

String conversion and formatting

Functions for number conversion and formatted string output.

int **PyOS_snprintf**(char **str*, size_t *size*, const char **format*, ...)

Output not more than *size* bytes to *str* according to the format string *format* and the extra arguments. See the Unix man page *snprintf(2)*.

int **PyOS_vsnprintf**(char **str*, size_t *size*, const char **format*, va_list *va*)

Output not more than *size* bytes to *str* according to the format string *format* and the variable argument list *va*. Unix man page *vsnprintf(2)*.

`PyOS_snprintf()` and `PyOS_vsnprintf()` wrap the Standard C library functions `snprintf()` and `vsnprintf()`. Their purpose is to guarantee consistent behavior in corner cases, which the Standard C functions do not.

The wrappers ensure that *str**[*size*-1] is always '\0' upon return. They never write more than *size* bytes (including the trailing '\0') into *str*. Both functions require that *str* != NULL, *size* > 0 and *format* != NULL.

If the platform doesn't have `vsnprintf()` and the buffer size needed to avoid truncation exceeds *size* by more than 512 bytes, Python aborts with a *Py_FatalError*.

The return value (*rv*) for these functions should be interpreted as follows:

- When $0 \leq rv < size$, the output conversion was successful and *rv* characters were written to *str* (excluding the trailing '\0' byte at *str**[*rv*]).
- When $rv \geq size$, the output conversion was truncated and a buffer with *rv* + 1 bytes would have been needed to succeed. *str**[*size*-1] is '\0' in this case.
- When $rv < 0$, "something bad happened." *str**[*size*-1] is '\0' in this case too, but the rest of *str* is undefined. The exact cause of the error depends on the underlying platform.

The following functions provide locale-independent string to number conversions.

double **PyOS_string_to_double**(const char **s*, char ***endptr*,
`PyObject` **overflow_exception*)

Convert a string *s* to a double, raising a Python exception on failure. The set of accepted strings corresponds to the set of strings accepted by Python's `float()` constructor, except that *s* must not have leading or trailing whitespace. The conversion is independent of the current locale.

If `endptr` is `NULL`, convert the whole string. Raise `ValueError` and return `-1.0` if the string is not a valid representation of a floating-point number.

If `endptr` is not `NULL`, convert as much of the string as possible and set `*endptr` to point to the first unconverted character. If no initial segment of the string is the valid representation of a floating-point number, set `*endptr` to point to the beginning of the string, raise `ValueError`, and return `-1.0`.

If `s` represents a value that is too large to store in a float (for example, `"1e500"` is such a string on many platforms) then if `overflow_exception` is `NULL` return `Py_HUGE_VAL` (with an appropriate sign) and don't set any exception. Otherwise, `overflow_exception` must point to a Python exception object; raise that exception and return `-1.0`. In both cases, set `*endptr` to point to the first character after the converted value.

If any other error occurs during the conversion (for example an out-of-memory error), set the appropriate Python exception and return `-1.0`.

New in version 3.1.

`char*` **PyOS_double_to_string**(double *val*, char *format_code*, int *precision*, int *flags*, int **ptype*)

Convert a double *val* to a string using supplied *format_code*, *precision*, and *flags*.

format_code must be one of `'e'`, `'E'`, `'f'`, `'F'`, `'g'`, `'G'` or `'r'`. For `'r'`, the supplied *precision* must be 0 and is ignored. The `'r'` format code specifies the standard `repr()` format.

flags can be zero or more of the values `Py_DTSTF_SIGN`, `Py_DTSTF_ADD_DOT_0`, or `Py_DTSTF_ALT`, or-ed together:

- `Py_DTSTF_SIGN` means to always precede the returned string with a sign character, even if *val* is non-negative.
- `Py_DTSTF_ADD_DOT_0` means to ensure that the returned string will not look like an integer.
- `Py_DTSTF_ALT` means to apply “alternate” formatting rules. See the documentation for the `PyOS_snprintf()` `'#'` specifier for details.

If *ptype* is non-`NULL`, then the value it points to will be set to one of `Py_DTST_FINITE`, `Py_DTST_INFINITE`, or `Py_DTST_NAN`, signifying that *val* is a finite number, an infinite number, or not a number, respectively.

The return value is a pointer to *buffer* with the converted string or `NULL` if the conversion failed. The caller is responsible for freeing the returned string by calling `PyMem_Free()`.

New in version 3.1.

int **PyOS_stricmp**(const char *s1, const char *s2)

Case insensitive comparison of strings. The function works almost identically to `strcmp()` except that it ignores the case.

int **PyOS_strnicmp**(const char *s1, const char *s2, Py_ssize_t size)

Case insensitive comparison of strings. The function works almost identically to `strncmp()` except that it ignores the case.