# Pinball Emulation Resources

Web Sites:
> VPForum:  https://www.vpforums.org/
> VPinball:  https://vpinball.com/
> VPUniverse: https://vpuniverse.com/

Visual Pinball 9/X:
> https://www.vpforums.org/index.php?app=downloads&showfile=11572
>
> This provides the 3D graphics and visual emulation of the machine. It can also be installed as part of the All In One Installer (see below).
>
> In most cases, to play a particular game you will also need to download a pinball table (.vpx or .vpt file), as well as a ROM image file.

Visual PinMAME:
> https://www.vpforums.org/index.php?app=downloads&showfile=11571
>
> Emulates the electronics found in hundreds of real pinball machines. Requires a ROM image to operate. It can also be installed as part of the All In One Installer (see below).

B2SBackglass Server:
> https://www.vpforums.org/index.php?app=downloads&showfile=12553
>
> Provides backglass images (the picture found behind the glass in the vertical "head" of a pinball machine) and, in some cases, even animates the lights and other parts of the image.

Tutorial and All In One Installer for Visual Pinball:
> https://www.vpforums.org/index.php?app=tutorials&article=1
> https://www.vpforums.org/index.php?app=downloads&showfile=11573
>
> If all you want to do is try out Visual Pinball without creating a whole cabinet, start here.

Direct Output Framework (DOF):
> https://vpuniverse.com/forums/files/file/5547-direct-output-framework-dof-r3-mjr/
> Config Tool:  http://configtool.vpuniverse.com/
>
> Communicates between the pinball emulator (such as Visual Pinball) and the hardware that controls the physical lights, solenoids, and other gadgets in a cabinet.

Pinscape:
> http://mjrnet.org/pinscape
> http://mjrnet.org/pinscape/BuildGuideV2/
>
> Open-source hardware boards that convert cabinet switch presses into joystick inputs, and control outputs such as LEDs and solenoids. Can also sense when a machine is being nudged and can read a ball plunger sensor.

PinballX:
> https://www.pinballx.com/
>
> This is one of many "frontends", which let you choose which game to play. It's not strictly needed just to try out pinball emulation, but very helpful to have if you are creating a full cabinet.

Future Pinball
> https://vpinball.com/forums/topic/future-pinball-and-bam-mega-guide-by-terryred/
>
> An alternative to Visual Pinball/Visual PinMAME which provides the 3D graphics and gameplay.

Pinball Hardware:
> Marco Specialties:  https://www.marcospecialties.com/
> Pinball Resource:  http://www.pbresource.com/
> Suzo-Happ (Wico):  https://na.suzohapp.com/products

# The Cost of Pinball Emulation

## The cheapest way: Free!

You can set up Visual Pinball or other emulators without creating a full cabinet. Instead of flipper buttons and other switches, you use a keyboard and a single, regular computer monitor. This is a great way to try out emulation to see if you like it, or if your hardware is powerful enough. For this, just install the basics using the tutorial:
https://www.vpforums.org/index.php?app=tutorials&article=1

## Specialized input hardware: $50-$200

The next level up is to keep using a regular monitor, but add a special controller. I built one by taking apart an old keyboard and wiring arcade game switches to it. This was housed in a box the same width as an actual pinball machine. I also included two joysticks, extra arcade switches and a rotary controller for playing emulated video games. Mass-produced consoles are also available.

# Full-out cabinet: $1578 - $2859

1. Cabinet: wood, tempered glass (x2), Lexan      $225
2. Hardware: legs, side rails, hinges, plastic/metal channels    $200
3. Audio system: speakers, amp      $75
4. PC
   a. Motherboard      $130
   b. CPU & cooler      $220
   c. RAM      $75
   d. Power supply      $50
   e. Case      $50
   f. Video Card      $160
   g. SSD      $40
   h. Windows      $0 - $100
   i. Wireless Keyboard/Mouse      $15
5. TVs/monitors
   a. 1, 2, or 3 total[1]      $50 - $800
6. Pinscape boards
   a. Circuit boards      $20
   b. Electronic parts[2]      $50 - $150
7. Switches      $18 - $75
8. Plunger (ball shooter)      $21 - $34
9. Tilt mechanism and plumb bob      $30
10. Coin door      $29 - $159
11. Solenoids      $20 - $80
12. Secondary power supplies for solenoids[3]      $40 - $60
13. Power strip: turns off everything when computer sleeps[4]    $10 - $40
14. Misc: paint, glue, screws, fuse holders, wire, connectors    $50

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[1] Check sites like Craig's List for used TVs
[2] You can skip some parts you know you won't need to save money
[3] A Power Over Ethernet (PoE) injector will work with 1-2 real pinball (50v) solenoids at once
[4] Check with your utility company for discounts on this kind of energy saving power strip