Getting Started with MAME and Mame Miner

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About this document

I decided to write this for a few different reasons. Mame in general can be difficult to use and after using it for a while I figured I could pass along some of the things that I have learned.

I also needed to document how to use Mame Miner, so I might as well try and do both in the same document

I hope you find this useful, and please direct your feedback to me at
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Chapter 1 - Setting Up Mame

About MAME and MESS

Mame is an amazing program and probably one of the most important pieces of software ever written. When it was initially formed, it could only run a handful of ancient arcade games, but since it's recent merger with the MESS project, it can simulate devices from the lowly gameboy all the way to a power mac.

Here is a full list of systems you can emulate with MESS
http://www.progettoemma.net/mess/sysset.php

Here is a full list of arcade cabs you can emulate with Mame
http://www.mamedb.com/

Download MAME

- You can grab mame from the official mamedev website. http://mamedev.org/release.php Personally I prefer the 64 bit version, but grab the one that's right for you.
- Alternatively, you check out AdvanceMAME and it's other projects.
    - http://www.advancemame.it/index.html - Specifically if you are going to use MAME with a non-computer screen display.
    - http://mame32fx.altervista.org/features.htm - Designed specifically for LCD monitors, and has a few other ehnancements.
    - http://hbmame.1emulation.com/index.html - Supports more hacks and homebrews than the official mame release.

Install MAME

- Run the mame installer, or extract the mame archive and set it to deploy to something simple like C:\MAME. You are going to want to keep the directory memorized.
- Now that you have your files extracted to somewhere you can find them, we need to generate a configuration file for mame.
    - Windows Key + R to open the run prompt
    - type in CMD to open the command window
    - type in `cd C:\MAME` to get to your mame folder

    - type in `mame64.exe -cc` to create a config file. Your version of mame may not be called mame64 if you are using one of the variants.
- If your mame folder does not already have a place to put roms, create a folder called roms.
- Open `c:\mame\mame.ini` in notepad or wordpad and set `rompath` to `c:\mame\roms`
- You can try running Mame, but it's going to kick you out because you don't have any games installed. If you want to play around with some public domain games you can grab them from the mamedev web site. http://mamedev.org/roms

Chapter 2 - Getting games for MAME

The Internet Archive

The Internet Archive. https://archive.org/ - is dedicated to preserving history digitally, and is my preferred source for acquiring files for MAME. The portal page for MESS and MAME is https://archive.org/details/messmame.

Download the following, preferably as torrents. Bandwidth still costs money and these files are huge.

- https://archive.org/details/MAME_0_161_ROMs - this contains the ROM files you will need in order to play games. Most of the time, this is all you will need.
- https://archive.org/details/MAME_0_161_CHDs - this contains CHD or Compressed Hard Drive files. This isn't as necessary, but some games do require them, mostly newer games that won't run well on MAME anyways. 90% of the time, you will only want the roms and not the CHDs.

Other places

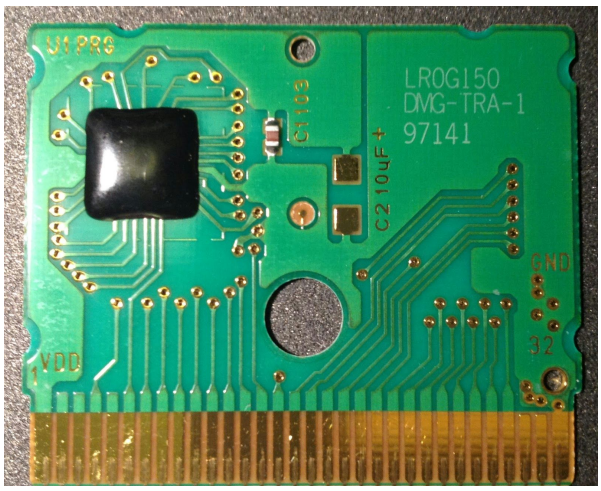
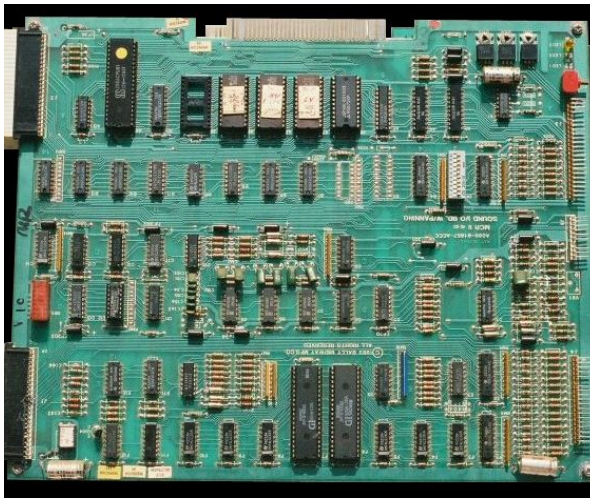
While the internet archive is the best place to get your ROMs sets, there are occasionally times where you need a one-off file, maybe you are missing some sound files or a BIOS. These can often be found by themselves on other sites.

- http://www.emuparadise.me/ - the best of the best.
- http://theisozone.com/ - has a lot of hard to find utilities as well as some games.
- http://www.emulator-zone.com/ - does not have any roms, but has lots of emulator tools.

Chapter 3 - How MAME Works

A game is a collection of roms

If you have done emulation before, you are probably used to a one game one file relationship. If you want to play pokemon red on your PC, you download a gameboy emulator and you find your pokemon red rom, you launch the emulator and find the rom and everything just works. This is not the case with MAME.

	
An example Gameboy PCB	An example Arcade PCB

For MAME, a game is a collection of roms inside of a zip file. These roms are dumped from the many individual chips on an arcade PCB.

Let’s take a look at an example MAME game, puckman. Puckman is the original Japanese version of Pac-man.

```
ROMs required for driver "puckman".
Name                    Size Checksum
pm1_prg1.6e             2048 CRC(f36e88ab) SHA1(813cecf44bf5464b1aed64b36f5047e4c79ba176)
pm1_prg2.6k             2048 CRC(618bd9b3) SHA1(b9ca52b63a49ddece768378d331deebbe34fe177)
pm1_prg3.6f             2048 CRC(7d177853) SHA1(9b5ddaaa8b564654f97af193dbcc29f81f230a25)
pm1_prg4.6m             2048 CRC(d3e8914c) SHA1(c2f00e1773c6864435f29c8b7f44f2ef85d227d3)
pm1_prg5.6h             2048 CRC(6bf4f625) SHA1(afe72fdfec66c145b53ed865f98734686b26e921)
pm1_prg6.6n             2048 CRC(a948ce83) SHA1(08759833f7e0690b2ccae573c929e2a48e5bde7f)
pm1_prg7.6j             2048 CRC(b6289b26) SHA1(d249fa9cdde774d5fee7258147cd25fa3f4dc2b3)
pm1_prg8.6p             2048 CRC(17a88c13) SHA1(eb462de79f49b7aa8adb0cc6d31535b10550c0ce)
pm1_chg1.5e             2048 CRC(2066a0b7) SHA1(6d4ccc27d6be185589e08aa9f18702b679e49a4a)
pm1_chg2.5h             2048 CRC(3591b89d) SHA1(79bb456be6c39c1ccd7d077fbe181523131fb300)
pm1_chg3.5f             2048 CRC(9e39323a) SHA1(be933e691df4dbe7d12123913c3b7b7b585b7a35)
pm1_chg4.5j             2048 CRC(1b1d9096) SHA1(53771c573051db43e7185b1d188533056290a620)
pm1-1.7f                  32 CRC(2fc650bd) SHA1(8d0268dee78e47c712202b0ec4f1f51109b1f2a5)
pm1-4.4a                 256 CRC(3eb3a8e4) SHA1(19097b5f60d1030f8b82d9f1d3a241f93e5c75d6)
pm1-3.1m                 256 CRC(a9cc86bf) SHA1(bbcec0570aeceb582ff8238a4bc8546a23430081)
pm1-2.3m                 256 CRC(77245b66) SHA1(0c4d0bee858b97632411c440bea6948a74759746)
```

Output generated from mame64.exe -lr puckman

These are all the files needed by MAME to play the game Puck-man. The first column is the name of the ROM. The next is the size of the rom in bytes, and the 3rd column is the 32 bit CRC hash of the file.

One of the unique challenges of MAME is that it is entirely possible for there to be 2 roms with the same name, same size, but different CRCs, meaning they have different contents. So it would not be possible to have every rom file in the same directory.

Parent and Child Roms

Another unique challenge of working with MAME and building playable games for MAME is that sometimes the only difference between two games may be only one or two ROMs. Let's compare Pac-man and Ms. Pac-man side by side.

```
ROMs required for driver "pacman".
Name                    Size Checksum
pacman.6e               4096 CRC(c1e6ab10) SHA1(e87e059c5be45753f7e9f33dff851f16d6751181)
pacman.6f               4096 CRC(1a6fb2d4) SHA1(674d3a7f00d8be5e38b1fdc208ebef5a92d38329)
pacman.6h               4096 CRC(bcdd1beb) SHA1(8e47e8c2c4d6117d174cdac150392042d3e0a881)
pacman.6j               4096 CRC(817d94e3) SHA1(d4a70d56bb01d27d094d73db8667ffb00ca69cb9)
pacman.5e               4096 CRC(0c944964) SHA1(06ef227747a440831c9a3a613b76693d52a2f0a9)
pacman.5f               4096 CRC(958fedf9) SHA1(4a937ac02216ea8c96477d4a15522070507fb599)
82s123.7f                 32 CRC(2fc650bd) SHA1(8d0268dee78e47c712202b0ec4f1f51109b1f2a5)
82s126.4a                256 CRC(3eb3a8e4) SHA1(19097b5f60d1030f8b82d9f1d3a241f93e5c75d6)
82s126.1m                256 CRC(a9cc86bf) SHA1(bbcec0570aeceb582ff8238a4bc8546a23430081)
82s126.3m                256 CRC(77245b66) SHA1(0c4d0bee858b97632411c440bea6948a74759746)
```

ROMs required for Pac-man

```
ROMs required for driver "mspacman".
Name                    Size Checksum
pacman.6e               4096 CRC(c1e6ab10) SHA1(e87e059c5be45753f7e9f33dff851f16d6751181)
pacman.6f               4096 CRC(1a6fb2d4) SHA1(674d3a7f00d8be5e38b1fdc208ebef5a92d38329)
pacman.6h               4096 CRC(bcdd1beb) SHA1(8e47e8c2c4d6117d174cdac150392042d3e0a881)
pacman.6j               4096 CRC(817d94e3) SHA1(d4a70d56bb01d27d094d73db8667ffb00ca69cb9)
u5                      2048 CRC(f45fbbcd) SHA1(b26cc1c8ee18e9b1daa97956d2159b954703a0ec)
u6                      4096 CRC(a90e7000) SHA1(e4df96f1db753533f7d770aa62ae1973349ea4cf)
u7                      4096 CRC(c82cd714) SHA1(1d8ac7ad03db2dc4c8c18ade466e12032673f874)
5e                      4096 CRC(5c281d01) SHA1(5e8b472b615f12efca3fe792410c23619f067845)
5f                      4096 CRC(615af909) SHA1(fd6a1dde780b39aea76bf1c4befa5882573c2ef4)
82s123.7f                 32 CRC(2fc650bd) SHA1(8d0268dee78e47c712202b0ec4f1f51109b1f2a5)
82s126.4a                256 CRC(3eb3a8e4) SHA1(19097b5f60d1030f8b82d9f1d3a241f93e5c75d6)
82s126.1m                256 CRC(a9cc86bf) SHA1(bbcec0570aeceb582ff8238a4bc8546a23430081)
82s126.3m                256 CRC(77245b66) SHA1(0c4d0bee858b97632411c440bea6948a74759746)
```

ROMs required for Ms. Pac-man

As you can see, these two games have a number of ROM files in common. This is because Ms. Pac-man was originally a conversion kit that sits on top of Pac-man. The chips that contain `pacman.5e` and `pacman.5f` are replaced with `u5` - `5f`.

Pac-Man can be considered a parent to Ms. Pac-man and Ms. Pac-man a child to Pac-Man.

So do you need a parent to play a child? No. But sometimes you can consolidate roms into parent sets and child sets. If you know that you are going to be playing both Pac-Man and Ms. Pac-man, you can choose to have the parent game, Pac-man, have all of it's ROMs inside `Pac-man.zip`, but have a zip file with only the files that are different for Ms. Pac-man. A parent game can be a parent to many children. A child game may only have one parent. The two different ways to store games are commonly called merged and split.

- Merged - The parent game contains all the files that it needs, while the child contains only the files that it needs when the parent is also present.
- Split - Each zip file contains the exact roms it needs to run, ignoring the parent-child relationship.

Now, with most romsets being over 50 GB, it can be an intimidating task to try and manage all these games. There are a number of different tools that you can use to process all these.

Chapter 4 - Alternatives to Mame Miner

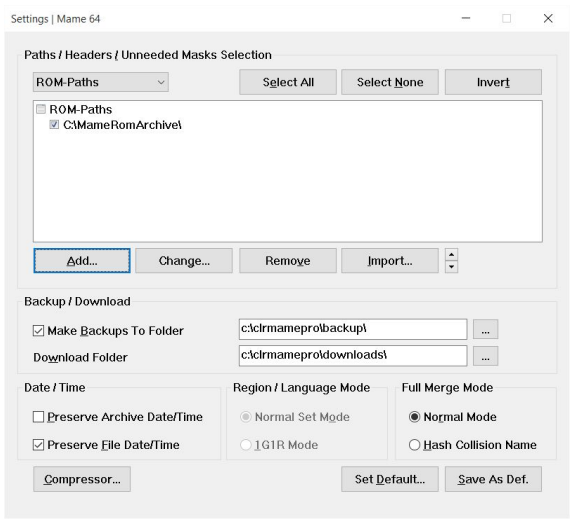
There are a number of tools out there to help you manage your MAME games, that can merge and split sets, and can keep your games up to date as new versions of MAME require different ROMs in order to function.

Before digging into Mame Miner, I would like to compare and contrast some of the other tools out there that you can use.

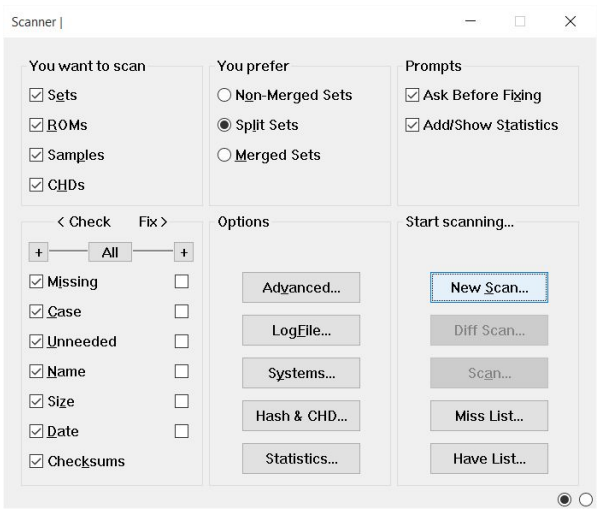
CLRMame Pro

http://mamedev.emulab.it/clrmamepro/

CLRMamePro main menu



CLRMamePro Settings

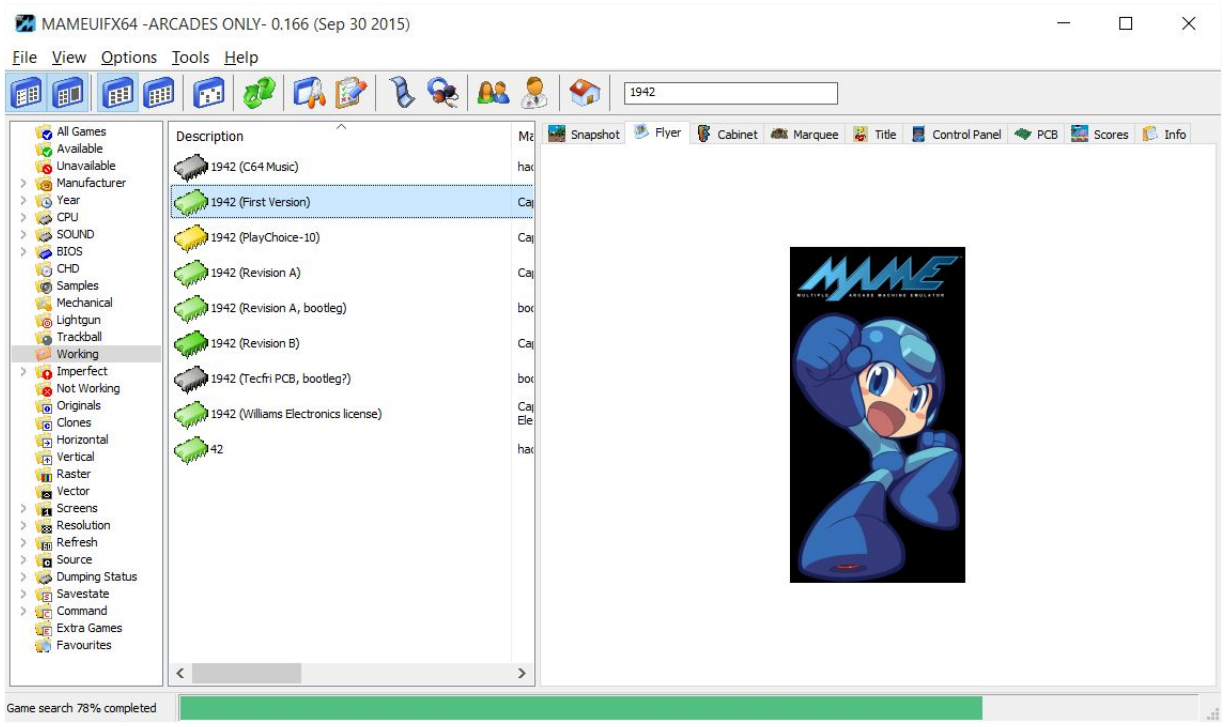


Scanning Menu

CLRMamePro is a good program, but definitely requires some thought and a decent tutorial to figure out. You are going to be spending a lot of time waiting for operations to complete and it's designed to work with DAT files and rom sets, not individual games.

MameUI FX

http://mame32fx.altervista.org/home.htm

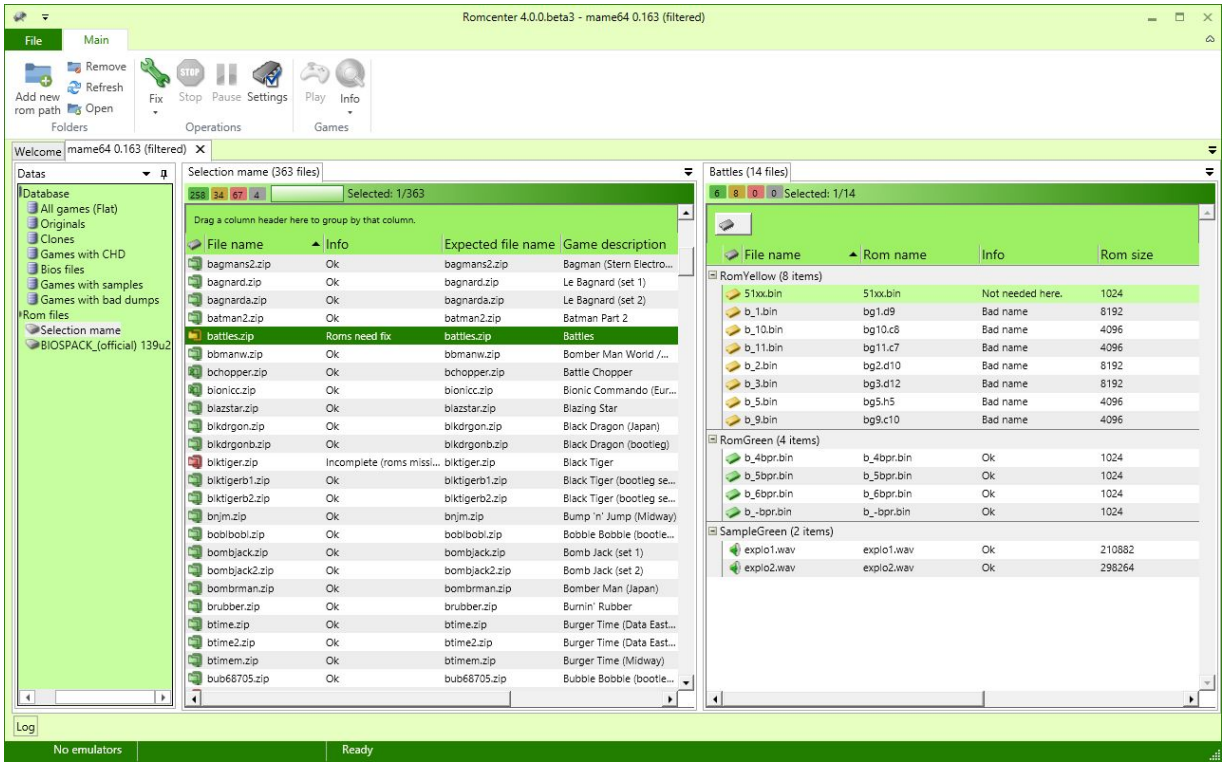


MameUI FX - Main Menu

MameUI FX is a version of MAME with a built in graphical user interface and primarily acts as a database. While it can tell you if games are working or are missing files, it's not able to rebuild games or manage roms. It's a decent all in one solution, and you can even use a gamepad to navigate around the UI.

Romcenter

http://www.romcenter.com/

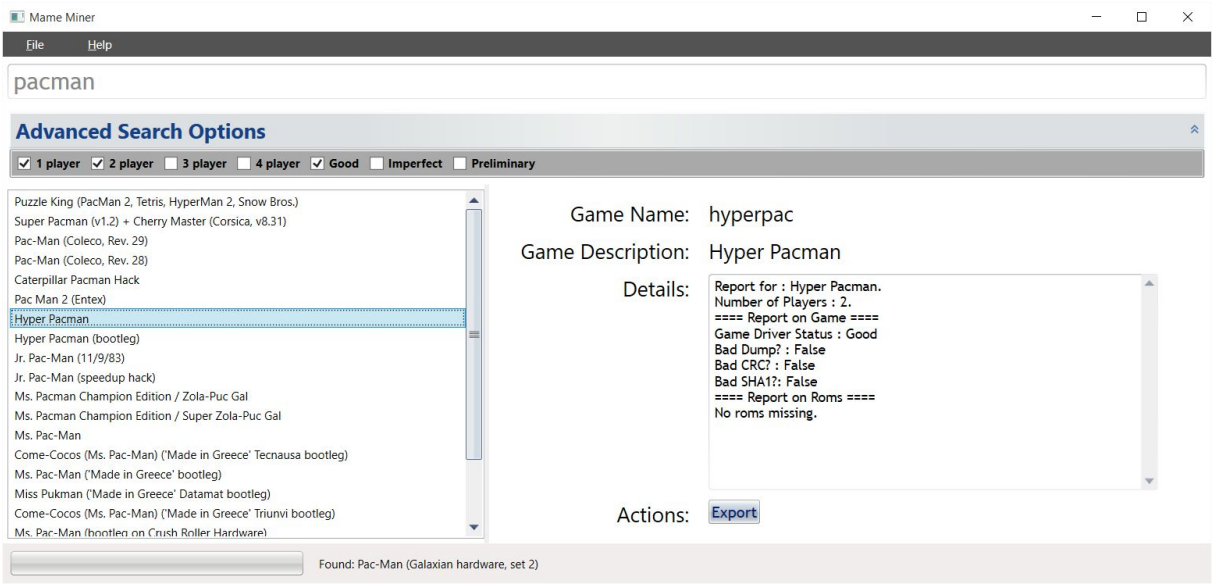


Romcenter 4.0b

Romcenter is another good tool for managing games, but is more of a general tool, and not just one for managing MAME games. It has the ability to export games from a collection as well. It can merge and split games in place. It works primarily by comparing archives against DAT and XML files. Versions prior to 4 would have issues causing program stability when working with large sets.

Chapter 5 - Mame Miner

https://github.com/longjoel/mameminer



Mame Miner Main UI

Mame Miner Settings

Features

- Mame Miner is exceptionally fast. Looking up games take a very short amount of time and games can be searched while the database is being built.

- Mame Miner is ridiculously simple. While there are fewer options, the ones presented are the most important for generating games.

- With the focus being searching for one working game at a time, not bothering with merged or split sets, and not having a bunch of extra features, Mame Miner is easy to use.

Getting Started

- Download Mame Miner from https://github.com/longjoel/mameminer - this is always where to find the latest version. In the future, Mame Miner may have an auto-updating installer.

- Extract it to somewhere that you can easily access it. I suggest somewhere like `C:\MameMiner`.

- Create a desktop shortcut for `MameMiner.exe`. You can do this by right clicking on MameMiner.exe and selecting `Send To`, and then `Desktop (Create shortcut)`

- Run Mame Miner

- The first time you run mame miner you will be prompted with the settings window. Here you will need to set the following
    - The Path to the Mame Executable - this is where the Mame program lives. Mame Miner uses Mame to find detail about the game such as how many players can play a game, and which files are needed to play a particular game.
    - Rom Import Path - This is where Mame Miner looks for zip files containing roms used to build games.
    - Game Export Path - This is where Mame Miner will put compiled games after building them. This is typically the roms folder inside the mame directory `C:\Mame\Roms`

- After setting up the Mame Miner settings you will need to generate the zip file database. This operation can be found under `File -> Generate Zip File Database`. **This will take many hours to complete, but you can continue using Mame Miner while this operation is running in the background.** Future versions of Mame Miner

will allow for recoverability in this operation if you close it while scanning.

- Now that Mame Miner is set up, you can begin searching and building games. Mame Miner has two ways to search for games. The standard search only searches by search title, and the advanced search lets you filter by the number of players, and the state of the game driver, working, partially working, and not working.

- Once you pick the game you want to export, Mame Miner will provide details on the game, including a report on missing roms and overall playability.

- At this point, you can click the `Export` button and Mame Miner will attempt to generate a zip file in the export folder containing all the roms needed to play a game.

- The final step is to run Mame, and test your game.

And with that, you now know everything you need to know to use Mame Miner. I hope this helps you quickly and easily build your Mame collection.