Subject: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 06 Apr 2022 10:29:15 GMT

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Hi,

I attempted to read Raspberry Pi 4 SoC temperature with the below code. For some reason using LoadFile does not work:

```
double GetRaspberryPiTemperature(){
 String result = LoadFile("/sys/devices/virtual/thermal/thermal_zone0/temp");
 if(!result.IsEmpty()) return 0.001*ScanDouble(~result);
 return -55.0;
}
```

So I had to revert using FILE and fgets instead:

```
double GetRaspberryPiTemperature(){
 FILE *in=fopen("/sys/devices/virtual/thermal/thermal_zone0/temp","rb");
 char s[8];
 if(fgets(s,8,in)) return 0.001*ScanDouble(s);
 return -55.0;
}
```

Is this expected or is this a bug?

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by mirek on Fri, 08 Apr 2022 14:11:18 GMT

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Tom1 wrote on Wed, 06 April 2022 12:29Hi,

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So I had to revert using FILE and fgets instead:

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double GetRaspberryPiTemperature(){
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 char s[8];
 if(fgets(s,8,in)) return 0.001*ScanDouble(s);
 return -55.0;
}
```

Is this expected or is this a bug?

Best regards,

Tom

Have you tried the exact equivalent? (like reading 8 bytes only).

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Tue, 12 Apr 2022 06:54:50 GMT
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Hi Mirek,

None of the options below work. The file opens OK, but reading fails with all means:
 FileIn in;
 in.Open("/sys/devices/virtual/thermal/thermal_zone0/temp");
 if(in.IsError()) return -100;

// String result = in.GetLine();
// String result = in.Get(5);
 String result = in.GetAll(8);
 if(!result.IsEmpty()) return 0.001*ScanInt(~result);
 return -55.0;

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Tue, 12 Apr 2022 12:46:55 GMT
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Hi Mirek,

First it seems the problem is that the Stream::GetSize() returns 4096 for some reason. (The file is more like five bytes long.) Then it breaks in BlockStream::_Get(void *data, dword size) in a way that causes error.

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 13 Apr 2022 07:13:49 GMT

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Hi Mirek,

There is also an easier way to test this -- the following does not work on Linux Mint on normal x86_64 platform:

```
#include <Core/Core.h>

using namespace Upp;

CONSOLE_APP_MAIN
{
 String meminfo = LoadFile("/proc/meminfo");
 Cout() << meminfo << "\n";
}
```

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 13 Apr 2022 12:44:57 GMT

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Hi,

This does work on both Raspberry Pi OS (on RPi4) and Linux Mint (on x86_64):

```
#include <Core/Core.h>

using namespace Upp;

String LoadFileRaw(const char *filename){
 int fd = open(filename,O_RDONLY);
 if(fd!=-1){
  char buf[4096];
  StringBuffer s;
  int len;
  while((len=read(fd,buf,4096))==4096) s.Cat(buf,len);
  if(len>0) s.Cat(buf,len);
  close(fd);
  if(s.GetCount()>0) return s;
 }
 return String::GetVoid();
}
```

```
CONSOLE_APP_MAIN
{
 String meminfo = LoadFileRaw("/proc/meminfo");
 Cout() << meminfo << "\n\n";
}
```
Also:
```
LoadFileRaw("/sys/devices/virtual/thermal/thermal_zone0/temp");
```
works fine on RPi4.

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by mirek on Wed, 13 Apr 2022 15:39:58 GMT

Tom1 wrote on Wed, 13 April 2022 14:44Hi,

This does work on both Raspberry Pi OS (on RPi4) and Linux Mint (on x86_64):
```
#include <Core/Core.h>

using namespace Upp;

String LoadFileRaw(const char *filename){
 int fd = open(filename,O_RDONLY);
 if(fd!=-1){
  char buf[4096];
  StringBuffer s;
  int len;
  while((len=read(fd,buf,4096))==4096) s.Cat(buf,len);
  if(len>0) s.Cat(buf,len);
  close(fd);
  if(s.GetCount()>0) return s;
 }
 return String::GetVoid();
}

CONSOLE_APP_MAIN
{
 String meminfo = LoadFileRaw("/proc/meminfo");
 Cout() << meminfo << "\n\n";
}
```
Also:
```
LoadFileRaw("/sys/devices/virtual/thermal/thermal_zone0/temp");
```
works fine on RPi4.

Best regards,

Tom

I suspect that the problem is somewhere here: Core/BlockStream.cpp:474

Probably that S_IFREG flag test. Maybe using S_IFBLK would fix it?

Mirek

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 13 Apr 2022 16:45:51 GMT

mirek wrote on Wed, 13 April 2022 18:39

I suspect that the problem is somewhere here: Core/BlockStream.cpp:474

Probably that S_IFREG flag test. Maybe using S_IFBLK would fix it?

Mirek

Hi,

Unfortunately this does not help. I think, it opens OK, but fails to read.

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 13 Apr 2022 18:33:45 GMT

Hi Mirek,

OK, the problem is here:
```
bool FileStream::Open(const char *name, dword mode, mode_t tmode) {
 Close();
 LLOG("Open " << name);
 int iomode = mode & ~SHAREMASK;
 handle = open(ToSystemCharset(name), iomode == READ ? O_RDONLY :
             iomode == CREATE ? O_CREAT|O_RDWR|O_TRUNC :
             O_RDWR|O_CREAT,
         tmode);
```

```
if(handle >= 0) {
 struct stat st[1];
 fstat(handle, st);
 if(!(st->st_mode & S_IFREG) ||  // not a regular file, e.g. folder - bad things would happen
    (mode & NOWRITESHARE) && flock(handle, LOCK_EX|LOCK_NB) < 0) { // lock if not sharing
  close(handle);
  handle = -1;
  return false;
 }
 int64 fsz = st->st_size;
```

The 'st->st_size' returned from fstat() above is zero for e.g. "/proc/meminfo". This causes the contents of the file not being read at all. (I tested with a fake length of five bytes and received the five first characters of "/proc/meminfo", so this explains the behavior.)

Best regards,

Tom

More edit: It turns out that files in "/proc" or "/sys" are not really files. Not on disk, but not even in memory. Their contents is generated by the kernel on the fly. So, there is no way to tell their size and so fstat() returns zero. Only way to read them is to just read() them in until EOF.

Maybe they could be read up to the buffer (page) size and if the EOF is encountered, the filesize becomes determined...?

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by mirek on Mon, 16 May 2022 08:48:38 GMT
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Quote:
More edit: It turns out that files in "/proc" or "/sys" are not really files. Not on disk, but not even in memory. Their contents is generated by the kernel on the fly. So, there is no way to tell their size and so fstat() returns zero. Only way to read them is to just read() them in until EOF.

Maybe they could be read up to the buffer (page) size and if the EOF is encountered, the filesize becomes determined...?

Well, one simple possible solution is to change LoadFile... However, it will then need to be implemented for every platform.

Mirek

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 18 May 2022 07:05:34 GMT

Hi Mirek,

Well, the LoadFileRaw() implementation above (a couple of messages up) could likely replace LoadFile() on Linux (or POSIX) and Windows does not need any changes. So, I guess it is just Mac that possibly needs attention. (I do not have a Mac, so I cannot really tell.)

EDIT: Or maybe we could use LoadFileRaw() just for files in POSIX that fail to open with LoadFile(). Then allocation of String would be better optimized for normal files.

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by mirek on Wed, 18 May 2022 07:58:01 GMT

OK, this should do the job:

```
String LoadFile(const char *filename) {
 FindFile ff(filename);
 if(ff && ff.IsFile()) {
 #ifdef PLATFORM_POSIX
  if(ff.GetLength() == 0) { // handle special cases like /proc/...
   int fd = open(filename,O_RDONLY);
   if(fd >= 0) {
    const int CHUNK = 32768;
    StringBuffer s;
    for(;;) {
     int n = s.GetCount();
     s.SetCount(n + CHUNK);
     int len = read(fd, ~s + n, CHUNK);
     if(len != CHUNK) {
      if(len > 0)
       s.SetCount(n + len);
      return s;
     }
    }
   }
   return String::GetVoid();
  }
 #endif
  FileIn in(filename);
  return LoadStream(in);
```

```
  }
  return String::GetVoid();
}
```

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 18 May 2022 08:15:29 GMT
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Mirek,

A nice idea. Now it works in /proc too. Unfortunately, now a truly empty file comes in as garbage sized at 32769 bytes. The StringBuffer sizing needs some tuning...

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 18 May 2022 08:26:48 GMT
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EDIT: My mistake, IsVoid() works correctly for String::GetVoid().

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by mirek on Wed, 18 May 2022 08:29:41 GMT
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Empty file issue fixed (with len >= 0).

Not sure what do you mean with IsVoid problem, piece of code maybe?

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 18 May 2022 08:36:51 GMT
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Thanks Mirek!

Now it works perfectly.

Sorry, GetVoid() / IsVoid() issue was my mistake in testing...

Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 18 May 2022 08:47:56 GMT
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mirek wrote on Wed, 18 May 2022 11:29Empty file issue fixed (with len >= 0).

Not sure what do you mean with IsVoid problem, piece of code maybe?
OK, I found the reason causing part of my testing issues:
 if(String::GetVoid().IsVoid()) Cout() << "String::GetVoid().IsVoid() works!\n";
 else Cout() << "String::GetVoid().IsVoid() fails!\n";
 if(IsVoid(String::GetVoid())) Cout() << "IsVoid(String::GetVoid()) works!\n";
 else Cout() << "IsVoid(String::GetVoid()) fails!\n";

Best regards,

Tom

EDIT: Improved test code.

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by pvictor on Wed, 18 May 2022 08:50:30 GMT
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Hi Mirek,

You should close(fd) in the above code.

Best regards,
Victor

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by mirek on Wed, 18 May 2022 08:58:42 GMT
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---

pvictor wrote on Wed, 18 May 2022 10:50Hi Mirek,

You should close(fd) in the above code.

Best regards,
Victor

Thanks, not my best morning....

Mirek

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by mirek on Wed, 18 May 2022 09:04:41 GMT
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Tom1 wrote on Wed, 18 May 2022 10:47mirek wrote on Wed, 18 May 2022 11:29Empty file issue fixed (with len >= 0).

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 else Cout() << "IsVoid(String::GetVoid()) fails!\n";

Best regards,

Tom

EDIT: Improved test code.

Uhm, that is actually API problem:

IsVoid(const Value&) function is about Value - it tells you that Value was not assigned anything. In above example you assign it a String, so it must return false.

I agree this is a bit confusing, but I am not sure there is a solution to that.

Mirek

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Wed, 18 May 2022 09:10:56 GMT
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mirek wrote on Wed, 18 May 2022 12:04Tom1 wrote on Wed, 18 May 2022 10:47mirek wrote on Wed, 18 May 2022 11:29Empty file issue fixed (with len >= 0).

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I agree this is a bit confusing, but I am not sure there is a solution to that.

Mirek

How about introducing an additional IsVoid variant?:
bool IsVoid(const String &s){ return s.IsVoid(); }
Best regards,

Tom

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by mirek on Thu, 19 May 2022 08:33:41 GMT
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Tom1 wrote on Wed, 18 May 2022 11:10

How about introducing an additional IsVoid variant?:
bool IsVoid(const String &s){ return s.IsVoid(); }
Best regards,

Tom

OK, done

Subject: Re: LoadFile("/sys/devices/virtual/thermal/ ...") does not work
Posted by Tom1 on Thu, 19 May 2022 09:04:23 GMT

Thanks!