A Tool for Encryption and Integrity Verification

——cp command modify

## 使用说明

**NAME**

cp -- copy files

**SYNOPSIS**

cp [-option] source\_file target\_file

cp [-option] source\_file ... target\_directory

**DESCRIPTION**

In the first synopsis form, the cp utility copies the contents of the source\_file to the target\_file.；overwrite the target file if it already exists;

In the second synopsis form, the contents of each named source\_file is copied to the destination target\_directory. The names of the files themselves are not changed.

If cp detects an attempt to copy a file to itself, the copy will fail.

For each destination file that already exists, its contents are overwritten if permissions allow.

In the second synopsis form, target\_directory must exist unless there is only one named source\_file which is a directory and the -R flag is specified.

**OPTIONS**

|  |  |
| --- | --- |
| **-r|-R** | If source\_file designates a directory, cp copies the directory and the entire subtree connected at that point. If the target directory already exists, the contents of the directory are copied rather than the directory itself.    In -r|-R mode, cp will continue copying even if errors are detected. |
| **-u|-U** | copy only when the SOURCE file is newer than the destination file or when the destination file is missing；Judge by the ctime in linux; |
| **-h|-H**  **Or undefined** | output the help information to the stand output stream; |
| **-c|-C key** | crypt the specified files with key； |
| **-x|-X key** | decrypt the specified files with key； |
| **-m** | Copy files and print the md5 check code; |
| **-M** | Recomputed the md5 code and not do copy actions; If –c key is not given, compute the origin file md5 code; |
| **--** | End of configure Param |
|  |  |

**EXIT STATUS**

The cp utility exits 0 on success, and >0 if an error occurs.

## 功能划分

**文件拷贝，文件加密解密，文件完整性校验；**

**文件拷贝**

Linux系统下，保留原来文件的权限信息，只区分文件与目录，连接文件等特殊文件当做普通文件处理；

**文件加密解密**

采用对称式加密算法，AES；

**文件的完整性校验**

采用md5校验实现

**文件处理流程**

加密解密过程以及md5码生成过程均在文件拷贝过程中实现；

## 输入和输出

**运行结果**

加密结果：拷贝后的文件保留完整的文件名，文件内容完全是加密后的内容，文件名追加.cxc后缀；结果后

解密结果：只对文件名后缀为.cxc的文件进行解密处理，跳过其他任何文件；解密后去除.cxc文件后缀；

指定-m货-M参数的情况下，打印输出校验信息；

**信息输入**

工具只在命令行环境下运行；信息输入借助于命令行参数；

**信息输出**

列表形式打印，依次为校验和；文件名（包含相对于参数输入路径的路径信息）；输出信息定向到到标准输出流上；

## 其他

性能要求：内存映射，多线程，流水线；

多平台：linux，windows，宏条件编译；