Bahir Dar Institute of Technology

Faculty of computing

Department Software Engineering

Operating system and system programming individual assignment

System call

Name Meron Gebresilassie

ID : BDU1311637

Submitted to: Mr. Wendmu Baye

Submission Date;02/09/2014 EC

1 What is posix_fadvise() system call? Why is used? And how does it work?

The posix_fadvise () function is intended to signal an implementation of the expected behavior of an application starting at offset and extending to len bytes with respect to the data in the file associated with the open file descriptor fd. The specified range does not have to currently exist in the file. If len is zero, all data will be specified after offset. Implementations can use this information to optimize the processing of the specified data. The posix_fadvise () function is not intended to affect the semantics of other operations on the specified data, but it can affect the performance of other operations. The advice applied to the data is specified by the advice parameter and can be one of the following values:

Posix_fadivse() is a system call to pre fetch file on Linux .with four parameter the fourth parameter ,int advice is a pre fetch mainly including

- POSIX_FADV_NORMAL - Indicates that the application cannot provide advice on actions related to the specified date. This is the default feature if the open file is not hinted at. no special suggestion to reset the pre-read size to the default value
- POSIX_FADV_SEQUENTIAL - Indicates that the application expects the specified data to be accessed in order from the lowest offset to the highest offset. Set the pre-read size to twice the default value for sequential operations.
- POSIX_FADV_RANDOM - Indicates that the application expects to access the specified data in a random order. It will perform random operations to clear the pre-read size(prohibit pre-read)
- POSIX_FADV_WILLNEED -Indicates that the application expects to access the specified data in the near future. It will be accessed and pre-read immediately to the page cache.
- POSIX_FADV_DONTNEED - Indicates that the application does not expect to access the specified data in the near future. It will not be accessed recently and will discarded from page cache immediately.
- POSIX_FADV_NOREUSE – will be accessed only once(no action)

POSIX_FADV_NORMAL, POSIX_FADV_SEQUENTIAL, and POSIX_FADV_RANDOM are used to adjust the size of the pre fetch window.
POSIX_FADV_WILLNEED can read disk files within the specified range to page cache.
POSIX_FADV_DONTNEED switches the data in the specified disk file from page cache.

Upon successful completion, the posix_fadvise () subroutine returns 0. Otherwise, one of the following error codes will be returned.

EBDADF – the fd parameter is not a valid file descriptor

EINVAL-the value of the advice parameter is invalid

ESPIPE-the fd parameter is associated with a pipe of FIFO

To use the posix_fadvise subroutine, you must first open the file and then call the posix_fadvise subroutine. Closing the file does not reset the file hint information. The client application must call the posix_fadvise subroutine with the POSIX_FADV_NORMAL flag to reset all hint information.

Indicates that the application wants to access the specified data once and not reuse it thereafter. These values are defined in.

Programs can use posix_fadvise() to announce an intention to access file data in a specific pattern in the future, thus allowing the kernel to perform appropriate optimizations.
The advise applies to a (not necessarily existent) region starting at offset and extending for len bytes (or until the end of the file if len is 0) within the file referred to by fd The advise is not binding; it merely constitutes an expectation on behalf of the application.

- Parameters

Fd -File descriptor of recommended file

Offset -Represents the start of an offset address

range Lens- specifies the length of the address

range

Advice - Defines the advice given

POSIX_FADV_NORMAL -Resets all advisory information in the file to default values.

POSIX_FADV_SEQUENTIAL - This is a valid option, but this value takes no action.
POSIX_FADV_RANDOM -This is a valid option, but this value takes no action.

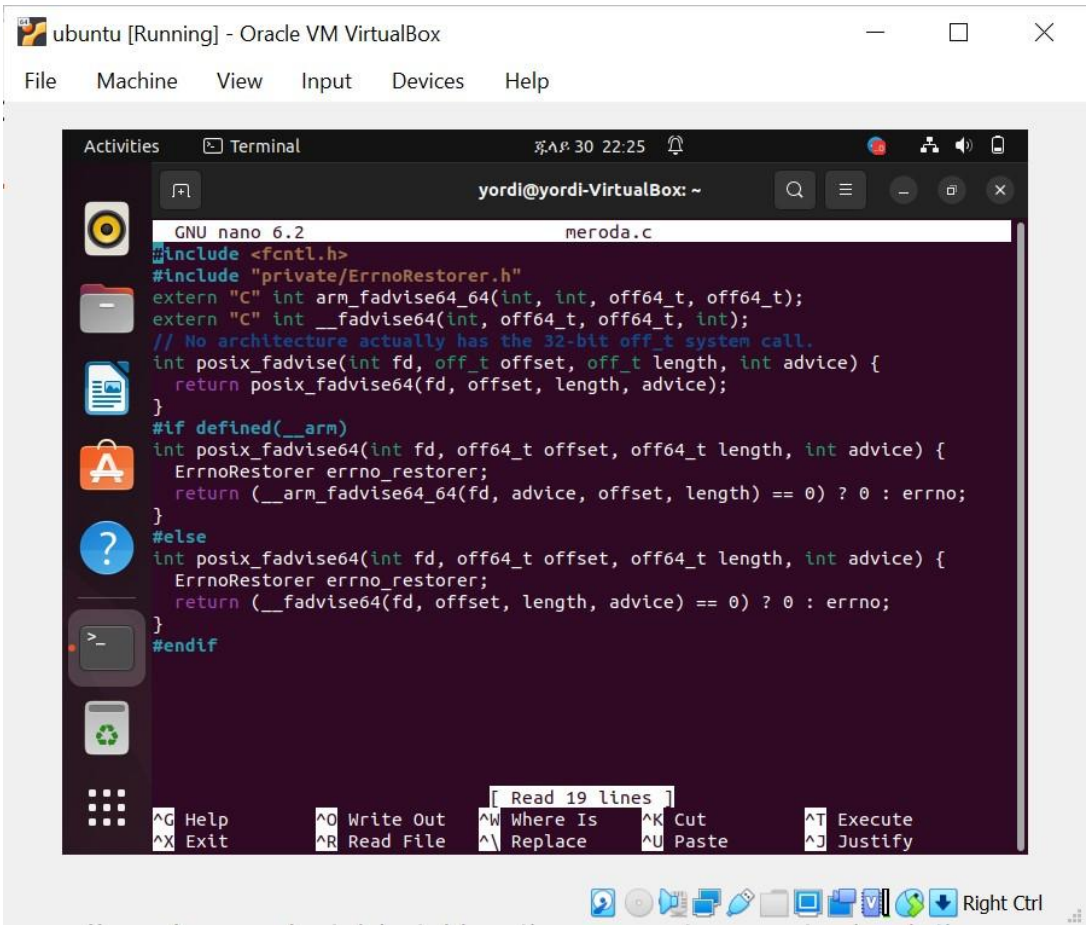
POSIX_FADV_WILLNEED -This is a valid option, but this value takes no action.

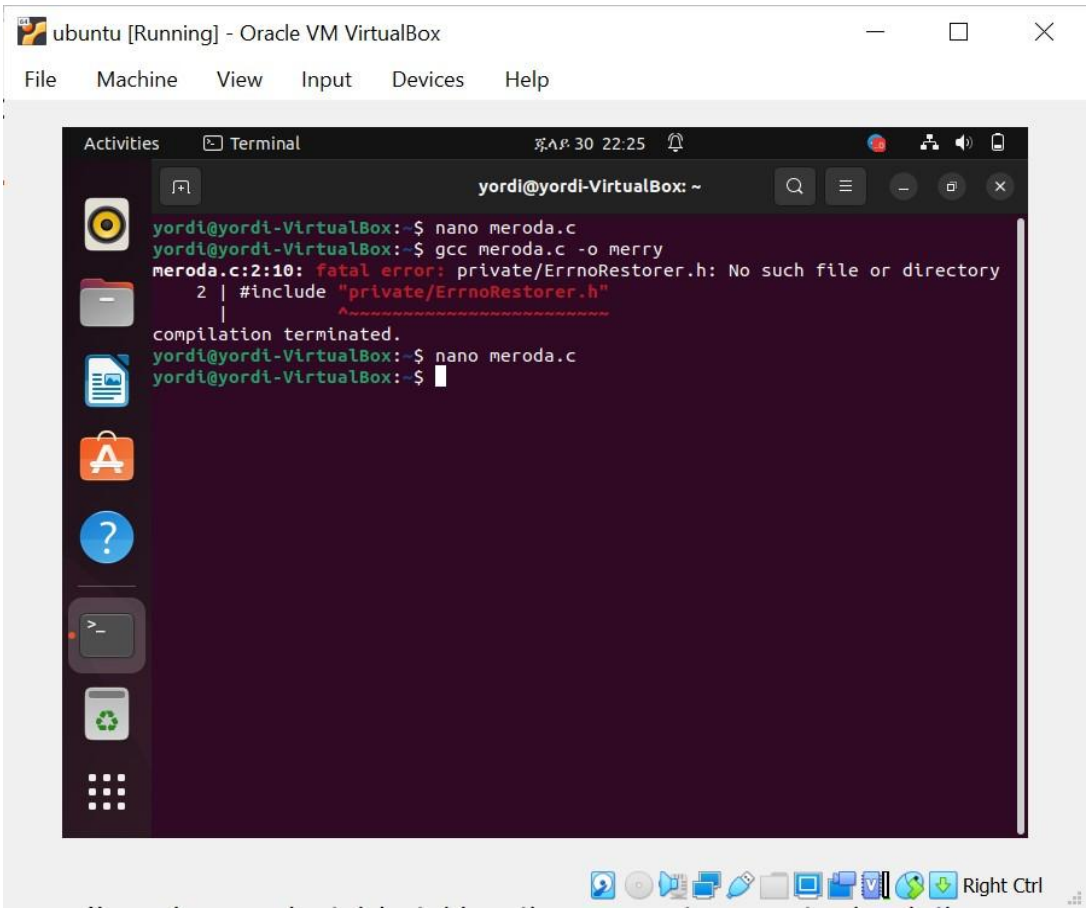
POSIX_FADV_DONTNEED - This is a valid option, but this value takes no action.

POSIX_FADV_NOREUSE -This is a valid option, but this value takes no action.

POSIX_FADV_NOWRITEBEHIND -Tells the file to ignore normal trailing features.

Implementation code


ubuntu [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Terminal
30 22:25
yordi@yordi-VirtualBox: ~
GNU nano 6.2 meroda.c
#include <fcntl.h>
#include "private/ErrnoRestorer.h"
extern "C" int arm_fadvise64_64(int, int, off64_t, off64_t);
extern "C" int __fadvise64(int, off64_t, off64_t, int);
// No architecture actually has the 32-bit off_t system call.
int posix_fadvise(int fd, off_t offset, off_t length, int advice) {
return posix_fadvise64(fd, offset, length, advice);
}
#if defined(__arm)
int posix_fadvise64(int fd, off64_t offset, off64_t length, int advice) {
ErrnoRestorer errno_restorer;
return (__arm_fadvise64_64(fd, advice, offset, length) == 0) ? 0 : errno;
}
#else
int posix_fadvise64(int fd, off64_t offset, off64_t length, int advice) {
ErrnoRestorer errno_restorer;
return (__fadvise64(fd, offset, length, advice) == 0) ? 0 : errno;
}
#endif
[Read 19 lines]
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify
Right Ctrl



Reference: https://topic.alibabacloud.com/