

**AmigaMail**

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## Chapter 1

# AmigaMail

### 1.1 II-27: Standard Command Line Parsing

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One of the new features in release 2.0 is system standard command line parsing. Its presence has two benefits: it standardizes the way in which the user supplies command line arguments, making it much easier on the user, and it also removes some tedious programming (and code size) from every application that uses it.

The `dos.library`'s `ReadArgs()` routine is the heart of this feature:

```
struct RDArgs *rda = ReadArgs( UBYTE *argtemplate, LONG *argarray,  
                               struct RDArgs *myrda );
```

This function stores each argument supplied on the command line in its corresponding entry in the array of LONG words, `argarray`. The format in which `ReadArgs()` stores each argument is based on the description of the command line supplied in the first argument, `argtemplate`. This description is a C-style string containing a name for each argument.

Each argument name in the template should be a full, descriptive name (for example `'Quick'` not `'Q'`). Each option can be prepended by an abbreviation of the form `'abbrev='` (for example `'Q=Quick'`). The `argtemplate` options must be delimited by commas. Avoid using the names of common commands as keywords, otherwise the user will have to delimit them with quotes.

The ordinal position that an argument appears in the description string determines what its corresponding position in `argarray` is (the first argument corresponds to the first entry in `argarray`, the second argument corresponds to the second entry in `argarray`, ...). There must be an entry in `argarray` for each argument in the description string so that `ReadArgs()` has a place to store each argument's value.

Each argument name in the template can be followed by modifiers that tell `ReadArgs()` the format of the argument. The valid modifiers are:

`/S` - Switch. This is considered a boolean variable. If this option is

present, ReadArgs() will set the corresponding array entry in argarray (an array of LONGs) to something besides zero. If the option is not present, ReadArgs() will set the entry to 0.

/K - Keyword. This means that ReadArgs() will not fill in the corresponding entry in argarray unless the keyword appears with the parameter. For example, if the template is ``Name/K``, then unless ``Name=<string>`` or ``Name <string>`` appears in the command line, the ``Name`` entry in argarray will not be altered by ReadArgs(). /N - Number. This means the parameter is considered a decimal integer, and ReadArgs() will convert it to a LONG. If the argument is not valid, ReadArgs() will fail. If the option is present in the command line (and it is valid), ReadArgs() will fill in the corresponding entry with a pointer to the LONG.

/T - Toggle. This is similar to the switch (/S) modifier, but causes the corresponding boolean (in argarray) to toggle. For example, if the array entry corresponding to an argtemplate of ``binary/T`` is set to something besides FALSE and the word ``binary`` appears by itself on the command line, ReadArgs() will toggle that array entry to FALSE.

/A - Always. This modifier tells ReadArgs() that this option is required. ReadArgs() will fail if the keyword does not appear in the command line.

/F - Final (rest of line). If this is specified, the part of the command line that follows this option is taken as the parameter for this option, even if other option keywords appear in it.

/M - Multiple arguments. This means the argument will take any number of strings (or integers as this modifier can be used with the /N modifier), returning them as an array of strings. Any arguments not considered to be part of another option will be added to this option. Only one /M should appear in a template. Example: for a template ``Dir/M,All/S`` the command-line ``foo bar all qwe`` will set the boolean ``all``, and return an array consisting of ``foo``, ``bar``, and ``qwe``. The entry in the array will be a pointer to an array of string pointers, the last of which will be NULL.

There is an intentional interaction between /M parameters and /A parameters. If there are unfilled /A parameters after parsing, ReadArgs() will grab strings from the end of a previous /M parameter list to fill the /A's. This is used for things like Copy (``From/A/M,To/A``).

If the user does not supply a non-required argument (one without the ``/A`` modifier) on the command line, ReadArgs() will leave the argument's argarray entry alone. Before calling ReadArgs(), a program should either set the argarray entries to reasonable default values or clear them, so the application can't be confused by any garbage values left in the array.

If it is successful, ReadArgs() returns a pointer to a RDArgs structure (from <dos/rdargs.h>). ReadArgs() uses this structure internally to control its operation. It is possible to pass ReadArgs() a custom RDArgs structure (myrda in the ReadArgs() prototype above). For most applications myrda will be NULL, as most applications do not need to control ReadArgs().

```
struct RDAArgs {
    struct    CSource RDA_Source; /* Select input source */
    LONG      RDA_DAList;         /* PRIVATE. */
    UBYTE     *RDA_Buffer;        /* Optional string parsing space. */
    LONG      RDA_BufSiz;         /* Size of RDA_Buffer (0..n) */
    UBYTE     *RDA_ExtHelp;       /* Optional extended help */
    LONG      RDA_Flags;          /* Flags for any required control */
};
```

Any successful call to `ReadArgs()` (even those that use a custom `RDAArgs` structure) must be complemented with a call to `FreeArgs()` to free the resources that `ReadArgs()` allocates:

```
void FreeArgs(struct RDAArgs *rda);
```

where `rda` is the `RDAArgs` structure used by `ReadArgs()`.

An application can use a custom `RDAArgs` structure to provide an alternate command line source, an alternate temporary storage buffer, or an extended help string. The custom `RDAArgs` structure must be allocated with `AllocDosObject()` and deallocated with `FreeDosObject()`. See the Autodocs for more details on these functions.

The `RDAArgs.RDA_Source` field is used to supply `ReadArgs()` with an alternate command line to parse. If this field is non-NULL, `ReadArgs()` will use it as a pointer to a `CSource` structure describing the alternate command line. The `CSource` structure (from `<dos/rdargs.h>`) is as follows:

```
struct CSource {
    UBYTE     *CS_Buffer;
    LONG      CS_Length;
    LONG      CS_CurChr;
};
```

Where `CS_Buffer` is the command line to parse, `CS_Length` is the length of `CS_Buffer`, and `CS_CurChr` is the position in `CS_Buffer` from which `ReadArgs()` should begin its parsing. Normally `CS_CurChr` is initialized to zero.

`ReadArgs()` uses the `RDAArgs` structure's `RDA_DAList` field for internal use. This field must be set to NULL before `ReadArgs()` uses this structure.

The `RDA_Buffer` and `RDA_BufSiz` fields allow an application to supply a fixed-size buffer in which to store parsed data. This allows the application to pre-allocate a buffer rather than requiring `ReadArgs()` to allocate buffer space. If either `RDA_Buffer` or `RDA_BufSiz` is NULL, `ReadArgs()` assumes the application has not supplied a buffer.

`RDA_ExtHelp` is a text string which `ReadArgs()` displays if the user asks for additional help. The user asks for additional help by typing a question mark when `ReadArgs()` prompts the user for input (which normally happens only after he or she types a question mark as the only argument on the command line).

`RDA_Flags` is a bit field used to toggle certain options of `ReadArgs()`. Currently, only one option is implemented, `RDAF_NOPROMPT`. When set, `RDAF_NOPROMPT` prevents `ReadArgs()` from prompting the user.

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The following code, `ReadArgs.c`, uses a custom `RDArgs` structure to pass a command line to `ReadArgs`.