

awk Quick Ref

compiled by v.ledos
rel 1.0 feb-2010

Usage

```
awk [-v var=val] 'program' [file1 file2...]  
awk [-v var=val] -f progfile [file1 file2...]
```

Structure of an awk program

```
# comments  
pattern { action }           A sequence of  
pattern { action }           pattern-action  
...                           statements
```

For each file,
 For each input line,
 For each pattern,
 If pattern matches input line, do the action.

"pattern"
BEGIN : executes "action" before starting to view the input file
END : executes "action" after ending to view the input file
Other : regular, numeric or string expression or combination

"action" is executable code
if (expression) statement1 **else** statement2
while (expression) statement
for (expr1;expr2;expr3) statement
do statement **while** (expression)
break / **continue** : immediately leave / start next iteration
of innermost enclosing loop
exit / **exit** expression : go immediately to the END
action; if within the END action, exit program

Built-in variables

\$0	Whole line,
\$1, \$2 ... \$NF	first, second... last field
ARGC	Number of command line arguments
ARGV	Array of command line arguments
FILENAME	Name of current input file
FS, RS	Input field / record separator (def: one space, \n)
NF	Number of fields in current record
NR, FNR	Number of record read so far / in current file
OFMT	Output format for numbers (default: %.6g)

OFS, ORS	Output field / rec. separator (def: one space, \n)
RESTART, RLENGTH	Start / Length of string matched by match function (see below)
SUBSEP	Subscript separator (default: \034)

Main built-in functions

r: regex ; s,t: strings ; n,p: integers

int (n), sqrt (n), exp (n), log (n), sin (n), cos (n)	
rand ()	Random number between 0 and 1
close (file or command)	
getline [var]	Read next line from input file,
getline [var] < file	from a specific file,
command getline [var]	or from a pipe
	Return 1 (record found), 0 (end of file), -1 (error)
gsub (r, s)	Substitute s for r globally in \$0 / string t;
gsub (r, s, t)	return # of subs made
index (s, t)	Return first position of string t in s, or 0 if t is not present
length (s)	Return number of characters in s
match (s, r)	Test whether s contains a substring matched by r; return index or 0; sets RSTART and RLENGTH
split (s, a)	Split s into array a on FS / field
split (s, a, fs)	separator fs; return # of fields
sprintf (fmt, expr-list)	Return expr-list formatted according to format string fmt
sub (r, s)	Substitute s for the leftmost longest
sub (r, s, t)	substring of \$0 / t matched by r; return # of subs made
substr (s, p)	Return substring of s (of length n)
substr (s, p, n)	starting at position p
tolower (s), toupper (s)	Lower and upper cases

Formatted output

```
{ printf ("FORMAT",value1,value2,value3,...) }
```

%c	%s	Print as character, as string
%-8s		Print as 8 characters, left aligned
%f		Print as float number,
%6.2f		with 6 digits (4 as integer, 2 as decimal)
\n		Line feed and carriage return

Operators

&& !	Logical operators. Ex: !(\$2<4 \$3<20)
< <= == != >= >	Comparing operators
~ !~	matched by, not
selector?if-true-exp;if-false-exp	

Basic programs

{ print NR, \$0 }	Precede each line by line #
{ \$1 = NR; print }	Replace first field by line #
{ \$2 = log (\$2); \$3 = "" ; print }	Replace the 2 nd field by its logarithm, zap field 3
NF > 0	Print non-empty lines
NF > 0 { print \$1, \$NF}	Print first field and last one of non-empty lines
NF > 4	Print records containing more than 4 fields
\$NF > 4	Print if last field greater than 4
NR%2==0	Print even-numbered lines
NR==10, NR==20	Print lines 10 to 20
/start/, /end /	Print lines between patterns
/regex/, EOF	Print from pattern to end of file
/regex/ { print \$1}	Print first field of lines matching regex
\$1 ~ /regex/	Print lines where first field matches
ORS=NR%5?" ":"\n"	Concatenate every 5 lines of input, using comma separator
/regex/ {x++}	Count and print the number
END { print x}	of lines matching /regex/
{ nc += length (\$0) + 1; nw += NF }	
END { print NR, "lines", nw, "words", nc, "characters" }	wc command
{ sum += \$1 }	Print sum and
END { print sum, sum/NR }	average
{ x[NR] = \$0 }	
END { for (i = NR; i > 0; i--) print x[i]}	Reverse a file
{ a[\$1] += \$2 }	
END { for (i in a) print (i,":",a[i]) }	Group by field 1, and sum field 2
function pwr(a,b) { return exp(b*log(a)) }	
NF >= 2 { print pwr(\$1,\$2) }	User defined function
BEGIN { RS=""; FS="\n" }	Multi-line records.
{ print "Name: ", \$1	Leading and trailing
print "Address: ", \$2 }	newlines are ignored