
      \else\ifnum\boardrow=\numexpr\boardsize+\plusone\relax
      \plusthree
      \else\ifnum\boardcolumn=\zerocount
      \plusthree
      \else\ifnum\boardcolumn=\numexpr\boardsize+\plusone\relax
      \plusthree
      \else
      \zerocount
      \fi\fi\fi\fi}}}}
```

```
4 \let\laststone\plusone
```

`\addstone` The `\addstone` is the used to place a stone on the board. The three arguments keeps the current row, the column and the stone color. The values for the row and the column have to be a number, the stone color has do be given with the two values B for black and W for white.

```
5 \def\addstone(#1:#2:#3)%
  {\global\advance\stonecount\plusone
   \ifx#3B
    \global\let\laststone\plusone
   \else\ifx#3W
    \global\let\laststone\plustwo
   \fi\fi
   \setevalue{field:\number#1:\number#2}%
   {\ifx#3B
    \plusone
   \else\ifx#3W
    \plustwo
   \fi\fi:\number\stonecount}}
```

```
6 \def\blackstone
  {\let\stone \plusone
   \let\enemy \plustwo
   \let\wall \plusthree
   \let\marked\plusfour
   \let\dead \plusseven}
```

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```
7  \def\whitestone
    {\let\stone \plustwo
     \let\enemy \plusone
     \let\wall \plusthree
     \let\marked\plusfive
     \let\dead \plusseven}

8  \def\firstofcurrentstone #1:#2\relax{\number#1}
    \def\secondofcurrentstone#1:#2\relax{\number#2}

9  \def\currentstone
    {\@EA\@EA\@EA\@EA\@EA\@EA\@EA\firstofcurrentstone
     \getvalue{field:\boardrow:\boardcolumn}\relax}

10 \def\currentstonenumber
    {\@EA\@EA\@EA\@EA\@EA\@EA\@EA\secondofcurrentstone
     \getvalue{field:\boardrow:\boardcolumn}\relax}

11 \def\leftstone
    {\@EA\@EA\@EA\@EA\@EA\@EA\@EA\firstofcurrentstone
     \getvalue{field:\boardrow:\the\numexpr\boardcolumn-\plusone\relax}\relax}

12 \def\rightstone
    {\@EA\@EA\@EA\@EA\@EA\@EA\@EA\firstofcurrentstone
     \getvalue{field:\boardrow:\the\numexpr\boardcolumn+\plusone\relax}\relax}

13 \def\topstone
    {\@EA\@EA\@EA\@EA\@EA\@EA\@EA\firstofcurrentstone
     \getvalue{field:\the\numexpr\boardrow-\plusone\relax:\boardcolumn}\relax}

14 \def\bottomstone
    {\@EA\@EA\@EA\@EA\@EA\@EA\@EA\firstofcurrentstone
     \getvalue{field:\the\numexpr\boardrow+\plusone\relax:\boardcolumn}\relax}

15 \newif\iftracingstones

16 \def\doprocessstones
    {\markstones
     \iftracingstones\placeterminalboard\fi
     \deadstones
     \dorecurse\deadcount\checkstones
     \revertstones}

17 \def\processtones
    {\ifcase\laststone
     \or\processwhitetones\processblackstones
     \or\processblackstones\processwhitetones
     \fi}

18 \def\processblackstones
    {\blackstone
     \doprocessstones}
```

```

19 \def\processwhitetones
    {\whitestone
     \doprocessstones}

20 \def\setstonemark
    {\setcurrentstone{\ifcase\stone\or\plusfour\or\plusfive\else\plussix\fi}}

```

`\markstones` The first internal command is `\markstones`, it set the stone value to marked if all consitions are true, otherwise the state will remain with the old value and we check the next one.

```

21 \def\markbottomstone
    {\ifcase\bottomstone
     \or\setstonemark
     \or\setstonemark
     \or\setstonemark
     \fi}

22 \def\markrightstone
    {\ifcase\rightstone
     \or\markbottomstone
     \or\markbottomstone
     \or\markbottomstone
     \fi}

23 \def\marktopstone
    {\ifcase\topstone
     \or\ifnum\stone=\plusone\else\markrightstone\fi
     \or\ifnum\stone=\plustwo\else\markrightstone\fi
     \or\markrightstone
     \or\ifnum\stone=\plusone\relax\markrightstone\fi
     \or\ifnum\stone=\plustwo\relax\markrightstone\fi
     \fi}

24 \def\markstones
    {\dorecurse\boardsize
     {\edef\boardrow{\recurselevel}%
      \dorecurse\boardsize
      {\edef\boardcolumn{\recurselevel}%
       \ifnum\currentstone=\stone
        \ifcase\leftstone
         \or\ifnum\stone=\plusone\else\marktopstone\fi
         \or\ifnum\stone=\plustwo\else\marktopstone\fi
         \or\marktopstone
         \or\ifnum\stone=\plusone\relax\marktopstone\fi
         \or\ifnum\stone=\plustwo\relax\marktopstone\fi
        \fi
       \fi}}}

```

`\deadstones` The `\deadstones` macro check the marked stones from the last step for a dead state. We will now state from the right bottom and go to the left top corner.

```

25 \def\deadleftstone
    {\ifcase\leftstone
     \or\ifnum\stone=\plusone\else\setdeadstone\fi
     \or\ifnum\stone=\plustwo\else\setdeadstone\fi

```

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```

\or\setdeadstone
\or\setdeadstone
\or\setdeadstone
\fi}

26 \def\deadbottomstone
    {\ifcase\bottomstone
    \or\ifnum\stone=\plusone\else\deadleftstone\fi
    \or\ifnum\stone=\plustwo\else\deadleftstone\fi
    \or\deadleftstone
    \or\resetdeadstone
    \or\resetdeadstone
    \or\resetdeadstone
    \or\deadleftstone
    \fi}

27 \def\deadstones
    {\dostepwiserecurse\boardsize\plusone\minusone
    {\edef\boardrow{\recurselevel}%
    \dostepwiserecurse\boardsize\plusone\minusone
    {\edef\boardcolumn{\recurselevel}%
    \ifnum\currentstone=\marked
    \ifcase\rightstone
    \or\ifnum\stone=\plusone\else\deadbottomstone\fi
    \or\ifnum\stone=\plustwo\else\deadbottomstone\fi
    \or\deadbottomstone
    \or
    \or
    \or
    \or\deadbottomstone
    \fi
    \fi}}}
```

`\revertsto..` The `\revertstones` is called after all dead stones are and we will make the board ready for the next move. There are still fields with the value marked on the board and we have to make sure they get their normal state with the values for stone and enemy.

```

28 \def\revertstones
    {\dorecurse\boardsize
    {\edef\boardrow{\recurselevel}%
    \dorecurse\boardsize
    {\edef\boardcolumn{\recurselevel}%
    \ifcase\currentstone
    \or
    \or
    \or
    \or\resetstone
    \or\resetstone
    \or
    \or\removedeadstone
    \fi}}}
```

```

29 \def\presetcurrentstone#1%
    {\setxvalue{field:\boardrow:\boardcolumn}{\number#1:0}}

30 \def\setcurrentstone#1%
    {\setxvalue{field:\boardrow:\boardcolumn}{\number#1:\number\currentstonenumber}}

31 \def\setdeadstone
    {\setcurrentstone{\pluseven}}

32 \def\resetdeadstone
    {\setcurrentstone{\ifcase\stone\or\plusone\or\plustwo\else\plussix\fi}}

33 \let\resetstone\resetdeadstone

34 \def\keepdeadstone
    {\setcurrentstone{\ifcase\stone\or\pluseven\or\pluseven\else\plussix\fi}}

35 \def\removedeadstone
    {\appendtodeadstonelist
     \setcurrentstone{\zerocount}}

```

`\deadblack..` The dead stones we found in one run are saved in two commalists, their names are `\deadblacktones`
`\deadwhite..` and `\deadwhitestones`. They can be used by users to their positions and numbers in their own macros.

```

36 \def\appendtodeadstonelist
    {\ifcase\stone
     \or\expanded{\appendtocommalist
                  {\boardrow:\boardcolumn:number\stone:\currentstonenumber}}\deadblackstones
     \or\expanded{\appendtocommalist
                  {\boardrow:\boardcolumn:number\stone:\currentstonenumber}}\deadwhitestones
     \fi}

37 \def\cleardeadstonelist
    {\let\deadblackstones\empty
     \let\deadwhitestones\empty}

```

`\checkstones` As one of the first examples has shown sometimes still living stones get the value dead in the last step and we have to check for such a case. Tests has shown this need to be done at least two times and make sure this can be increased without problems users can change this with the counter `\deadcount` but you should also know increasing this counter will result in longer processing time.

```

38 \def\checkdeadstones
    {\ifcase\leftstone
     \or\ifnum\stone=\plusone\relax\resetdeadstone\else\checktopdeadstone\fi
     \or\ifnum\stone=\plustwo\relax\resetdeadstone\else\checktopdeadstone\fi
     \or\checktopdeadstone
     \or\resetdeadstone
     \or\resetdeadstone
     \or\resetdeadstone
     \or\checktopdeadstone
     \fi}

```

```

39 \def\checktopdeadstone
    {\ifcase\topstone
     \or\ifnum\stone=\plusone\relax\resetdeadstone\else\checkrightdeadstone\fi
     \or\ifnum\stone=\plustwo\relax\resetdeadstone\else\checkrightdeadstone\fi
     \or\checkrightdeadstone
     \or\resetdeadstone
     \or\resetdeadstone
     \or\resetdeadstone
     \or\checkrightdeadstone
     \fi}

40 \def\checkrightdeadstone
    {\ifcase\rightstone
     \or\ifnum\stone=\plusone\relax\resetdeadstone\else\checkbottomdeadstone\fi
     \or\ifnum\stone=\plustwo\relax\resetdeadstone\else\checkbottomdeadstone\fi
     \or\checkbottomdeadstone
     \or\resetdeadstone
     \or\resetdeadstone
     \or\resetdeadstone
     \or\checkbottomdeadstone
     \fi}

41 \def\checkbottomdeadstone
    {\ifcase\bottomstone
     \or\ifnum\stone=\plusone\relax\resetdeadstone\else\keepdeadstone\fi
     \or\ifnum\stone=\plustwo\relax\resetdeadstone\else\keepdeadstone\fi
     \or\keepdeadstone
     \or\resetdeadstone
     \or\resetdeadstone
     \or\resetdeadstone
     \or\keepdeadstone
     \fi}

42 \def\checkstones
    {\dorecurse\boardsize
     {\edef\boardrow{\recurselevel}%
      \dorecurse\boardsize
      {\edef\boardcolumn{\recurselevel}%
       \ifcase\currentstone
        \or
        \or
        \or
        \or\ifnum\stone=\plusone\relax\resetdeadstone\fi
        \or\ifnum\stone=\plustwo\relax\resetdeadstone\fi
        \or
        \or\checkdeadstones
        \fi}}}}

43 \protect \endinput

```


\addstone 1

\checkstones 5

\clearboard 1

\deadblackstones 5

\deadstones 3

\deadwhitestones 5

\markstones 3

\revertstones 4

