Why this document?

I upgraded my iPhone 5s to iOS 10 and could no longer retrieve photos from it. This was unacceptable for me so I worked at achieving retrieving my photos. This document is my story (on Ubuntu 16.04).

The solution is to compile [libimobiledevice and ifuse from source](https://github.com/libimobiledevice).

Audience

Who is this guide intended for?

Compiling software is what I would consider an advanced Linux skill. If you're not interested in tinkering with your operating system then this guide may not be for you. There's a lot of concepts I don't explain or gloss over with brevity to keep these instructions brief (compared to explaining everything).

While I did my best to think of beginners when creating this guide; this guide is not for the faint of heart. If you've not compiled software before then I recommend you practicing inside of [VirtualBox](https://www.virtualbox.org/) before attempting this on your real system. Follow this guide at your own risk because I can't make any guarantees based on unknown individual skill level.

Support

This solution works for (posted via comments):

* Archlinux
* Debian GNU/Linux 8 - 64 bits
* Linux Mint 18
* Linux Mint 18.1
* Linux Mint 18.2
* Linux Mint 18.3
* Ubuntu 16.04
* Ubuntu 17.04

This solution does **not work** for the following:

* Ubuntu 14.04

On `Ubuntu 16.04`, I have personally used this method to connect to:

* iOS 10
* iOS 10.1
* iOS 10.2

* iOS 10.3.1
* iOS 10.3.3
* iOS 11.2.2

Hardware: I have personally successfully used this method on an iPhone 5S. The following is a list of hardware successes from other users (via comments below).

* iPhone 5C
* iPhone 6
* iPhone 6 Plus
* iPhone 8 Plus

If you get this working on a flavor that I don't list, then please post a comment and I will update this support section.

Setup environment

Don't forget to set up your environment before building. I typically build and install packages to my local user at `$HOME/usr`.

```bash
sudo apt-get install -y build-essential git
```

Here's a peek at my `.bashrc` settings:

```bash
[ ! -d "$HOME/usr/src" ] && mkdir -p "$HOME/usr/src"
export PKG_CONFIG_PATH="${HOME}/usr/lib/pkgconfig:${PKG_CONFIG_PATH}"
export CPATH="${HOME}/usr/include:${CPATH}"

export MANPATH="${HOME}/usr/share/man:${MANPATH}"

export PATH="${HOME}/usr/bin:${PATH}"
export LD_LIBRARY_PATH="${HOME}/usr/lib:${LD_LIBRARY_PATH}"
```

Notes:
* Important! `PATH` and `LD_LIBRARY_PATH` is important because it is the runtime of `libimobiledevice` and `ifuse` to fix mounting iOS 10 devices.
* `MANPATH` is only used when looking up man pages so it's optional (I recommend it).
* `PKG_CONFIG_PATH` and `CPATH` is used at compile time to resolve dependencies.

Build libimobiledevice and ifuse from HEAD

Building on other platforms and OSes (reported in user comments)

* Mint 18.2 - https://gist.github.com/samrocketman/70dff6ebb18004fc37dc5e33c259a0fc#gistcomment-2161041
* Mac OS X
  - https://gist.github.com/samrocketman/70dff6ebb18004fc37dc5e33c259a0fc#gistcomment-2116098
  - https://gist.github.com/samrocketman/70dff6ebb18004fc37dc5e33c259a0fc#gistcomment-2140745

Jump to [Clone and Build](#clone-and-build).

Building on Ubuntu 16.04

Install development packages discovered through trial and error.

```
sudo apt-get install automake libtool pkg-config libplist-dev libplist++-dev python-dev libssl-dev libusb-1.0-0-dev libfuse-dev
```

Clone and Build

Clone the sources.

```bash
cd ~/usr/src
for x in libusbmuxd usbmuxd libimobiledevice ifuse; do git clone https://github.com/libimobiledevice/${x}.git;done
```

Now build in order (the order matters):

1. [libplist](https://github.com/libimobiledevice/libplist) (not required on Ubuntu 16.04)
2. libusbmuxd
3. libimobiledevice
4. usbmuxd
5. ifuse

> Note: (Optional) If you have a system package installed which is in the above list, then I recommend uninstalling it. However, if you can't uninstall it, then no big deal. It is mostly a precautionary measure. As long as you set the bash environment variables properly, then your compiled version should not reference your system packages. Uninstalling any system packages is by no means required.

> Note 2: Removing usbmuxd was required on Debian Jessie 8.10 [mentioned in comments](https://gist.github.com/samrocketman/70dff6ebb18004fc37dc5e33c259a0fc#gistcomment-2336691).

Build libusbmuxd

```bash
cd ~/usr/src/libusbmuxd
./autogen.sh --prefix="$HOME/usr"
make && make install
```

Build libimobiledevice

```bash
cd ~/usr/src/libimobiledevice
./autogen.sh --prefix="$HOME/usr"
make && make install
```

Build usbmuxd

Unfortunately, `sudo make install` is required because it needs to write to `/lib/udev/rules.d` and `/lib/systemd/system`.

```bash
cd ~/usr/src/usbmuxd
./autogen.sh --prefix="$HOME/usr"
make && sudo make install
```

Build ifuse

```bash
cd ~/usr/src/ifuse
./autogen.sh --prefix="$HOME/usr"
make && make install
```

Connect iPhone

Create a mount point and verify the paths of the tools before executing.

```bash
$ mkdir -p ~/usr/mnt
```

```
$ type -P ifuse
/home/sam/usr/bin/ifuse

$ type -P idevicepair
/home/sam/usr/bin/idevicepair
```

Now attempt to mount using ifuse.

```
$ idevicepair pair
SUCCESS: Paired with device 37b633350ab83dc815a6a97dcd6d327b12c41968

$ ifuse ~/usr/mnt/

$ ls ~/usr/mnt/
AirFair  Books  CloudAssets  DCIM  Downloads  FactoryLogs  iTunes_Control  MediaAnalysis  PhotoData  Photos  PhotoStreamsData
PublicStaging  Purchases  Radio  Recordings  Safari  Vibrations
```

When you're finished. Unmount `~/usr/mnt` using `fusermount`. For example,

```
fusermount -u ~/usr/mnt
```

Browsing Photos

The mounted iPhone has an empty `Photos` folder. Strangely, this has no photos. Instead, look in the `DCIM` folder for photos.

I have only copied photos _off of my iPhone_ as a backup. I have not tried copying photos to my iPhone.

Browsing Music

It is a [known issue music sync no longer works][music] in later versions of iOS with libimobiledevice. Since Apple changed some
things (outlined in linked issues), music sync hasn't worked since as early as iOS 6 and still doesn't work.

[music]: https://github.com/search?q=org%3Alibimobiledevice+music&type=Issues