**General Resources**

[Molloy, Derek - Exploring BeagleBone\_ Tools and Techniques for Building with Embedded Linux-Wiley (2019) - Google Docs](https://drive.google.com/file/d/1pZmOTEW-kSfafobhv1C2eYOeMyvvT6Zj/view?usp=drivesdk)

**Pocket Beagle and Game Pup links**

[GamePup Cape Schematic](https://docs.rs-online.com/4833/A700000007073043.pdf?fbclid=IwAR3uT4p1SwCt6GKyHbX5ricLpjU8PUWUPvg7IJV3ux3Oyl_GNbOFFLV_Zuc)

[Device Tree A2 repo link](https://github.com/beagleboard/bb.org-overlays/blob/master/src/arm/BBORG_GAMEPUP-00A2.dts)

[Jason Kridner Repo for A4](https://github.com/jadonk/bb.org-overlays/tree/b6aecdd60acc25115531599223222f99d000b1b6/src/arm)

-Use A4 for the buttons

-Page 253 of the book discusses gpio configuration

-gpio60 is the gpio associated with pin 2\_8

[Jason Testing Repo (Beagle Tester)](https://github.com/jadonk/beagle-tester)

**Advance MAME**

[Retro Arcade: Get Your Game On With Pocketbeagle (electromaker.io)](https://www.electromaker.io/project/view/retro-arcade-get-your-game-on-with-pocketbeagle)

Useful Notes:

./configure $ make -j3 $ sudo make install

* 3 separate commands

Note: If something is missing, try checking /var/lib/cloud9\_backup\_examples/

To install games put the zip file in /usr/local/share/advance/rom

[Jason's MAME repo](https://gist.github.com/jadonk/1b6a3c17059fe5a1977f3d1e5d12f916)

[Website for MAME roms](https://www.retrostic.com/roms/mame)

[Sound driver errors? on MAME](https://gist.github.com/jadonk/d435886df74a061052d82c1d7e22313b)

<https://alsa-project.org/wiki/DeviceNames>

<https://www.advancemame.it/download>

<https://github.com/amadvance/advancemame/releases>

<https://sourceforge.net/p/advancemame/discussion/313511/thread/7cde48b8/>

<https://sourceforge.net/p/advancemame/discussion/313511/thread/65c163741f/>cd

**Enable console**

sudo systemctl disable getty@tty1.service

sudo systemctl start getty@tty1.service

**Running MAME From USB Keyboard (it is important to pay attention to if you are using cloud9 or the external keyboard):**

* Make sure console is turned on
  + Disable console : # systemctl disable getty@tty1.service
* Plug in keyboard to gamepup
* Login
  + Username: debian
  + sudoPassword: temppwd
* Connect to internet (can be done on cloud9)
* Speaker test (can be done on cloud9)
  + Let that play out
  + If SHOULD stop by itself
* Go to advancemame directory on keyboard
  + cd /var/lib/cloud9/advancemame
* On keyboard type advmame
  + Double check if the .advance directory is in the root before doing this step
* Switching back to **cloud9** : sudo su
* cd root
* cd .advance
* Edit advmame.rc file
  + Go to this link : [github with mame](https://gist.github.com/jadonk/1b6a3c17059fe5a1977f3d1e5d12f916) and copy the .rc file and replace the code in your advmame.rc
    - Want to make sure that your advmame.rc has the same code as the advmame.rc file from the github repo
    - the ONLY thing you need change in your .rc file is to have : device\_video auto
* From the **keyboard connected to your gamepup** make sure you are in the advancemame folder
  + FRAMEBUFFER=/dev/fb0 advv
* Hit F5 on your keyboard
  + The next steps are very crucial! **MAKE SURE** you type in the following numbers correctly
* Type 60 and hit enter
* Type 128 and hit enter
* Type 160 and hit enter
* Hit F2 on your keyboard
* Hit Esc on your keyboard
* Type: FRAMEBUFFER=/dev/fb0 advmame robby (this starts the game)
  + Robby game should start

**.service file tutorial**

* In cloud9 directory, create test\_buttons.sh: # wget https://gist.githubusercontent.com/jadonk/1b6a3c17059fe5a1977f3d1e5d12f916/raw/d1173c5edbdcf7f50e5746aee4e446237848f49c/test\_buttons.sh
* Go to the debian@beaglebone:~$ directory: # cd
  + Make sure you’re not in debian@beaglebone:/$ (just do cd, not cd ../../..)
* Create and open the advmame.sh script: # sudo nano advmame.sh
* Inside the script, paste these lines:

#!/bin/sh

systemctl disable getty@tty1.service

/var/lib/cloud9/internetOverUSB

/var/lib/cloud9/speaker.sh

sleep 20s

/var/lib/cloud9/lv\_port\_pocketbeagle/demo

FRAMEBUFFER=/dev/fb0 advmame robby

* Save and exit the script by pressing Ctrl+x, then pressing Y for save, then press enter
* Make the script executable: # sudo chmod +x advmame.sh
* Change to the /systemd directory: # cd /lib/systemd/system
* Create and open the advmame.service script: # sudo nano advmame.service
* Inside the script, paste these lines:

[Unit]

Description=ADVMAME

After=systemd-user-sessions.service

After=rc-local.service

IgnoreOnIsolate=yes

[Service]

#User=debian

ExecStart=/home/debian/advmame.sh

Type=idle

-Restart=always

RestartSec=10

UtmpIdentifier=tty1

TTYPath=/dev/tty1

TTYReset=yes

TTYVHangup=yes

TTYVTDisallocate=yes

KillMode=process

IgnoreSIGPIPE=no

SendSIGHUP=yes

Environment=LANG= LANGUAGE= LC\_CTYPE= LC\_NUMERIC= LC\_TIME= LC\_COLLATE= LC\_MONETARY= LC\_MESSAGES= LC\_PAPER= LC\_NAME= LC\_ADDRESS= LC\_TELEPHONE= LC\_MEASUREMENT= LC\_IDENTIFICATION= FRAMEBUFFER=/dev/fb0 HOME=/home/debian

[Install]

WantedBy=multi-user.target

* Save and exit the script by pressing Ctrl+x, then pressing Y for save, then press enter
* Enable the new service: # sudo systemctl enable advmame.service
* Start the service:# sudo systemctl start advmame.service
* To stop service:
  + # sudo systemctl disable advmame.service
  + Reboot
* Reboot PocketBeagle and make sure your keyboard is not connected to PocketBeagle anymore
* Make sure you don’t have cloud9 running on your computer
* After you reboot, the terminal should show up on the LCD - do not type anything into this, robby should replace the terminal after a few seconds
* **Current Issues: none of the controls are working on the ROM anymore (solved)**

**LVGL**

[Set up LVGL in Visual Studio](https://www.programmersought.com/article/72644634583/)

[Documentation Page backup (shouldn't look ugly)](http://lvgl.io/docs/latest/en/html/index.html)

[LVGL Documentation](https://docs.lvgl.io/latest/en/html/index.html)

[Input device interface — LVGL documentation](http://lvgl.io/docs/latest/en/html/porting/indev.html#button)

[Hardware button usage | LVGL’s Blog](https://blog.lvgl.io/2019-01-08/hardware-button)

**“Boot to Menu Screen” Tutorial**

* Clone/pull the repo into cloud9
  + It’s the “Our Repo” link above in the LVGL section
* Cd into /var/lib/cloud9/lv\_port\_pocketbeagle, and run make
  + Sudo make
* cd into /home/debian
* Then, create **menuscreen.sh**
  + Sudo nano menuscreen.sh
* Inside this file, paste these lines:

#!/bin/sh

systemctl disable getty@tty1.service

/var/lib/cloud9/internetOverUSB

/var/lib/cloud9/speaker.sh

sleep 20s

/var/lib/cloud9/lv\_port\_pocketbeagle/demo

* Save and exit
* Then, create **restart\_service.sh**
  + Sudo nano restart\_service.sh
* Inside this file, paste these lines:

sudo systemctl disable advmame.service

sudo systemctl enable advmame.service

sudo systemctl start advmame.service

sudo reboot

* Save and exit
* Chmod +x all the new .sh files you created
* Change to the /systemd directory: # cd /lib/systemd/system
* Open the advmame.service script: # sudo nano advmame.service
* Change the ExecStart line to “ExecStart=/home/debian/menuscreen.sh”
* Save and exit
* Then, cd back to /home/debian, and do ./restart\_service.sh

**New Roms**

* [Roms repo](https://github.com/GamePup-Handheld/rom)
* In cloud9, cd into lv\_port\_pocketbeagle, and run “git pull” to get the new code changes
* Run sudo make
* Then cd to /home/debian, and run ./restart\_service.sh

**Adding new games**

* Put ROMS in the correct directory in Cloud9
  + /usr/local/share/advance/rom
* **Important:** Don’t change names of zip files
  + For tetris, the zip file is “atetris.zip”. When I tried to change the name to ‘tetris.zip’, the game wouldn’t work anymore.
* Then cd to /home/debian, and run ./restart\_service.sh
  + You should have this sh file from the “Boot to menu screen” tutorial on Page 5
* Make sure you can play the new games
  + Some games require more controls (buttons, joysticks) than we have on our GamePups
  + Some games are also real laggy (if over 1 MB in size)
  + Some games also show “required files are missing” errors when you do sudo systemctl status advmame.service
  + The games that I found are the only games that work (and look fun lol) within the first 20 pages of <https://www.retrostic.com/roms/mame>
* If a game works, keep in repo

**Makecode**

[Make Code Arcade (where we discovered a4)](https://gist.github.com/pdp7/4343f454f76e5c96664793d784a9a3b7)

Make code error: ALSA lib pcm.c:8424:(snd\_pcm\_recover) underrun occurred

**Other Tutorials**

How to increase storage capacity

[Expanding File System on SD card](https://drive.google.com/file/d/1uVPoY7Ony5RnfuloHsSvWPpEv9QkNByM/view?usp=drivesdk)

How to install an overlay

Requirements

1.dts file has been compiled

1. If not compiled then put the overlay file in the BBorg overlay directory
2. Run sudo ./install.sh

2. Dtbo file exists in /lib/firmware/

Steps

If no other overlay is currently installed

1. echo uboot\_overlay\_addr0=/lib/firmware/Name\_of\_file.dtbo | sudo tee -a /boot/uEnv.txt
2. Sudo reboot

If an overlay is already installed

1. Open /boot/uEnv.txt
2. Go to the bottom of the document.
3. Insert a line “uboot\_overlay\_addr0=/lib/firmware/Name\_of\_file.dtbo”
4. Save and exit (wq on vim)
5. Sudo reboot

How to connect to the Internet

[Tutorial from the Book](https://drive.google.com/file/d/1QHB77N1Nnvzotwy3nz3-Ixoi_xEb4oF2/view?usp=drivesdk)

[Internet over USB script](https://github.com/derekmolloy/exploringBB/blob/version2/chp02/internetOverUSB)

Useful notes:

Make this file an executable by first doing command “chmod u+x internetOverUSB”

Then do “sudo ./internetOverUSB”

If your stuff is completely screwed

1. [If the script doesn't work use this to reset](https://kerneltalks.com/virtualization/how-to-reset-iptables-to-default-settings/)
2. Make sure to disable and then enable sharing
3. Turn off any firewalls when re-enabling sharing

How to fix ALSA Error:

1. Change version to 4.14 using code provided on slack
   1. sudo /opt/scripts/tools/update\_kernel.sh --ti-channel --lts-4\_14
   2. sudo reboot
2. See note below.
3. Run advmame on one of the test roms in sudo
   1. sudo advmame robby

NOTE:

After you have installed the new kernel mentioned in slack:

* Create a file called speaker.sh
* Copy the code below into speaker.sh
* Make speaker.sh an executable by running “chmod +x speaker.sh”
* Run speaker.sh

config-pin p1.33 pwm

echo 1 > /sys/class/pwm/pwmchip0/export

sleep 1

echo 1000000 > /sys/class/pwm/pwm-0\:1/period

echo 500000 > /sys/class/pwm/pwm-0\:1/duty\_cycle

echo 1 > /sys/class/pwm/pwm-0\:1/enable

sleep 3

echo 0 > /sys/class/pwm/pwm-0\:1/enable

echo 1 > /sys/class/pwm/pwmchip0/unexport

sleep 1

sudo modprobe snd-pwmsp

speaker-test -f 100 -t sine -l 1

ssh 192.168.7.2 -l debian

<http://exploringbeaglebone.com/>

<http://exploringbeaglebone.com/chapter13/>

<https://www.amazon.com/Exploring-BeagleBone-Techniques-Building-Embedded/dp/1119533163/ref=sr_1_2?dchild=1&keywords=exploring+beaglebone&qid=1604436303&sr=8-2>

<https://www.amazon.com/BeagleBone-Cookbook-Software-Hardware-Solutions/dp/1491905395/ref=sr_1_5?dchild=1&keywords=exploring+beaglebone&qid=1604436323&sr=8-5>

<https://en.wikipedia.org/wiki/Qt_(software)>

<https://www.youtube.com/watch?v=hxBnE1-YSoA>

<https://www.youtube.com/watch?v=jvgDwkkKtBA> (shorter one )

[1 ELC-2018 E-ALE PocketBeagle Walkthrough - Jason Kridner](https://www.youtube.com/watch?v=jvgDwkkKtBA)