NAME

gperf − generate a perfect hash function from a key set

SYNOPSIS

gperf [*OPTION*]... [*INPUT-FILE*]

DESCRIPTION

GNU 'gperf' generates perfect hash functions.

If a long option shows an argument as mandatory, then it is mandatory for the equivalent short option also.

Output file location:

−−output−file=*FILE* Write output to specified file.

The results are written to standard output if no output file is specified or if it is -.

Input file interpretation:

−e, **−−delimiters**=*DELIMITER−LIST*
Allow user to provide a string containing delimiters used to separate keywords from their attributes. Default is ",".

−t, **−−struct−type**
Allows the user to include a structured type declaration for generated code. Any text before %% is considered part of the type declaration. Key words and additional fields may follow this, one group of fields per line.

−−ignore−case
Consider upper and lower case ASCII characters as equivalent. Note that locale dependent case mappings are ignored.

Language for the output code:

−L, **−−language**=*LANGUAGE−NAME*
Generates code in the specified language. Languages handled are currently C++, ANSI-C, C, and KR-C. The default is C.

Details in the output code:

−K, **−−slot−name**=*NAME*
Select name of the keyword component in the keyword structure.

−F, **−−initializer−suffix**=*INITIALIZERS*
Initializers for additional components in the keyword structure.

−H, **−−hash−function−name**=*NAME*
Specify name of generated hash function. Default is 'hash'.

−N, **−−lookup−function−name**=*NAME*
Specify name of generated lookup function. Default name is 'in_word_set'.

−Z, **−−class−name**=*NAME*
Specify name of generated C++ class. Default name is 'Perfect_Hash'.

−7, **−−seven−bit**
Assume 7-bit characters.

−l, **−−compare−lengths**
Compare key lengths before trying a string comparison. This is necessary if the keywords contain NUL bytes. It also helps cut down on the number of string comparisons made during the lookup.

−c, **−−compare−strncmp**
Generate comparison code using strncmp rather than strcmp.

−C, **−−readonly−tables**
Make the contents of generated lookup tables constant, i.e., readonly.

−E, **−−enum**
Define constant values using an enum local to the lookup function rather than with defines.

−I, **−−includes**
Include the necessary system include file <string.h> at the beginning of the code.

−G, **−−global−table**
Generate the static table of keywords as a static global variable, rather than hiding it inside of the lookup function (which is the default behavior).

−P, **−−pic**
Optimize the generated table for inclusion in shared libraries. This reduces the startup time of programs using a shared library containing the generated code.

−Q, **−−string−pool−name**=*NAME*
Specify name of string pool generated by option **−−pic**. Default name is 'stringpool'.

−−null−strings
Use NULL strings instead of empty strings for empty keyword table entries.

−W, **−−word−array−name**=*NAME*
Specify name of word list array. Default name is 'wordlist'.

−S, **−−switch**=*COUNT*
Causes the generated C code to use a switch statement scheme, rather than an array lookup table. This can lead to a reduction in both time and space requirements for some keyfiles. The COUNT argument determines how many switch statements are generated. A value of 1 generates 1 switch containing all the elements, a value of 2 generates 2 tables with 1/2 the elements in each table, etc. If COUNT is very large, say 1000000, the generated C code does a binary search.

−T, **−−omit−struct−type**
Prevents the transfer of the type declaration to the output file. Use this option if the type is already defined elsewhere.

Algorithm employed by gperf:

−k, **−−key−positions**=*KEYS*
Select the key positions used in the hash function. The allowable choices range between 1-255, inclusive. The positions are separated by commas, ranges may be used, and key positions may occur in any order. Also, the meta-character '*' causes the generated hash function to consider ALL key positions, and $ indicates the "final character" of a key, e.g., $,1,2,4,6-10.

−D, **−−duplicates**
Handle keywords that hash to duplicate values. This is useful for certain highly redundant keyword sets.

−m, **−−multiple−iterations**=*ITERATIONS*
Perform multiple choices of the **−i** and **−j** values, and choose the best results. This increases the running time by a factor of ITERATIONS but does a good job minimizing the generated table size.

−i, **−−initial−asso**=*N*
Provide an initial value for the associate values array. Default is 0. Setting this value larger helps inflate the size of the final table.

−j, **−−jump**=*JUMP−VALUE*
Affects the "jump value", i.e., how far to advance the associated character value upon collisions. Must be an odd number, default is 5.

−n, **−−no−strlen**
Do not include the length of the keyword when computing the hash function.

−r, **−−random**
Utilizes randomness to initialize the associated values table.

−s, **−−size−multiple**=*N*
Affects the size of the generated hash table. The numeric argument N indicates "how many times larger or smaller" the associated value range should be, in relationship to the number of keys, e.g. a value of 3 means "allow the maximum associated value to be about 3 times larger than the number of input keys". Conversely, a value of 1/3 means "make the maximum associated value about 3 times smaller than the number of input keys". A larger table should

decrease the time required for an unsuccessful search, at the expense of extra table space. Default value is 1.

Informative output:

−h, **−−help**
Print this message.

−v, **−−version**
Print the gperf version number.

−d, **−−debug**
Enables the debugging option (produces verbose output to the standard error).

AUTHOR

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REPORTING BUGS

Report bugs to <bug-gnu-gperf@gnu.org>.

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SEE ALSO

The full documentation for **gperf** is maintained as a Texinfo manual. If the **info** and **gperf** programs are properly installed at your site, the command

info gperf

should give you access to the complete manual.