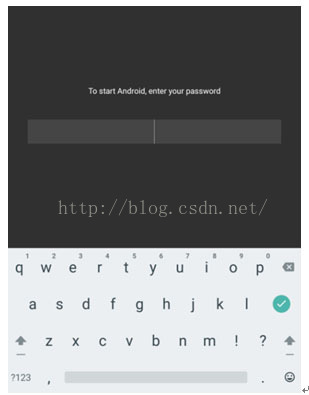
在[**Android**](http://lib.csdn.net/base/android) M版本里，如果设定的加密密码，比如pin，password和pattern。那在开机的时候，会要求输入密码才能开机。如下图：



在开机过程中比较重要的一只文件CryptKeeper.[**Java**](http://lib.csdn.net/base/javase)。

Path：/packages/apps/Settings/src/com/android/settings/CryptKeeper.java

接下来讲讲需要加密开机过程中的几个关键flow。

1，  在开机过程中，会先跑到CryptKeeper.java，其中比较重要的就是setupUi（）。

1），部分被加密，直接显示factoryreset

[457](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "457" \t "_blank)        if ([mEncryptionGoneBad](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#mEncryptionGoneBad)|| [isDebugView](http://androidxref.com/6.0.1_r10/s?defs=isDebugView&project=packages)([FORCE\_VIEW\_ERROR](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#FORCE_VIEW_ERROR))){

[458](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "458" \t "_blank)            [setContentView](http://androidxref.com/6.0.1_r10/s?defs=setContentView&project=packages)(R.[layout](http://androidxref.com/6.0.1_r10/s?defs=layout&project=packages).[crypt\_keeper\_progress](http://androidxref.com/6.0.1_r10/s?defs=crypt_keeper_progress&project=packages));

[459](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "459" \t "_blank)            [showFactoryReset](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#showFactoryReset)([mCorrupt](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#mCorrupt));

[460](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "460" \t "_blank)            return;

[461](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "461" \t "_blank)        }

 2），获取vold.encrypt\_progress的值，如果为空，就会去init进度条，并且会不断更新这个进度条。

[463](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "463" \t "_blank)        final [String](http://androidxref.com/6.0.1_r10/s?defs=String&project=packages) [progress](http://androidxref.com/6.0.1_r10/s?defs=progress&project=packages) = [SystemProperties](http://androidxref.com/6.0.1_r10/s?defs=SystemProperties&project=packages).[get](http://androidxref.com/6.0.1_r10/s?defs=get&project=packages)("vold.encrypt\_progress");

[464](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "464" \t "_blank)        if (!"".[equals](http://androidxref.com/6.0.1_r10/s?defs=equals&project=packages)([progress](http://androidxref.com/6.0.1_r10/s?defs=progress&project=packages)) || [isDebugView](http://androidxref.com/6.0.1_r10/s?defs=isDebugView&project=packages)([FORCE\_VIEW\_PROGRESS](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#FORCE_VIEW_PROGRESS))) {

[465](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "465" \t "_blank)            [setContentView](http://androidxref.com/6.0.1_r10/s?defs=setContentView&project=packages)(R.[layout](http://androidxref.com/6.0.1_r10/s?defs=layout&project=packages).[crypt\_keeper\_progress](http://androidxref.com/6.0.1_r10/s?defs=crypt_keeper_progress&project=packages));

[466](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "466" \t "_blank)            [encryptionProgressInit](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#encryptionProgressInit)();

3），判断mValidationRequested是否为flase，如果为false，就执行ValidationTask。

这个分支是最早执行的，即最先执行ValidationTask。

[527](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "527" \t "_blank)        } else if (![mValidationRequested](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#mValidationRequested)) {

[528](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "528" \t "_blank)            // We're supposed to be encrypted,but no validation has been done.

[529](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "529" \t "_blank)            new [ValidationTask](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#ValidationTask)().[execute](http://androidxref.com/6.0.1_r10/s?defs=execute&project=packages)(([Void](http://androidxref.com/6.0.1_r10/s?defs=Void&project=packages)[]) [null](http://androidxref.com/6.0.1_r10/s?defs=null&project=packages));

[530](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "530" \t "_blank)            [mValidationRequested](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#mValidationRequested) = true;

[531](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "531" \t "_blank)        }

  ValidationTask的主要功能是先获取Encryption state。如果状态为ENCRYPTION\_STATE\_OK，就将mEncryptionGoneBad设置成true。ValidationTask执行完之后，就会将mValidationComplete设置成true，准备执行输入password的task。

[286](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "286" \t "_blank)    private class [ValidationTask](http://androidxref.com/6.0.1_r10/s?refs=ValidationTask&project=packages" \t "_blank)extends [AsyncTask](http://androidxref.com/6.0.1_r10/s?defs=AsyncTask&project=packages)<[Void](http://androidxref.com/6.0.1_r10/s?defs=Void&project=packages), [Void](http://androidxref.com/6.0.1_r10/s?defs=Void&project=packages), [Boolean](http://androidxref.com/6.0.1_r10/s?defs=Boolean&project=packages)> {

[287](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "287" \t "_blank)        int [state](http://androidxref.com/6.0.1_r10/s?refs=state&project=packages" \t "_blank);

[288](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "288" \t "_blank)

[289](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "289" \t "_blank)        @[Override](http://androidxref.com/6.0.1_r10/s?defs=Override&project=packages)

[290](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "290" \t "_blank)        protected [Boolean](http://androidxref.com/6.0.1_r10/s?defs=Boolean&project=packages) [doInBackground](http://androidxref.com/6.0.1_r10/s?refs=doInBackground&project=packages" \t "_blank)([Void](http://androidxref.com/6.0.1_r10/s?defs=Void&project=packages)... [params](http://androidxref.com/6.0.1_r10/s?refs=params&project=packages" \t "_blank)){

[291](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "291" \t "_blank)            final [IMountService](http://androidxref.com/6.0.1_r10/s?defs=IMountService&project=packages) [service](http://androidxref.com/6.0.1_r10/s?defs=service&project=packages) = [getMountService](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#getMountService)();

[292](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "292" \t "_blank)            try {

[293](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "293" \t "_blank)                [Log](http://androidxref.com/6.0.1_r10/s?defs=Log&project=packages).d([TAG](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#TAG),"Validating encryption state.");

[294](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "294" \t "_blank)                [state](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#state) = [service](http://androidxref.com/6.0.1_r10/s?defs=service&project=packages).[getEncryptionState](http://androidxref.com/6.0.1_r10/s?defs=getEncryptionState&project=packages)();

[295](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "295" \t "_blank)                if ([state](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#state) == [IMountService](http://androidxref.com/6.0.1_r10/s?defs=IMountService&project=packages).[ENCRYPTION\_STATE\_NONE](http://androidxref.com/6.0.1_r10/s?defs=ENCRYPTION_STATE_NONE&project=packages)){

[296](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "296" \t "_blank)                    [Log](http://androidxref.com/6.0.1_r10/s?defs=Log&project=packages).w([TAG](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#TAG),"Unexpectedly in CryptKeeper even though there is no encryption.");

[297](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "297" \t "_blank)                    return true; // Unexpected,but fine, I guess...

[298](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "298" \t "_blank)                }

[299](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "299" \t "_blank)                return [state](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#state) == [IMountService](http://androidxref.com/6.0.1_r10/s?defs=IMountService&project=packages).[ENCRYPTION\_STATE\_OK](http://androidxref.com/6.0.1_r10/s?defs=ENCRYPTION_STATE_OK&project=packages);

[300](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "300" \t "_blank)            } catch ([RemoteException](http://androidxref.com/6.0.1_r10/s?defs=RemoteException&project=packages)e) {

[301](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "301" \t "_blank)                [Log](http://androidxref.com/6.0.1_r10/s?defs=Log&project=packages).w([TAG](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#TAG),"Unable to get encryption state properly");

[302](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "302" \t "_blank)                return true;

[303](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "303" \t "_blank)            }

[304](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "304" \t "_blank)        }

[305](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "305" \t "_blank)

[306](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "306" \t "_blank)        @[Override](http://androidxref.com/6.0.1_r10/s?defs=Override&project=packages)

[307](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "307" \t "_blank)        protected void [onPostExecute](http://androidxref.com/6.0.1_r10/s?refs=onPostExecute&project=packages" \t "_blank)([Boolean](http://androidxref.com/6.0.1_r10/s?defs=Boolean&project=packages) [result](http://androidxref.com/6.0.1_r10/s?refs=result&project=packages" \t "_blank)){

[308](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "308" \t "_blank)            [mValidationComplete](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#mValidationComplete) = true;

[309](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "309" \t "_blank)            if ([Boolean](http://androidxref.com/6.0.1_r10/s?defs=Boolean&project=packages).[FALSE](http://androidxref.com/6.0.1_r10/s?defs=FALSE&project=packages).[equals](http://androidxref.com/6.0.1_r10/s?defs=equals&project=packages)([result](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#result))) {

[310](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "310" \t "_blank)                [Log](http://androidxref.com/6.0.1_r10/s?defs=Log&project=packages).w([TAG](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#TAG),"Incomplete, or corrupted encryption detected. Prompting user towipe.");

[311](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "311" \t "_blank)                [mEncryptionGoneBad](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#mEncryptionGoneBad) = true;

[312](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "312" \t "_blank)                [mCorrupt](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#mCorrupt) = [state](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#state) == [IMountService](http://androidxref.com/6.0.1_r10/s?defs=IMountService&project=packages).[ENCRYPTION\_STATE\_ERROR\_CORRUPT](http://androidxref.com/6.0.1_r10/s?defs=ENCRYPTION_STATE_ERROR_CORRUPT&project=packages);

[313](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "313" \t "_blank)            } else {

[314](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "314" \t "_blank)                [Log](http://androidxref.com/6.0.1_r10/s?defs=Log&project=packages).d([TAG](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#TAG),"Encryption state validated. Proceeding to configure UI");

[315](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "315" \t "_blank)            }

[316](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "316" \t "_blank)            [setupUi](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#setupUi)();

[317](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "317" \t "_blank)        }

[318](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "318" \t "_blank)    }

4），判断mValidationComplete为true，显示输入password的UI

[467](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "467" \t "_blank)        } else if ([mValidationComplete](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#mValidationComplete)|| [isDebugView](http://androidxref.com/6.0.1_r10/s?defs=isDebugView&project=packages)([FORCE\_VIEW\_PASSWORD](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#FORCE_VIEW_PASSWORD))) {

[468](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "468" \t "_blank)            new [AsyncTask](http://androidxref.com/6.0.1_r10/s?defs=AsyncTask&project=packages)<[Void](http://androidxref.com/6.0.1_r10/s?defs=Void&project=packages), [Void](http://androidxref.com/6.0.1_r10/s?defs=Void&project=packages), [Void](http://androidxref.com/6.0.1_r10/s?defs=Void&project=packages)>() {

[469](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "469" \t "_blank)                int [passwordType](http://androidxref.com/6.0.1_r10/s?defs=passwordType&project=packages) =[StorageManager](http://androidxref.com/6.0.1_r10/s?defs=StorageManager&project=packages).[CRYPT\_TYPE\_PASSWORD](http://androidxref.com/6.0.1_r10/s?defs=CRYPT_TYPE_PASSWORD&project=packages);

[470](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "470" \t "_blank)                [String](http://androidxref.com/6.0.1_r10/s?defs=String&project=packages) [owner\_info](http://androidxref.com/6.0.1_r10/s?defs=owner_info&project=packages);

[471](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "471" \t "_blank)                boolean [pattern\_visible](http://androidxref.com/6.0.1_r10/s?defs=pattern_visible&project=packages);

[472](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "472" \t "_blank)                boolean [password\_visible](http://androidxref.com/6.0.1_r10/s?defs=password_visible&project=packages);

[473](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "473" \t "_blank)

[474](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "474" \t "_blank)                @[Override](http://androidxref.com/6.0.1_r10/s?defs=Override&project=packages)

[475](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "475" \t "_blank)                public [Void](http://androidxref.com/6.0.1_r10/s?defs=Void&project=packages) [doInBackground](http://androidxref.com/6.0.1_r10/s?defs=doInBackground&project=packages)([Void](http://androidxref.com/6.0.1_r10/s?defs=Void&project=packages)... v) {

[476](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "476" \t "_blank)                    try {

[477](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "477" \t "_blank)                        final [IMountService](http://androidxref.com/6.0.1_r10/s?defs=IMountService&project=packages) [service](http://androidxref.com/6.0.1_r10/s?defs=service&project=packages) = [getMountService](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#getMountService)();

[478](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "478" \t "_blank)                        [passwordType](http://androidxref.com/6.0.1_r10/s?defs=passwordType&project=packages) =[service](http://androidxref.com/6.0.1_r10/s?defs=service&project=packages).[getPasswordType](http://androidxref.com/6.0.1_r10/s?defs=getPasswordType&project=packages)();

[479](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "479" \t "_blank)                        [owner\_info](http://androidxref.com/6.0.1_r10/s?defs=owner_info&project=packages) = [service](http://androidxref.com/6.0.1_r10/s?defs=service&project=packages).[getField](http://androidxref.com/6.0.1_r10/s?defs=getField&project=packages)([StorageManager](http://androidxref.com/6.0.1_r10/s?defs=StorageManager&project=packages).[OWNER\_INFO\_KEY](http://androidxref.com/6.0.1_r10/s?defs=OWNER_INFO_KEY&project=packages));

[480](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "480" \t "_blank)                        [pattern\_visible](http://androidxref.com/6.0.1_r10/s?defs=pattern_visible&project=packages)= !("0".[equals](http://androidxref.com/6.0.1_r10/s?defs=equals&project=packages)([service](http://androidxref.com/6.0.1_r10/s?defs=service&project=packages).[getField](http://androidxref.com/6.0.1_r10/s?defs=getField&project=packages)([StorageManager](http://androidxref.com/6.0.1_r10/s?defs=StorageManager&project=packages).[PATTERN\_VISIBLE\_KEY](http://androidxref.com/6.0.1_r10/s?defs=PATTERN_VISIBLE_KEY&project=packages))));

[481](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "481" \t "_blank) [password\_visible](http://androidxref.com/6.0.1_r10/s?defs=password_visible&project=packages)= !("0".[equals](http://androidxref.com/6.0.1_r10/s?defs=equals&project=packages)([service](http://androidxref.com/6.0.1_r10/s?defs=service&project=packages).[getField](http://androidxref.com/6.0.1_r10/s?defs=getField&project=packages)([StorageManager](http://androidxref.com/6.0.1_r10/s?defs=StorageManager&project=packages).[PASSWORD\_VISIBLE\_KEY](http://androidxref.com/6.0.1_r10/s?defs=PASSWORD_VISIBLE_KEY&project=packages))));

[482](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "482" \t "_blank)                    } catch ([Exception](http://androidxref.com/6.0.1_r10/s?defs=Exception&project=packages) e) {

[483](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "483" \t "_blank)                        [Log](http://androidxref.com/6.0.1_r10/s?defs=Log&project=packages).e([TAG](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#TAG),"Error calling mount service " + e);

[484](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "484" \t "_blank)                    }

  当检测到有pin，password或者pattern输入，就会去执行DecryptTask。

2，  执行DecryptTask

1）  Checking

[226](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "226" \t "_blank)    private void [beginAttempt](http://androidxref.com/6.0.1_r10/s?refs=beginAttempt&project=packages" \t "_blank)(){

[227](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "227" \t "_blank)        final [TextView](http://androidxref.com/6.0.1_r10/s?defs=TextView&project=packages) [status](http://androidxref.com/6.0.1_r10/s?defs=status&project=packages) = ([TextView](http://androidxref.com/6.0.1_r10/s?defs=TextView&project=packages))[findViewById](http://androidxref.com/6.0.1_r10/s?defs=findViewById&project=packages)(R.[id](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#id).[status](http://androidxref.com/6.0.1_r10/s?defs=status&project=packages));

[228](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "228" \t "_blank)        [status](http://androidxref.com/6.0.1_r10/s?defs=status&project=packages).[setText](http://androidxref.com/6.0.1_r10/s?defs=setText&project=packages)(R.[string](http://androidxref.com/6.0.1_r10/s?defs=string&project=packages).[checking\_decryption](http://androidxref.com/6.0.1_r10/s?defs=checking_decryption&project=packages));

[229](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "229" \t "_blank)    }

2）  执行解密动作，调用mountservice的decryptStorage接口

[183](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "183" \t "_blank)        protected [Integer](http://androidxref.com/6.0.1_r10/s?defs=Integer&project=packages) [doInBackground](http://androidxref.com/6.0.1_r10/s?refs=doInBackground&project=packages)([String](http://androidxref.com/6.0.1_r10/s?defs=String&project=packages)... [params](http://androidxref.com/6.0.1_r10/s?refs=params&project=packages)) {

[184](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "184" \t "_blank)            final [IMountService](http://androidxref.com/6.0.1_r10/s?defs=IMountService&project=packages) [service](http://androidxref.com/6.0.1_r10/s?defs=service&project=packages) = [getMountService](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#getMountService)();

[185](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "185" \t "_blank)            try {

[186](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "186" \t "_blank)                return [service](http://androidxref.com/6.0.1_r10/s?defs=service&project=packages).[decryptStorage](http://androidxref.com/6.0.1_r10/s?defs=decryptStorage&project=packages)([params](http://androidxref.com/6.0.1_r10/s?defs=params&project=packages)[0]);

[187](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "187" \t "_blank)            } catch ([Exception](http://androidxref.com/6.0.1_r10/s?defs=Exception&project=packages) e) {

[188](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "188" \t "_blank)                [Log](http://androidxref.com/6.0.1_r10/s?defs=Log&project=packages).e([TAG](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java#TAG),"Error while decrypting...", e);

[189](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "189" \t "_blank)                return -1;

[190](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "190" \t "_blank)            }

[191](http://androidxref.com/6.0.1_r10/xref/packages/apps/Settings/src/com/android/settings/CryptKeeper.java" \l "191" \t "_blank)        }

3）  decryptStorage会调用checkpw验证password，验证完之后，会restart。

[2363](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2363" \t "_blank)    public int [decryptStorage](http://androidxref.com/6.0.1_r10/s?refs=decryptStorage&project=frameworks" \t "_blank)([String](http://androidxref.com/6.0.1_r10/s?defs=String&project=frameworks) [password](http://androidxref.com/6.0.1_r10/s?refs=password&project=frameworks" \t "_blank)){

[2364](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2364" \t "_blank)        if ([TextUtils](http://androidxref.com/6.0.1_r10/s?defs=TextUtils&project=frameworks).[isEmpty](http://androidxref.com/6.0.1_r10/s?defs=isEmpty&project=frameworks)([password](http://androidxref.com/6.0.1_r10/s?defs=password&project=frameworks))) {

[2365](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2365" \t "_blank)            throw new [IllegalArgumentException](http://androidxref.com/6.0.1_r10/s?defs=IllegalArgumentException&project=frameworks)("password cannot be empty");

[2366](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2366" \t "_blank)        }

[2367](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2367" \t "_blank)

[2368](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2368" \t "_blank)        [mContext](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#mContext).[enforceCallingOrSelfPermission](http://androidxref.com/6.0.1_r10/s?defs=enforceCallingOrSelfPermission&project=frameworks)([Manifest](http://androidxref.com/6.0.1_r10/s?defs=Manifest&project=frameworks).[permission](http://androidxref.com/6.0.1_r10/s?defs=permission&project=frameworks).[CRYPT\_KEEPER](http://androidxref.com/6.0.1_r10/s?defs=CRYPT_KEEPER&project=frameworks),

[2369](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2369" \t "_blank)                "no permission to accessthe crypt keeper");

[2370](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2370" \t "_blank)

[2371](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2371" \t "_blank)        [waitForReady](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#waitForReady)();

[2372](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2372" \t "_blank)

[2373](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2373" \t "_blank)        if ([DEBUG\_EVENTS](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#DEBUG_EVENTS)){

[2374](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2374" \t "_blank)            [Slog](http://androidxref.com/6.0.1_r10/s?defs=Slog&project=frameworks).i([TAG](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#TAG),"decrypting storage...");

[2375](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2375" \t "_blank)        }

[2376](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2376" \t "_blank)

[2377](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2377" \t "_blank)        final [NativeDaemonEvent](http://androidxref.com/6.0.1_r10/s?defs=NativeDaemonEvent&project=frameworks) [event](http://androidxref.com/6.0.1_r10/s?defs=event&project=frameworks);

[2378](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2378" \t "_blank)        try {

[2379](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2379" \t "_blank)            [event](http://androidxref.com/6.0.1_r10/s?defs=event&project=frameworks) = [mCryptConnector](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#mCryptConnector).[execute](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#execute)("cryptfs","checkpw", new [SensitiveArg](http://androidxref.com/6.0.1_r10/s?defs=SensitiveArg&project=frameworks)([password](http://androidxref.com/6.0.1_r10/s?defs=password&project=frameworks)));

[2380](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2380" \t "_blank)

[2381](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2381" \t "_blank)            final int [code](http://androidxref.com/6.0.1_r10/s?defs=code&project=frameworks) = [Integer](http://androidxref.com/6.0.1_r10/s?defs=Integer&project=frameworks).[parseInt](http://androidxref.com/6.0.1_r10/s?defs=parseInt&project=frameworks)([event](http://androidxref.com/6.0.1_r10/s?defs=event&project=frameworks).[getMessage](http://androidxref.com/6.0.1_r10/s?defs=getMessage&project=frameworks)());

[2382](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2382" \t "_blank)            if ([code](http://androidxref.com/6.0.1_r10/s?defs=code&project=frameworks) == 0) {

[2383](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2383" \t "_blank)                // Decrypt was successful. Posta delayed message before restarting in order

[2384](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2384" \t "_blank)                // to let the UI to clearitself

[2385](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2385" \t "_blank)                [mHandler](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#mHandler).[postDelayed](http://androidxref.com/6.0.1_r10/s?defs=postDelayed&project=frameworks)(new[Runnable](http://androidxref.com/6.0.1_r10/s?defs=Runnable&project=frameworks)() {

[2386](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2386" \t "_blank)                    public void [run](http://androidxref.com/6.0.1_r10/s?defs=run&project=frameworks)() {

[2387](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2387" \t "_blank)                        try {

[2388](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2388" \t "_blank)                            [mCryptConnector](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#mCryptConnector).[execute](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#execute)("cryptfs","restart");

[2389](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2389" \t "_blank)                        } catch ([NativeDaemonConnectorException](http://androidxref.com/6.0.1_r10/s?defs=NativeDaemonConnectorException&project=frameworks)e) {

[2390](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2390" \t "_blank)                            [Slog](http://androidxref.com/6.0.1_r10/s?defs=Slog&project=frameworks).e([TAG](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java#TAG),"problem executing in background", e);

[2391](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2391" \t "_blank)                        }

[2392](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2392" \t "_blank)                    }

[2393](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2393" \t "_blank)                }, 1000); // 1 second

[2394](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2394" \t "_blank)            }

[2395](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2395" \t "_blank)

[2396](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2396" \t "_blank)            return [code](http://androidxref.com/6.0.1_r10/s?defs=code&project=frameworks);

[2397](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2397" \t "_blank)        } catch ([NativeDaemonConnectorException](http://androidxref.com/6.0.1_r10/s?defs=NativeDaemonConnectorException&project=frameworks)e) {

[2398](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2398" \t "_blank)            // Decryption failed

[2399](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2399" \t "_blank)            return e.[getCode](http://androidxref.com/6.0.1_r10/s?defs=getCode&project=frameworks)();

[2400](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2400" \t "_blank)        }

[2401](http://androidxref.com/6.0.1_r10/xref/frameworks/base/services/core/java/com/android/server/MountService.java" \l "2401" \t "_blank)

4）DecryptTask的postexcute

5）接下来看看mountservice的decryptStorage

    （1）checkpw会去调用cryptfs\_check\_password接口，接着就是调用check\_unmount\_and\_get\_ftr的接口。如果正在validate，则不去check，或者没有加密，也不用去check。然后通过调用test\_mount\_encrypted\_fs接口，判断password是否ok。

a)      用password获取decrypt master key

b)      获取crypt info

c)      创建crypto device

d)      Match password

  （2）restart

            Cryptfs\_restart\_internal（1）