



FunBox Classic (FBC)

INITIAL PROJECT AND GROUP IDENTIFICATION DOCUMENT

STEPHEN CASKEY

ANNA ISKENDER

NICK JOHNSON

KYLE MCCLEARY

Goals and Objectives

The project contains elements that each member of the group is interested in. In addition, we can constantly add new elements at will as needed or desired with relatively little effort. Plus, it's fun.

Our end goal is to create a portable device that will allow us to play games from retro gaming consoles, updated with some more modern features such as Bluetooth controllers. Our objectives include:

- A touchscreen
- Emulates old consoles
- Bluetooth Controllers
- Custom Power Controller
- Extra Solar Powered Charger
- Micro USB charging
- Support for original cartridges
 - o Can download games from cartridges to device
- Internal memory
- SDXC support
- Controls on the device
- LED Lighting
- Custom Operating System
 - o Support for split screen play.
- Portable size
- Power-Efficient
- Headphone jack
- Internal Speakers
- Hardware Volume Controls
- Sleep Mode

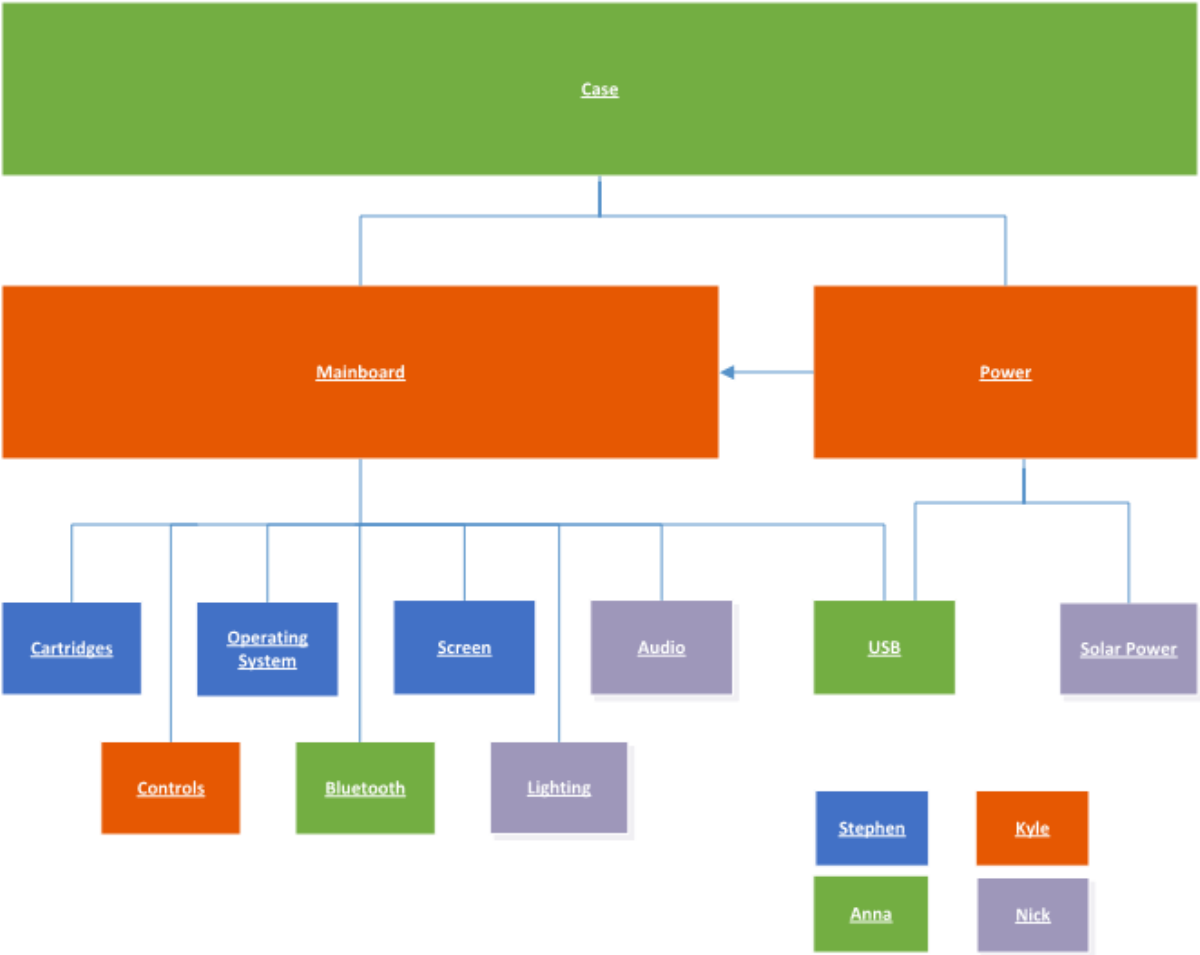
The most essential function of our device is to replace all of a user's old gaming systems. Controls on the device are necessary to insure that the device remains portable and easily useable. We're including custom-designed Bluetooth controllers for multiplayer support without adding bulk to the device. We decided to include a solar panel to increase the longevity of the device on the go. Original cartridge support is key for avoiding copyright infringements and allowing users to make use of what they might already have lying around. Micro USB charging was chosen to support a pre-existing standard and to lower the cost on the user in terms of cables. In addition, we plan on using the port to transfer data to the internal memory. SDXC support was added to allow the user to cheaply upgrade available space on the device and to support a wide range of memory cards. LED lighting was chosen to maximize brightness and minimize power consumption. Hardware volume controls were added so that the user isn't surprised by the volume level when powering on the device or resuming from sleep mode.

Specifications and Requirements

- A 6.2" resistive touchscreen
- LCD Controller
- Emulates old consoles
- Bluetooth 4.0 LE support
- Bluetooth Controllers
- Custom Power Controller
- 1500 mAh Lithium Ion battery
- Extra Solar Powered Charger
- Micro USB charging
- Support for original cartridges
 - o Can download games from cartridges to device
- 2GB flash memory
- SDXC support
- Controls on the device
- LED Lighting
- Custom Operating System
 - o Support for split screen play.
- Portable size
- Power-Efficient
- 3.5mm headphone jack
- Internal Stereo Speakers
- Hardware Volume Controls
- Sleep Mode

We plan on having a battery life of 3-5 hours, depending on system emulated, brightness, and other conditions. The device will have a 6" resistive touchscreen to cut down on cost compared to a capacitive touchscreen. The touchscreen will be used solely for operating system and emulator control. We are purchasing an LCD controller as we have no desire to break the screen by making a custom controller. That functionality will not be available to the games. We are including Bluetooth 4.0 LE for speed, reliability, and, most importantly, power efficiency. The device will emulate: NES, SNES, and the entire Gameboy line. The device controls will include: A Directional Pad, four main buttons (ABXY), start and select buttons, two shoulder buttons (LR), hardware volume controls, a home button, and a power button. The case will be 3D printed to fit the components, such that size and weight can be minimized.

Block Diagram:



Block ID	Color	Assigned	Acquired	Block Status			
				Research	Design	Prototype	Completed
Case	Green	Anna	No	Yes	No	No	No
Mainboard	Red	Kyle	No	Yes	No	No	No
Power	Red	Kyle	No	Yes	No	No	No
Cartridges	Blue	Stephen	No	Yes	No	No	No
Operating System	Blue	Stephen	No	Yes	No	No	No
Screen	Blue	Stephen	No	Yes	No	No	No
Audio	Lavender	Nick	No	Yes	No	No	No
Controls	Red	Kyle	No	Yes	No	No	No
Bluetooth	Green	Anna	No	Yes	No	No	No
Lighting	Lavender	Nick	No	Yes	No	No	No
Universal Serial Bus	Green	Anna	No	Yes	No	No	No
Solar Power	Lavender	Nick	No	Yes	No	No	No

Budget:

- 6-7" Touchscreen: \$125
- Battery: \$10
- Solar Panel: \$15
- Power controller: \$5
- Bluetooth transmitter: \$6
- Stereo speakers: \$15
- Processor, Board, RAM, Internal Flash: \$70
- LEDs: \$5
- Case: \$20
- Controller: \$30
- Buttons for device: \$10
- Total: \$311

All financing will be provided by us.

Project Milestones:

1st Semester:

- Try to identify and obtain all necessary parts
- Have design of device fully completed
- Begin building initial prototype
- Begin coding initial prototype operating system

2nd Semester:

- Finish Fully Functioning Prototype
- Create final documentation