

# NAG Library Function Document

## nag\_open\_file (x04acc)

### 1 Purpose

nag\_open\_file (x04acc) opens a file for reading, writing or appending, and returns an associated file identifier.

### 2 Specification

```
#include <nag.h>
#include <nagx04.h>
void nag_open_file (const char *filename, Integer mode, Nag_FileID *fileid,
                   NagError *fail)
```

### 3 Description

nag\_open\_file (x04acc) opens a file for reading, writing or appending and returns an associated file identifier. This function is intended for use by callers of certain functions in Chapters e04 and f12 which use the file identifier for input or output of data.

### 4 References

None.

### 5 Arguments

1: **filename** – const char \* *Input*

*On entry:* the name of the file to be opened. As special cases, an empty string or null pointer may be used to associate **fileid** with standard input or standard output. See the description of **mode** below.

*Constraint:* must contain a valid filename for the computer system being used.

2: **mode** – Integer *Input*

*On entry:* specifies whether the file is to be opened for reading, writing or appending.

**mode** = 0

The file is to be opened for reading.

If **filename** is an empty string or null pointer then **fileid** becomes associated with standard input.

**mode** = 1

The file is to be opened for writing.

If **filename** is an empty string or null pointer then **fileid** becomes associated with standard output.

**mode** = 2

The file is to be opened for appending.

If **filename** is an empty string or null pointer then **fileid** becomes associated with standard output.

*Constraint:*  $0 \leq \mathbf{mode} \leq 2$ .

- 3: **fileid** – Nag\_FileID \* *Output*  
*On exit:* an identifier associated with the file to be read from, written to or appended to. This identifier will typically be passed to other NAG C Library functions.
- 4: **fail** – NagError \* *Input/Output*  
 The NAG error argument (see Section 2.7 in How to Use the NAG Library and its Documentation).

## 6 Error Indicators and Warnings

### NE\_INT

On entry, **mode** =  $\langle value \rangle$ .  
 Constraint:  $0 \leq \mathbf{mode} \leq 2$ .

### NE\_NOT\_APPEND\_FILE

Cannot open file  $\langle value \rangle$  for appending.

### NE\_NOT\_READ\_FILE

Cannot open file  $\langle value \rangle$  for reading.

### NE\_NOT\_WRITE\_FILE

Cannot open file  $\langle value \rangle$  for writing.

## 7 Accuracy

Not applicable.

## 8 Parallelism and Performance

nag\_open\_file (x04acc) is not threaded in any implementation.

## 9 Further Comments

None.

## 10 Example

This example illustrates how to open a file for writing, write a line to the file using nag\_write\_line (x04bac) and close the file using nag\_close\_file (x04adc). The file is then reopened, the line read back using nag\_read\_line (x04bbc), and closed again.

### 10.1 Program Text

```
/* nag_open_file (x04acc) Example Program.
 *
 * NAGPRODCODE Version.
 *
 * Copyright 2016 Numerical Algorithms Group.
 *
 * NAG C Library
 *
 * Mark 26, 2016.
 */
#include <stdio.h>
```

```

#include <string.h>
#include <nag.h>
#include <nag_stdlib.h>
#include <nagx04.h>

int main(void)
{
    Integer mode, exit_status = 0;
    Nag_FileID fileid;
    const char *filename;
    char line[100], line2[100];
    NagError fail;

    INIT_FAIL(fail);

    printf("nag_open_file (x04acc) Example Program Results\n");
    printf("\n");

    filename = "x04acc_example.txt";
    printf("Attempting to write to and read from file %s:\n", filename);

    /* Open the file for writing */
    mode = 1;
    /* nag_open_file (x04acc).
     * Open unit number for reading, writing or appending, and
     * associate unit with named file
     */
    nag_open_file(filename, mode, &fileid, &fail);
    if (fail.code != NE_NOERROR) {
        printf("Error from nag_open_file (x04acc) %s\n", fail.message);
        exit_status = 1;
        goto END;
    }
    /* Write a line to the file we opened */
#ifdef _WIN32
    sprintf_s(line, (unsigned)_countof(line), "%s",
              "NAG nag_open_file (x04acc) example program");
#else
    sprintf(line, "%s", "NAG nag_open_file (x04acc) example program");
#endif
    /* nag_write_line (x04bac).
     * Write formatted record to external file
     */
    nag_write_line(fileid, line);
    /* Close the file */
    /* nag_close_file (x04adc).
     * Close file associated with given unit number
     */
    nag_close_file(fileid, &fail);
    if (fail.code != NE_NOERROR) {
        printf("Error from nag_close_file (x04adc) %s\n", fail.message);
        exit_status = 1;
        goto END;
    }

    /* Open the file for reading */
    mode = 0;
    /* nag_open_file (x04acc), see above. */
    nag_open_file(filename, mode, &fileid, &fail);
    if (fail.code != NE_NOERROR) {
        printf("Error from nag_open_file (x04acc) %s\n", fail.message);
        exit_status = 1;
        goto END;
    }
    /* Read the line back from the file */
    /* nag_read_line (x04bbc).
     * Read formatted record from external file
     */
    nag_read_line(fileid, line2, 100, &fail);
    if (fail.code != NE_NOERROR) {
        printf("Error from nag_read_line (x04bbc) %s\n", fail.message);
    }
}

```

```
    exit_status = 1;
    goto END;
}

if (!strcmp(line, line2))
    printf("\n - correctly wrote line:\n      \"%s\"\n"
          "      to file and read it back.\n", line);
else {
    printf("\n - failed to write line:\n      \"%s\"\n"
          "      to file and read it back.\n", line);
    exit_status = 1;
}

END:
return exit_status;
}
```

## 10.2 Program Data

None.

## 10.3 Program Results

nag\_open\_file (x04acc) Example Program Results

Attempting to write to and read from file x04acc\_example.txt:

```
- correctly wrote line:
  "NAG nag_open_file (x04acc) example program"
  to file and read it back.
```

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