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pC/TFS Reference

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The Tiny-File-System is based on hierarchical, double-interlinked lists, through what no limitation is available in number of the files within a table or file size (Max 4GB). Each file can produce on that occasion in fragmented or unfragmentierter form, administrators and is deleted.
 This filesystem handles all names of directories/files as a STRING, so can used special characters in the names. Not to use are two points in series and the slashes.

reserved names-elements:

- .. - one directory back
- / - on the beginning of the Path: for from ROOT
- / - in middle of the Path: as separation for directory/file-names

The whole filesystem works case-sensitive !

But no mechanisms of the File-Sharings are deposited. So a file can be opened simultaneously from many Users to reading but only from one User to writing.

As directory and File-Attribute, Read-Only and Hidden(System) to the disposal, stand. Hidden entries are not declared on that occasion with a TFS_GetFirst.. or TFS_GetNext.., can be grabbed directly, however.

The entire File-System does 4 Gbytes on a linear storage area of maximum. The utilization of a MMU is included possible without further.

A use of modern data Flashes with PAGE sizes of 128..2048 bytes can be made possible at any time by means of a "ReadPageToBuffer-UpdateBuffer-ErasePage-WriteBufferToPage" mechanism, however the TinyFileSystem does not examine for optimized (summarized) PageWrite.

In addition, the TinyFileSystem do not respect hot spots (high-update files).

User-Functions:

TFS-Control:	Description
TFS_Init	Initialization of the File-System
TFS_GetRev	It returns a pointer on TFS revision
TFS_Flush	save the TFS as image into a LINUX-file
TFS_Format	Format the drive

User:	Description
TFS_BecomeUser	As User announce
TFS_BecomeUserSubROOT	As User in a subdirectory as user-ROOT announce
TFS_CloseUser	As User cancel
TFS_GetFreeSize	Return the brutto free-memory of the drive

Directories:	Description
TFS_CreateDir	Create a directory
TFS_RemoveDir	Remove a directory
TFS_RenameDir	Rename a directory
TFS_ChangeDir	Change current path
TFS_ChangeDirTemp	Change current path temporary
TFS_BackDirTemp	returns from temporary path

TFS_GetCurrentDir	Return the name of current directory
TFS_GetCurrentPath	Return the complete current path from ROOT

Files:	Description
TFS_CreateFile	Create a file
TFS_RemoveFile	Remove a file
TFS_RenameFile	Rename a file
TFS_MoveFile	Move a file
TFS_AttribFile	Change the attributes of a file
TFS_GetFileAttrib	It returns the attributes of a file
TFS_ResizeFile	Resize a file
TFS_GetFileSize	It returns the size of a file
TFS_OpenFile	Open a file in "mode"
TFS_CloseFile	Close the opened file
TFS_SeekFile	Place the pointer in opened file absolutely
TFS_TellFile	It returns the pointer in opened file
TFS_ExpandFile	Expand the size of opened file
TFS_SetEOF	Set EndOfFile in opened file to actual R/W-pointer
TFS_ReadFile	Read data from opened file
TFS_WriteFile	Write data into opened file
TFS_WriteFileE	Write data into opened file, expand this file if its needed
TFS_GetErrNo	read the error-code from Open, Read, Write ...

Links:	Description
TFS_CreateLink	Create a Link to a directory or file
TFS_RemoveLink	Remove a Link
TFS_RenameLink	Rename a Link
TFS_ReadLink	It returns the name of the linked directory or file

Entries:	Description
TFS_GetFirstName	It returns the name of first entry in current directory
TFS_GetNextName	It returns the name of next entry in current directory
TFS_GetFirst	It returns all infos of first entry in current directory into a struct

TFS_GetNext

It returns all infos of next entry in current directory into a struct

Error-Codes:

Name	Decimal_Value	Description
TFS_NO_ERR	0	no errors
TFS_USR_OVF	200	no user free
TFS_DBL_USER	201	double user
TFS_NO_USER	202	not a valid user
TFS_SUB_USER	203	this DIR is ROOT of a active user
TFS_NAME_EXIST	210	name of entry exist in this DIR
TFS_NOT_EXIST	211	DIR or FILE not exist
TFS_PATH_ERR	212	error on PATH
TFS_TMP_DIR	213	Temp-Dir is still used / not set
TFS_NO_FILE	214	error on PATH / no FILE-Name given
TFS_FILE_RO	215	file to open for writing is read-only
TFS_FILE_WO	216	file to open for reading is write-only
TFS_FILE_EOF	217	end-of-file while reading or writing
TFS_NOT_EMPTY	218	entry not empty
TFS_FILE_OPEN	219	current user have a opened file
TFS_NO_DATA	220	current file-length is zero
TFS_WRONG_PTR	221	offset into open file is wrong (or size for R/W)
TFS_LINKED	230	entry is linked
TFS_MAX_LINK	231	entry is max count linked
TFS_LINK_ERR	232	error in link-mechanism
TFS_NO_LINK	233	no link to an entry in link-entry
TFS_MEM_ERR	250	error in memory-manager
TFS_MEM_OVF	251	memory overflow
TFS_WR_PTR	252	user-buffer for write/read is in TFS-area
TFS_WRITE_ERR	253	memory write error
TFS_INVALID	254	invalid TFS-image (for LINUX-Host)

general

TFS_Init

UBYTE TFS_Init(void)

Initialize the File-System and installs on use of a RTOS the required mutex/semaphore. If the system should be recognized as unformatted, so this is executed.

This function must be called before all other fileservices at the system initialization once.

If you using the Linux-HOST Port, a LINUX Image-file will load first.

The memory of the filesystem can be declared by two ways:

- for RAM-Drive (compiler known memory):

```
#define TFS_SIZE      0x00010000
U08      TFS_START[TFS_SIZE];
```

- for EE / FLASH / RAM (compiler unknown memory):

```
#define TFS_START      0x00200000      // TFS startaddress
#define TFS_SIZE      0x00010000      // TFS size
```

Parameters

none

Return Value

TFS_NO_ERR	filesystem initialised
TFS_MEM_ERR	Mistakes in the memory management
TFS_MEM_OVF	File-system too small for ROOT-Entry
TFS_INVALID	IMAGE invalid (only on Linux-HOST)

Example

```
#define TFS_SIZE      0x00010000
U08      TFS_START[TFS_SIZE];

void main(void)
{
    U08 returnOk;

    OS_Init();
    .
    .
    returnOk=TFS_Init();
    .
    .
    OS_Start();
}
```

}

TFS_GetRev

```
void TFS_GetRev(U08 OS_HUGE **pointer)
```

It returns a pointer on the TFS-revision (NULL-terminated ASCII-array).

Parameters

<code>**pointer</code>	pointer to pointer will get the address of array
------------------------	--

Return Value

none

Example

```
void OS_FAR Task1(void *data)
{
    U08 OS_HUGE *Revision;

    .
    .
    while(1)
    {
        .
        TFS_GetRev(&Revision);
        .
    }
}
```

TFS_Flush

U08 TFS_Flush(void)

Only by using the Linux_HOST
Saves the filesystem as IMAGE into a Linux-file.

Parameters

none

Return Value

TFS_NO_ERR	Drive saved
from LINUX	see LINUX

Example

```
void main(void)
{
    U08 returnOk;

    .
    returnOk=TFS_Init();
    .
    .
    returnOk=TFS_Flush();
}
```

TFS_Format

U08 TFS_Format(void)

Formats the TFS-Drive and writes down the ROOT-Entry. At this time no user may be known.

Parameters

none

Return Value

TFS_NO_ERR	Drive formatted
TFS_USER	at minimum one user is known
TFS_MEM_ERR	Mistakes in the memory management
TFS_MEM_OVF	File-system too small for ROOT-Entry

Example

```
void OS_FAR Task1(void *data)
{
    U08 returnOk;
    .
    while(1)
    {
        .
        returnOk=TFS_Format();
        .
        .
    }
}
```

TFS_BecomeUser

U08 TFS_BecomeUser(TFS_USER OS_HUGE *TFSUser)

If positions a new User.

This function initializes the User-Control-Block and writes down the new user into the internal list. Every Task need only once to register, after this every User can handle TFS_HANDLES files. After registration of an user can call this drive and file accesses.

Parameters

*TFSUser	pointer to user-control-block
----------	-------------------------------

Return Value

TFS_NO_ERR	User successfully positioned
TFS_DBL_USER	this User already is announced
TFS_USR_OVF	already TFS_maxUSER are announced

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
    }
}
```

TFS_BecomeUserSubROOT

U08 TFS_BecomeUserSubROOT(TFS_USER OS_HUGE *TFSUser, U08 OS_HUGE *FullDirPath)

Legt einen neuen User an und locks him up in the sub-directory of the drive as his ROOT-directory. This function initializes the User-Control-Block and writes down the new user into the internal list. Every Task need only once to register, after this every User can handle TFS_HANDLES files. After registration of an user can call this drive and file accesses. This user can not leave his user-ROOT directory to Drive-ROOT using all possible pathdata like ".." , "/" , "/Dir1".

WARNING! Is in this Sub-Tree a link to an other tree beginning on the Drive-ROOT included (created by an Drive-ROOT user), so this user here can exit this lock up using this link !

Parameters

*TFSUser	pointer to user-control-block
*FullPathDir	complete path to directory beginning from Drive-ROOT

Return Value

TFS_NO_ERR	User successfully positioned
TFS_DBL_USER	this User already is announced
TFS_USR_OVF	already TFS_maxUSER are announced
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_NOT_EXIST	the directory doesn't exist

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUserSubROOT(&TFS_User1, "/Dir2/Dir21/Dir214");

        // locks up the user in Dir214 as his ROOT

        .
    }
}
```

TFS_CloseUser

U08 TFS_CloseUser(void)

If deletes a registered user from the internal list. This user must be announced again for it before accesses to the drive become again.

Parameters

none

Return Value

TFS_NO_ERR	User successfully canceled
TFS_FILE_OPEN	User opened a file currently
TFS_NO_USER	User unknown

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_CloseUser();
        .
    }
}
```

TFS_GetFreeSize

TFS_LONG TFS_GetFreeSize(void)

Returns the actual brutto free-memory of the TFS-drive.

Parameters

none

Return Value

If the returned value zero, so get the following Error-Codes with TFS_GetErrNo().

TFS_NO_ERR	no free memory (drive is full)
TFS_NO_USER	User unknown
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    TFS_LONG  free_mem;
    U08      returnOk;
    .
    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        free_mem=TFS_GetFreeSize();
        if(!free_mem)
            returnOk=TFS_GetErrNo();
        .
        .
    }
}
```

Directory and File-Handling

TFS_CreateDir

U08 TFS_CreateDir(U08 OS_HUGE *Name)

Creates a new directory in the current or handed over path. The path statement can absolutely or relatively take place on that occasion.

Parameters

*Name	Directory-name [with path]
-------	----------------------------

Return Value

TFS_NO_ERR	Directory created
TFS_NO_USER	User unknown
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_NAME_EXIST	a directory with same name exists already in this directory
TFS_MEM_ERR	Mistakes in the memory management
TFS_MEM_OVF	Drive full

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_CreateDir("/usr"); // from ROOT
        .
        returnOk=TFS_CreateDir("../local/test.src"); // from one level back
        .
        returnOk=TFS_CreateDir("config.save"); // in actual directory
        .
        .
        returnOk=TFS_CloseUser();
        .
    }
}
```



TFS_RemoveDir

U08 TFS_RemoveDir(U08 OS_HUGE *Name)

Removes the directory in the current or handed over path. The path statement can absolutely or relatively take place on that occasion. That to deleting directory must be included empty and no link may point this entry.

Parameters

*Name	Directory-name [with path]
-------	----------------------------

Return Value

TFS_NO_ERR	Directory deleted
TFS_NO_USER	User unknown
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_NOT_EMPTY	the directory is not empty
TFS_SUB_USER	the directory is ROOT of an active user
TFS_LINKED	the directory is linked from another entry
TFS_NO_LINK	the directory is a link but points to no entry or this linked entry doesn't know this
TFS_LINK_ERR	Mistakes in the link-mechanism
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_RemoveDir("config.save"); // in actual directory
        .
        .
    }
}
```

TFS_RenameDir

U08 TFS_RenameDir(U08 OS_HUGE *Name, U08 OS_HUGE *NewName)

Changes the name of directory in the current or handed over path. The path statement can absolutely or relatively take place on that occasion. A Path in the new name will be ignored, so the directory can't moved !

Parameters

*Name	Directory-name [with path]
*NewName	new Directory-name

Return Value

TFS_NO_ERR	directory renamed
TFS_NO_USER	User unknown
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_NAME_EXIST	a entry with same name exists already in this directory
TFS_NOT_EXIST	the directory doesn't exist
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_RenameDir("/usr", "user");    // in ROOT
        .
        .
    }
}
```

TFS_ChangeDir

U08 TFS_ChangeDir(U08 OS_HUGE *Name)

Changes the current directory. The path statement can absolutely or relatively take place on that occasion.

Parameters

*Name	Directory-name [with path]
-------	----------------------------

Return Value

TFS_NO_ERR	Directory changed
TFS_NO_USER	User unknown
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_NOT_EXIST	the directory doesn't exist

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_ChangeDir("../test.src");
        .
        .
        .
    }
}
```

TFS_ChangeDirTemp

U08 TFS_ChangeDirTemp(U08 OS_HUGE *Name)

Changes the current directory temporary. The path statement can absolutely or relatively take place on that occasion. The current directory up to this call will be registered internally. This feature can only be used one level per user.

Parameters

*Name	Directory-name [with path]
-------	----------------------------

Return Value

TFS_NO_ERR	Directory changed
TFS_NO_USER	User unknown
TFS_TMP_DIR	Temp-Dir is still used
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_NOT_EXIST	the directory doesn't exist

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;
    U08 Name[TFS_Name_SIZE];

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_ChangeDirTemp("../userfiles");
        if(returnOk == TFS_NO_ERR) {
            .
            returnOk=TFS_GetFirstName(Name);
            .
            do {
                .
                returnOk=TFS_GetNextName(Name);
                .
            } while(returnOk == TFS_NO_ERR);
            .
            returnOk=TFS_BackDirTemp();
        }
        .
    }
}
```

}
}



TFS_BackDirTemp

U08 TFS_BackDirTemp(void)

Returns from the temporary directory to the registered directory from TFS_ChangeDirTemp().

Parameters

none

Return Value

TFS_NO_ERR	Directory changed
TFS_TMP_DIR	Temp-Dir is not set
TFS_NO_USER	User unknown

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08  returnOk;
    U08  Name[TFS_Name_SIZE];

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_ChangeDirTemp("../userfiles");
        if(returnOk == TFS_NO_ERR) {
            .
            returnOk=TFS_GetFirstName(Name);
            .
            .
            do {
                .
                returnOk=TFS_GetNextName(Name);
                .
                .
            } while(returnOk == TFS_NO_ERR);
            .
            returnOk=TFS_BackDirTemp();
        }
        .
        .
    }
}
```

TFS_GetCurrentDir

U08 TFS_GetCurrentDir(U08 OS_HUGE *Name)

returns the current directory. It will return only the directory name on that occasion without path.

Parameters

*Name	pointer to array for Directory-name
-------	-------------------------------------

Return Value

TFS_NO_ERR	Directory readed
TFS_NO_USER	User unknown

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08  returnOk;
    U08  actDir[TFS_Name_SIZE];

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_GetCurrentDir(actDir);
        .
        .
        .
    }
}
```

TFS_GetCurrentPath

U08 TFS_GetCurrentPath(U08 OS_HUGE *Path, TFS_LONG maxlen)

returns the complete path of current directory. For this a recursive function is used internally, in order to return the path from (user-)ROOT up to including current directory name.

Parameters

*Path	pointer to array for complete path
maxlen	max length of Path[]

Return Value

TFS_NO_ERR	path complete readed
TFS_MEM_OVF	pathsize greater / equal maxlen
TFS_NO_USER	User unknown

Example

```
TFS_USER  TFS_User1;

void OS_FAR Task1(void *data)
{
    U08  returnOk;
    U08  actPath[1024];

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_GetCurrentPath(actPath, 1024);
        .
        .
    }
}
```

TFS_CreateFile

U08 TFS_CreateFile(U08 OS_HUGE *Name, TFS_ATTR Attr, TFS_LONG size)

Creates a new file in the current or handed over path in stated size. The path statement can absolutely or relatively take place on that occasion. As attributes, ReadOnly, WriteOnly and/or Hidden can be declared. ATTENTION! Files don't possess any type in this system.

Parameters

*Name	File-name [with path]
Attr	attribs of this file
size	size of file

Return Value

TFS_NO_ERR	File created
TFS_NO_USER	User unknown
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_NAME_EXIST	a file with same name exists already in this directory
TFS_MEM_ERR	Mistakes in the memory management
TFS_MEM_OVF	Drive full

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_CreateFile("/file1", TFS_ATTR_RO, 100);
                                     // from ROOT
        .
        returnOk=TFS_CreateFile("../test.src/main.c", TFS_ATTR_SYS, 350);
                                     // from one level back
        .
        returnOk=TFS_CreateFile("makefile.mak", 0, 140);
    }
}
```

```
        : // in actual directory
    }
}
```

TFS_RemoveFile

U08 TFS_RemoveFile(U08 OS_HUGE *Name)

Deletes the file in the current or handed over path. The path statement can absolutely or relatively take place on that occasion. The to deleting file cannot be opened by any other user on that occasion and no link may point this entry.

Parameters

*Name	File-name [with path]
-------	-----------------------

Return Value

TFS_NO_ERR	File deleted
TFS_NO_USER	User unknown
TFS_FILE_OPEN	User, itself or other, this file opened currently
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_LINKED	the file is linked from another entry
TFS_NO_LINK	the directory is a link but points to no entry or this linked entry doesn't know this
TFS_LINK_ERR	Mistakes in the link-mechanism
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_RemoveFile("makefile.mak");    // in actual directory
        .
        .
    }
}
```

TFS_RenameFile

U08 TFS_RenameFile(U08 OS_HUGE *OldName, U08 OS_HUGE *NewName)

Changes the name of file in the current or handed over path. The path statement can absolutely or relatively take place on that occasion. The to changing file cannot be opened by any other user on that occasion.

A Path in the new name will be cut, so the file can't moved !

Parameters

*OldName	File-name [with path]
*NewName	new file-name (a path will ignored)

Return Value

TFS_NO_ERR	File name changed
TFS_NO_USER	User unknown
TFS_NO_FILE	no file name in the path or as new name given
TFS_FILE_OPEN	User, itself or other, this file opened currently
TFS_NAME_EXIST	a file with same name exists already in this directory
TFS_NOT_EXIST	File doesn't exist in this directory
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_MEM_OVF	Drive full

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_RenameFile("/test.src/main.c", "modul.c");
        .
        .
    }
}
```



TFS_MoveFile

U08 TFS_MoveFile(U08 OS_HUGE *Name, U08 OS_HUGE *NewPath)

Move the file in the current or handed over path into given directory. The path statement can absolutely or relatively take place on that occasion. The to moving file cannot be opened by any user on that occasion.

A filename in the new path will be cut, so the file can't renamed !

Parameters

*Name	File-name [with path]
*NewPath	new Path (a filename will ignored)

Return Value

TFS_NO_ERR	File moved
TFS_NO_USER	User unknown
TFS_NO_FILE	no file name in the path given
TFS_FILE_OPEN	User, itself or other, this file opened currently
TFS_NAME_EXIST	a file with same name exists already in this destination-directory
TFS_NOT_EXIST	File doesn't exist in this directory
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_LINKED	the file is linked from another entry
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_MoveFile("/test.src/main.c", "../version.src");
        .
        .
    }
}
```



TFS_AttribFile

U08 TFS_AttribFile(U08 OS_HUGE *Name, TFS_ATTR Attribs)

Changes the attributes of the file in the current or handed over path. The path statement can absolutely or relatively take place on that occasion. The to changing file cannot be opened by any other user on that occasion.

Parameters

*Name	File-name [with path]
Attribs	new File-attributes

Return Value

TFS_NO_ERR	File attributes changed
TFS_NO_USER	User unknown
TFS_NO_FILE	no file name in the path given
TFS_FILE_OPEN	User, itself or other, this file opened currently
TFS_NOT_EXIST	File doesn't exist in this directory
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_AttribFile("../TFS_err.log", TFS_ATTR_RO | TFS_ATTR_SYS);
        .
        .
    }
}
```

TFS_GetFileAttrib

TFS_ATTR TFS_GetFileAttrib(U08 OS_HUGE *Name)

It returns the attributes of the file in the current or handed over path. The path statement can absolutely or relatively take place on that occasion.

Parameters

*Name	File-name [with path]
-------	-----------------------

Return Value

If the returned attribs -1, so you get the error-codes with a following TFS_GetErrNo().

TFS_NO_ERR	File attributes readed
TFS_NO_USER	User unknown
TFS_NO_FILE	no file name in the path given
TFS_NOT_EXIST	File doesn't exist in this directory
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08      returnOk;
    TFS_ATTR attribs;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        attribs=TFS_GetFileAttrib("../TFS_err.log");
        if(attribs==(TFS_ATTR)(-1))
            returnOk=TFS_GetErrNo();
        .
        .
    }
}
```

TFS_ResizeFile

U08 TFS_ResizeFile(U08 OS_HUGE *Name, TFS_LONG newsize)

Changes the size of a file in the current or handed over path. The path statement can absolutely or relatively take place on that occasion. The to changing file cannot be opened by any other user on that occasion.

Parameters

*Name	File-name [with path]
newsize	new File-size

Return Value

TFS_NO_ERR	File-size changed
TFS_NO_USER	User unknown
TFS_NO_FILE	no file name in the path given
TFS_FILE_OPEN	User, itself or other, this file opened currently
TFS_NOT_EXIST	File doesn't exist in this directory
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_MEM_OVF	Drive full
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        returnOk=TFS_ResizeFile("/Dir2/config.sys", 200);
        .
        .
    }
}
```

TFS_GetFileSize

```
TFS_LONG TFS_GetFileSize(U08 OS_HUGE *Name)
```

It returns the size of the file in the current or handed over path. The path statement can absolutely or relatively take place on that occasion.

Parameters

*Name	File-name [with path]
-------	-----------------------

Return Value

If the returned filesize zero, , so you get the error-codes with a following TFS_GetErrNo().

TFS_NO_ERR	filesize returned
TFS_NO_USER	User unknown
TFS_NO_FILE	no file name in the path given
TFS_NOT_EXIST	File doesn't exist in this directory
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08      returnOk;
    TFS_LONG filesize;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        filesize=TFS_GetFileSize("/Dir2/config.sys");
        if(!filesize)
            returnOk=TFS_GetErrNo();
        .
        .
    }
}
```

File-Access

TFS_OpenFile

TFS_HANDLE TFS_OpenFile(U08 OS_HUGE *Name, U08 Mode)

Open a file in the current or handed over path. The path statement can absolutely or relatively take place on that occasion. The to opening file cannot be opened by any other user on that occasion. For all folloing accesses a handle will returned, under this this file-data can access. This handle is intern referenced with the User and is checked on every access.

If a NULL-handle returned, so get the Error-Code with TFS_GetErrNo().

Access-rights:

If a file opened (more than once) to reading, an other User can't open this file to writing - if a file from one User opened to writing, no other User can open this file for reading or writing.

Parameters

*Name	File-name [with path]
mode	mode of access (ReadOnly/Write)

Return Value

If a NULL-handle returned, so get the Error-Codes with a following TFS_GetErrNo().

TFS_NO_ERR	File opened
TFS_NO_USER	User unknown
TFS_NO_FILE	no file name in the path given
TFS_FILE_OPEN	another User opened this file currently (see Access-rights)
TFS_FILE_RO	File is ReadOnly and cannot be opened "write"
TFS_FILE_WO	File is WriteOnly and cannot be opened "read"
TFS_NOT_EXIST	File doesn't exist in this directory
TFS_PATH_ERR	an element of the path statement doesn't exist

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08          returnOk;
    TFS_HANDLE  handl;

    .
    while(1)
```

```
{
    .
    returnOk=TFS_BecomeUser(&TFS_User1);
    .
    .
    handl=TFS_OpenFile("/Dir2/config.sys", TFS_ACC_RO);
    if(!handl)
        returnOk=TFS_GetErrNo();
    .
    .
}
}
```

TFS_CloseFile

U08 TFS_CloseFile(TFS_HANDLE Handl)

Close the currently opened file.

Parameters

Handl	file-handle
-------	-------------

Return Value

TFS_NO_ERR	File closed
TFS_NO_FILE	Handle invalid
TFS_NO_USER	User unknown

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08      returnOk;
    TFS_HANDLE  handl;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        handl=TFS_OpenFile("/Dir2/config.sys", TFS_ACC_RO);
        if(handl) {
            .
            returnOk=TFS_CloseFile(handl);
            .
        }
        .
    }
}
```

TFS_SeekFile

U08 TFS_SeekFile(TFS_LONG offset, TFS_HANDLE Handl)

Places absolutely the R/W-pointer within the opened file.

Parameters

offset	absolut pointer-position (in bytes)
Handl	File-Handle

Return Value

TFS_NO_ERR	Pointer in file placed
TFS_NO_HAND	handle invalid
TFS_NO_USER	User unknown
TFS_NO_FILE	no file is open
TFS_NO_DATA	File has zero-lenght
TFS_WRONG_PTR	offset greater file-size

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08          returnOk;
    TFS_HANDLE  handl;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        handl=TFS_OpenFile("/Dir2/config.sys", TFS_ACC_RO);
        if(handl) {
            .
            returnOk=TFS_SeekFile(100, handl);
        }
        .
    }
}
```

TFS_TellFile

TFS_LONG TFS_TellFile(TFS_HANDLE Handl)

It returns the R/W-pointer of opened file.

Parameters

Handl	File-Handle
-------	-------------

Return Value

If the returned position zero, so get the following Error-Codes with TFS_GetErrNo().

TFS_NO_ERR	pointer returned
TFS_NO_HAND	handle invalid
TFS_NO_USER	User unknown
TFS_NO_FILE	no file is open
TFS_NO_DATA	File has zero-lenght

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08      returnOk;
    TFS_HANDLE  handl;
    TFS_LONG  posit;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        handl=TFS_OpenFile("/Dir2/config.sys", TFS_ACC_RO);
        if(handl) {
            .
            posit=TFS_TellFile(handl);
            if(!posit)
                returnOk=TFS_GetErrNo();

        }
        .
    }
}
```

TFS_ExpandFile

U08 TFS_ExpandFile(TFS_LONG addsize, TFS_HANDLE Handl)

Expand the size of opened file.

Parameters

addsize	size to add
Handl	File-Handle

Return Value

TFS_NO_ERR	size added
TFS_NO_HAND	handle invalid
TFS_NO_USER	User unknown
TFS_NO_FILE	no file opened
TFS_MEM_OVF	Drive full
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08      returnOk;
    TFS_HANDLE  handl;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        handl=TFS_OpenFile("/Dir2/config.sys", TFS_ACC_RO);
        if(handl) {
            .
            returnOk=TFS_ExpandFile(50, handl);
        }
        .
    }
}
```

TFS_SetEOF

U08 TFS_SetEOF(TFS_HANDLE Handl)

Set EndOfFile in opened file to actual R/W-pointer.

Parameters

Handl	File-Handl
-------	------------

Return Value

TFS_NO_ERR	EndOfFile set
TFS_NO_HAND	handle invalid
TFS_NO_USER	User unknown
TFS_NO_FILE	no file is open
TFS_NO_DATA	File has zero-length
TFS_FILE_RO	File or Open-mode is Read-Only

Example

```
TFS_USER  TFS_User1;

void OS_FAR Task1(void *data)
{
    U08      returnOk;
    TFS_HANDLE  handl;
    U08      writebuffer[]={ "TFS_Test_File R/W" };
    TFS_LONG  written;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        handl=TFS_OpenFile("/Dir2/config.sys", TFS_ACC_RW);
        if(handl) {
            written=TFS_WriteFile(writebuffer, strlen(writebuffer)-1, handl);
            if(written == strlen(writebuffer)-1)
                returnOk=TFS_SetEOF(handl);
            .
        }
        .
    }
}
```

TFS_ReadFile

```
TFS_LONG TFS_ReadFile(U08 OS_HUGE *dest, TFS_LONG size, TFS_HANDLE Handl)
```

Reads number of bytes from currently opened file from current position. After successful reading, the R/W-pointer stands behind the readed block.
The readed number of bytes will returned. If this not the same from the call, so call `TFS_GetErrNo()` to get the error-code.

Parameters

*dest	Pointer to buffer where the bytes must written in
size	Bytes to read
Handl	File-Handle

Return Value

If the returned number of readed bytes not the same from the call, so you get the following error-codes from `TFS_GetErrNo()`.

TFS_NO_ERR	Bytes from file readed
TFS_NO_HAND	handle invalid
TFS_NO_USER	User unknown
TFS_NO_FILE	no file is open
TFS_NO_DATA	File has zero-lenght
TFS_FILE_EOF	End-Of-File
TFS_FILE_WO	File or Open-mode is Write-Only
TFS_WRONG_PTR	offset and/or size greater file-size

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08          returnOk;
    TFS_HANDLE   handl;
    U08          readbuffer[100];
    TFS_LONG     readed;

    .
    . . .
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
    }
}
```

```
handl=TFS_OpenFile("/Dir2/config.sys", TFS_ACC_RO);
if(handl) {
    returnOk=TFS_SeekFile(50, handl);
    readed=TFS_ReadFile(&readbuffer[0], 80, handl);
    if(readed != 80)
        returnOk=TFS_GetErrNo();
}
}
}
```

TFS_WriteFile

```
TFS_LONG TFS_WriteFile(U08 OS_HUGE *src, TFS_LONG size, TFS_HANDLE Handl)
```

Writes number of byte in currently opened file beginning on current position. After successful writing, the R/W-pointer stands behind the written block.

The written number of bytes will returned. If this not the same from the call, so call `TFS_GetErrNo()` to get the error-code.

Parameters

*src	Pointer to source-buffer
size	Bytes to write
Handl	File-Handle

Return Value

If the returned number of written bytes not the same from the call, so you get the following error-codes from `TFS_GetErrNo()`.

TFS_NO_ERR	Bytes in file written
TFS_NO_HAND	Handle invalid
TFS_NO_USER	User unknown
TFS_NO_FILE	no file is open
TFS_NO_DATA	File has zero-lenght
TFS_FILE_EOF	End-Of-File
TFS_FILE_RO	File or Open-mode is Read-Only
TFS_WRONG_PTR	offset and/or size greater file-size

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08      returnOk;
    TFS_HANDLE  handl;
    U08      writebuffer[]={ "TFS_Test_File R/W" };
    TFS_LONG  written;

    .
    . . .
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
    }
}
```

```
handl=TFS_OpenFile("/Dir2/config.sys", TFS_ACC_WO);
if(handl) {
    written=TFS_WriteFile(writebuffer, strlen(writebuffer)-1, handl);
    if(written != strlen(writebuffer)-1)
        returnOk=TFS_GetErrNo();
    .
    .
    .
}
}
```

TFS_WriteFileE

```
TFS_LONG TFS_WriteFileE(U08 OS_HUGE *src, TFS_LONG size, TFS_HANDLE Handl)
```

Writes number of byte in currently opened file beginning on current position. After successful writing, the R/W-pointer stands behind the written block.

If the file is too small, then this is increased automatically around the difference. To increase first tries the last fragment of the file. If this is not possible, is tried, to provide one new fragment. Only even if this fails, from the found free fragments the more memory is built up.

The written number of bytes will returned. If this not the same from the call, so call `TFS_GetErrNo()` to get the error-code.

Parameters

*src	Pointer to source-buffer
size	Bytes to write
Handl	File-Handle

Return Value

If the returned number of written bytes not the same from the call, so you get the following error-codes from `TFS_GetErrNo()`.

TFS_NO_ERR	Bytes in file written
TFS_NO_HAND	Handle invalid
TFS_NO_USER	User unknown
TFS_NO_FILE	no file is open
TFS_FILE_RO	File or Open-mode is Read-Only
TFS_MEM_OVF	Drive full
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08          returnOk;
    TFS_HANDLE   handl;
    U08          writebuffer[]={ "TFS_Test_File R/W(e)";
    TFS_LONG     written;

    .
    ...
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
    }
}
```

```
.  
.  
handl=TFS_OpenFile("/Dir2/config.sys", TFS_ACC_WO);  
if(handl) {  
    written=TFS_WriteFileE(writebuffer, strlen(writebuffer)-1, handl);  
    if(written != strlen(writebuffer)-1)  
        returnOk=TFS_GetErrNo();  
    .  
    .  
    .  
}  
.  
}  
}
```

Link-Handling

TFS_CreateLink

U08 TFS_CreateLink(U08 OS_HUGE *OrgName, U08 OS_HUGE *Name)

Creates a new link to a file or directory. The original entry can be located in another tree-part. As attributes of this link are the attributes of the linked entry valid.

Parameters

*OrgName	File/Directory-name to link [with path]
*Name	Link-name [with path]

Return Value

TFS_NO_ERR	Link created
TFS_NO_USER	User unknown
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_NAME_EXIST	a entry with same name exists already in this directory
TFS_MEM_ERR	Mistakes in the memory management
TFS_MEM_OVF	Drive full
TFS_MAX_LINK	*OrgName is TFS_MAX_Links linked
TFS_LINK_ERR	Mistakes in the linker

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    . . .
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        returnOk=TFS_CreateLink("/Dir2/config.sys", "../test.dir/linked.conf");
        .
        .
    }
}
```



TFS_RemoveLink

U08 TFS_RemoveLink(U08 OS_HUGE *LinkName)

Deletes the link in the current or handed over path. The path statement can absolutely or relatively take place on that occasion. The link to be deleted cannot be linked by another entry.

--- TO DELETING DIR / FILE: ---

Linked Dir / Files can't be removed while one link to this entry is valid !

Instead of TFS_RemoveLink() you can use the according (DIR/File) appendant primitive TFS_RemoveFile() or TFS_RemoveDir().

Parameters

*Name	Link-name [with path]
-------	-----------------------

Return Value

TFS_NO_ERR	Link removed
TFS_NO_USER	User unknown
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_MEM_ERR	Mistakes in the memory management
TFS_LINKED	*Name is oneself linked
TFS_NO_LINK	the entry is a link but points to no entry or this linked entry doesn't know this
TFS_LINK_ERR	Mistakes in the linker

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    .
    .
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        returnOk=TFS_CreateLink("/Dir2/config.sys", "/test.dir/linked.conf");
        .
        .
        returnOk=TFS_RemoveLink("../test.dir/linked.conf");
    }
}
```

TFS_RenameLink

U08 TFS_RenameLink(U08 OS_HUGE *OldName, U08 OS_HUGE *NewName)

Changes the name of link in the current or handed over path. The path statement can absolutely or relatively take place on that occasion.

A Path in the new name will be cut, so the link can't moved !

Parameters

*OldName	Link-name [with path]
*NewName	new Link-name (a path will be cut)

Return Value

TFS_NO_ERR	Linkname changed
TFS_NO_USER	User unknown
TFS_NAME_EXIST	a entry with same name exists already in this directory
TFS_NOT_EXIST	the link doesn't exist
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_MEM_ERR	Mistakes in the memory management

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08 returnOk;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_RenameLink("/test.dir/linked.conf", "config.link");
        .
        .
    }
}
```

TFS_ReadLink

U08 TFS_ReadLink(U08 OS_HUGE *Name, U08 OS_HUGE *LinkName)

Returns the name of the entry that is linked from *Name. It will return only the entry name on that occasion without path.

Parameters

*Name	Link-name [with path]
*LinkName	pointer to array for linked Entry-name

Return Value

TFS_NO_ERR	name readed
TFS_NO_USER	User unknown
TFS_PATH_ERR	an element of the path statement doesn't exist
TFS_MEM_ERR	Mistakes in the memory management
TFS_NO_LINK	the entry is a link but points to no entry or this linked entry doesn't know this
TFS_LINK_ERR	Mistakes in the linker

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08  returnOk;
    U08  Entry[TFS_Name_SIZE];

    .
    ...
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        returnOk=TFS_CreateLink("/Dir2/config.sys", "../test.dir/linked.conf");
        .
        returnOk=TFS_ReadLink("../test.dir/linked.conf", Entry);
        .
        returnOk=TFS_RemoveLink("../test.dir/linked.conf");
    }
}
```

Entries reading

TFS_GetFirstName

U08 TFS_GetFirstName(U08 OS_HUGE *Name)

Returns the name of first entry in the current directory and sets the "next"-counter of the user to begin of this directory. It will return only the directory or file name on that occasion without path.

Parameters

*Name	pointer to array for Entry-name
-------	---------------------------------

Return Value

TFS_NO_ERR	Entry read
TFS_NOT_EXIST	no entry exist
TFS_NO_USER	User unknown

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08  returnOk;
    U08  Name[TFS_Name_SIZE];

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_GetFirstName(Name);
        .
        .
    }
}
```

TFS_GetNextName

U08 TFS_GetNextName(U08 OS_HUGE *Name)

Returns the name of next entry in the current directory and steps the "next"-counter of the user one entry forward. It will return only the directory or file name on that occasion without path.

Parameters

*Name	pointer to array for Entry-name
-------	---------------------------------

Return Value

TFS_NO_ERR	Entry readed
TFS_NOT_EXIST	no further entry existing
TFS_NO_USER	User unknown

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08  returnOk;
    U08  Name[TFS_Name_SIZE];

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        returnOk=TFS_GetFirstName(Name);
        .
        do {
            .
            returnOk=TFS_GetNextName(Name);
            .
        } while(returnOk == TFS_NO_ERR);
        .
    }
}
```

TFS_GetFirst

```
U08 TFS_GetFirst(TFS_GET OS_HUGE *get)
```

Returns in the struct all relevant information of first entry in the current directory and sets the "next"-counter of the user to begin of this directory.
folgende Informationen sind in der Struktur enthalten:

```
U08      Name[TFS_Name_SIZE]; // name of this entry
TFS_ATTR Attr;                // attributes of this entry
TFS_LONG Length;              // used length of this entry (0 if its a directory)
U08      Linked;              // not 0, if this entry is linked by an other entry
```

Parameters

*get	pointer to GET struct
------	-----------------------

Return Value

TFS_NO_ERR	Entry readed
TFS_NOT_EXIST	no entry exist
TFS_NO_USER	User unknown

Example

```
TFS_USER TFS_User1;

void OS_FAR Task1(void *data)
{
    U08      returnOk;
    TFS_GET  get;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        .
        returnOk=TFS_GetFirst(&get);
        .
        .
        .
    }
}
```

TFS_GetNext

U08 TFS_GetNext(TFS_GET OS_HUGE *get)

Returns in the struct all relevant information of next entry in the current directory and steps the "next"-counter of the user one entry forward.

Parameters

*get	pointer to GET struct
------	-----------------------

Return Value

TFS_NO_ERR	Entry readed
TFS_NOT_EXIST	no further entry existing
TFS_NO_USER	User unknown

Example

```
TFS_USER  TFS_User1;

void OS_FAR Task1(void *data)
{
    U08      returnOk;
    TFS_GET  get;

    .
    while(1)
    {
        .
        returnOk=TFS_BecomeUser(&TFS_User1);
        .
        returnOk=TFS_GetFirst(&get);
        .
        do {
            .
            returnOk=TFS_GetNext(&get);
            .
        } while(returnOk == TFS_NO_ERR);
        .
    }
}
```

Comments

Comments
