ANIBALLS

A CIRCULAR SAFARI

An Adventure in Game Design

THE ANIBALLS TEAM

Todd Cowden
Game Design, Creative Direction, Illustrations,
Programming, Sound Design

Katie Cowden
Game Design, Level Design, Marketing,
Researcher, Quality Assurance

Connor Cowden
Game Design, Level Design, Quality Assurance

Danielle Cowden
Photography, Quality Assurance

PROLOGUE

The Theory Behind the Game

I'm a strong believer in using games as learning tools. Everyone can relate to games. They can make even the most mundane and repetitive task interesting and fun. If you want proof of that, just take a quick look at most of the Massively Multiplayer Online Games on the market today.

My daughter Katie was reading at a second grade level when she entered kindergarden thanks mainly to the speed chat system in Disney's "Toon Town" game. To this day she types faster than anyone I've ever seen. My son Connor knows more about world history and American history at age 9 than I probably ever did throughout high school, due to the plethora of realtime strategy and military games he's played. Not to mention he can beat the pants off of many adults when it comes to strategy games.

So, I know there are benefits to playing games that extend much further than "improved hand-eye coordination". But I'd like to take that thinking a step further. If people can learn while PLAYING games, can they learn even more and more effectively if they are CREATING games?

That was the question that drove the Aniballs project. How much could we all learn while making a single game? For Aniballs it would mean learning a new programming language; studying the effects of global warming; learning basic trigonametry; the basic laws of physics; and more than we could ever imagine about endangered animals.

The striped pattern on a tiger is unique, like a fingerprint.

Danielle's the one with the camera.

ANIBALLS TEAM

Connor Cowden

Connor is headed to the 4th grade. He has been a die-hard gamer his entire life. He loves just about every type of game, from real-time strategy, adventure games, to roll playing games and first person shooters.

I would put his knowledge of World War II vehicles, ships and planes against any historian out there.

Danielle Cowden

Danielle is a photography major at the University of Texas in Arlington. She handles any Aniballs photography we need and pretty much helps keep us all sane.

A gamer herself, she is more selective of the games she plays. But when she locks on to one it's best advised to stay out of her way.

Katie Cowden

Katie just completed the 6th grade. She's a straight 'A' student, and a member of the National Junior Honor Society.

When she's not doing her homework, or gathering research for Aniballs you'll most likely find her at the dance studio practicing tap, jazz, ballet, modern or hip hop.

Todd Cowden

Todd is a 10 year veteran of the games industry, with 2 years in the collectible card game industry and another 8 creating casual games for Fortune 500 companies such as Kraft, Universal Pictures, LucasFilm, and Microsoft. In total, he has helped create literally hundreds of games.

WHAT IS ANIBALLS?

Getting the Ball Rolling

The idea for Aniballs originated with a bedtime discussion with Katie. We were just talking about games we would like to make, and games we would like to play. It's a pretty common topic around our house. I brought up the basic mechanics of a physics based game; either throwing balls at a target, or catching balls. I asked, "What would be fun to catch?"

Katie, being the huge animal lover she is suggested that maybe catching animals would be fun. That led to discussions about zoos and animals escaping from the zoo which became our initial storyline concept. But the more we thought about animals escaping from the zoo, with the player's job being to capture them and return them to captivity, the more we felt a little bad for the animals. A feeling that probably came from too many viewings of "Madagascar".

From Capturing to Rescuing

In doing our initial research for which animals we were going to feature in the game, we discovered a lot of really interesting facts about endangered species. That's when Katie suggested that instead of capturing animals for the zoo, what if the player was rescuing endangered species and relocating them to nature reserves. Well the idea seemed perfect and it stuck.

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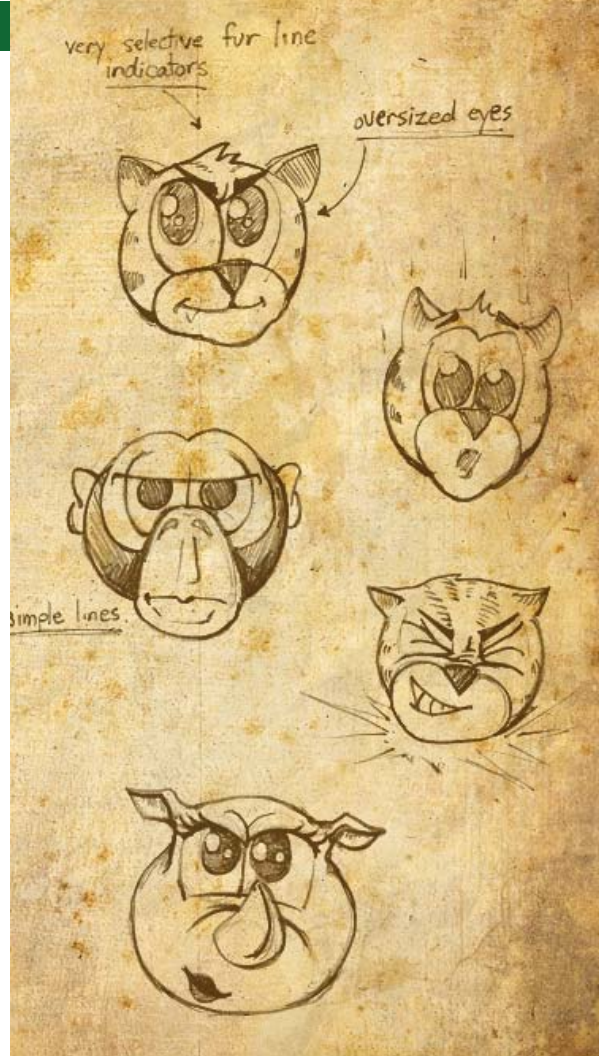
EARLY CONCEPTS

Once we decided to stick to endangered species, we began researching and selecting which animals would be featured in the game. Our first thoughts were that we would feature literally dozens of animals, which gave the game more of a "Pokemon" collector approach. We also planned on focusing purely on the jungle for our background environment. But the more we discovered about various endangered species, the more we realized that by focusing strictly on the jungle we would be leaving out a lot of animals.

So we expanded our initial selection of environments to include the Rainforest, the Savannah and the Arctic. That gave Aniballs a wide range of animals and a distinct color palette for each environment.

Getting Things Under Control

Originally, Aniball's control method was tilting the phone from side to side which affected how the Aniball fell through the level. Early tests proved that the tilt mechanic was too hard to control and made the game more a game of skill, rather than a puzzle based game. As a result, the tilting mechanic was exchanged for the tap and drag control mechanic as it is in the game today.

Some of the early animals to be featured in the game included elephants, bears, gorillas, flamingos, and tigers.
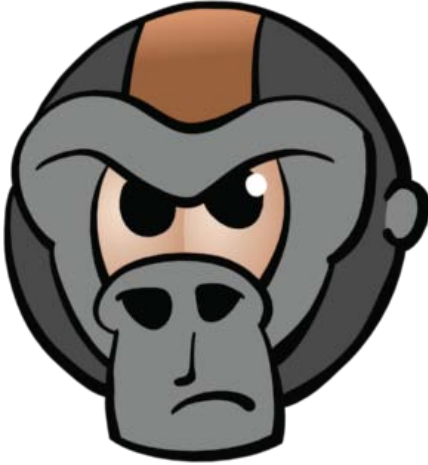
THE RAINFOREST

Going Green

The Rainforest, Aniball's first environment, features a lush green jungle environment with occasional scattered showers. Grass, rocks and wooden logs were thrown in to give the environments a range of physics properties that would react differently when the Aniballs collided with them.

When it came time to brainstorm on possible hazards in the rainforest we didn't have to look far to see things that were dangers to the forests. With all the deforestation that the Rainforests are currently fighting, elements such as fire and circular saws seemed to be fitting hazards for our Aniballs.

The DNA of a human and a chimpanzee are 99% identical.

The first Aniballs players encounter are in the Rainforest. They include the Western Lowland Gorilla, the Tiger and the Margay.

THE RAINFOREST

Starting Out Simple

Since the Rainforest was the first environment, it was also the place where players had to learn the basics of the game. Players begin with just one Aniball to select from. Then we gradually introduced the other Aniballs so players could get a feel of how each played differently. We introduced the hazards one-by-one so players learned how to deal with them without being overwelmed.

Another element that made the Rainforest levels easier was the ever-present bamboo borders on the right and left sides of the screen. The bamboo insured that players could only lose Aniballs at the bottom of the screen, and not the sides.

Getting that Puuuurfect Score

One of our biggest goals of Aniballs was to create a game that was very simple to play, but truely difficult to master. We also wanted to welcome a broad audience of players from virtually any age. Combine those two statements together and you've got one heck of a game design challenge.

We designed the levels to be relatively easy to complete, but very hard to get a perfect score on. That way players could progress from level to level, at their own pace. The hope was that players would want to push themselves and replay the levels until they had achieved that "puuurfect" score.

Night vision of Tigers is six times better than that of humans.

THE RAINFOREST

Not Making the Cut

There were a couple of game mechanics we tried out in the Rainforest that, for one reason or another, we ended up removing from the game. Sometimes the mechanic didn't test well, or didn't work exactly as we had intended, or it just wasn't something 'fun' to deal with.

Ultimately, with the Rainforest being the first environment, we decided we had more than enough elements for players to learn how to deal with. As a result, the hanging cage and pressure plate were left out of the game.

hanging cage

pressure plate

THE SAVANNAH

Warming Things Up

The second environment, the Savannah, is filled with warm orange and red hues, in strong contrast to the natural greens of the Rainforest. The dense foliage of the jungle is also gone, replaced by an open Savannah sky where the player can see all the way to the sunset on the horizon.

After studying the Savannah, we discovered that it has it's own set of challenges in nature.

Too Much Water?

When most people think of global warming, they think of extended heat waves and drought. In the Savannah however, global warming is having a very different effect. It actually brings an excess of rain to an environment carefully balanced around very little water.

This extra rain causes the trees to grow faster and denser, which creates extra shade which in turn starves the low lying grass and foliage from sunlight.

That's not to say the Savannah isn't dry. The majority of the time the Savannah is still dry enough to make wild fires a serious threat. With all that in mind, we decided to make fire and water our Savannah Hazards.

Sand Cats can live in places that reach 126 degrees fahrenheit.

THE SAVANNAH

In the Savannah environment, you'll find the Rhino,
the Cheetah and Lemur Aniballs.

THE SAVANNAH

Making Things a Little Tougher

By the time the player plays any of the Savannah levels they have already completed all the Rainforest levels and have a good understanding the of base game mechanics. We knew from the beginning that we wanted each environment to have something unique about it, and something that makes this environment a little tougher than the last.

What's New?

In addition to the free-spinning and motorized platforms of the Rainforest we added a horizontal sliding platform, a massive rolling boulder, and a "ball shooter" to the Savannah. Just as in the previous environment, we spaced out the introduction of each of these new elements through the entire environment so there was always something new for the player to discover.
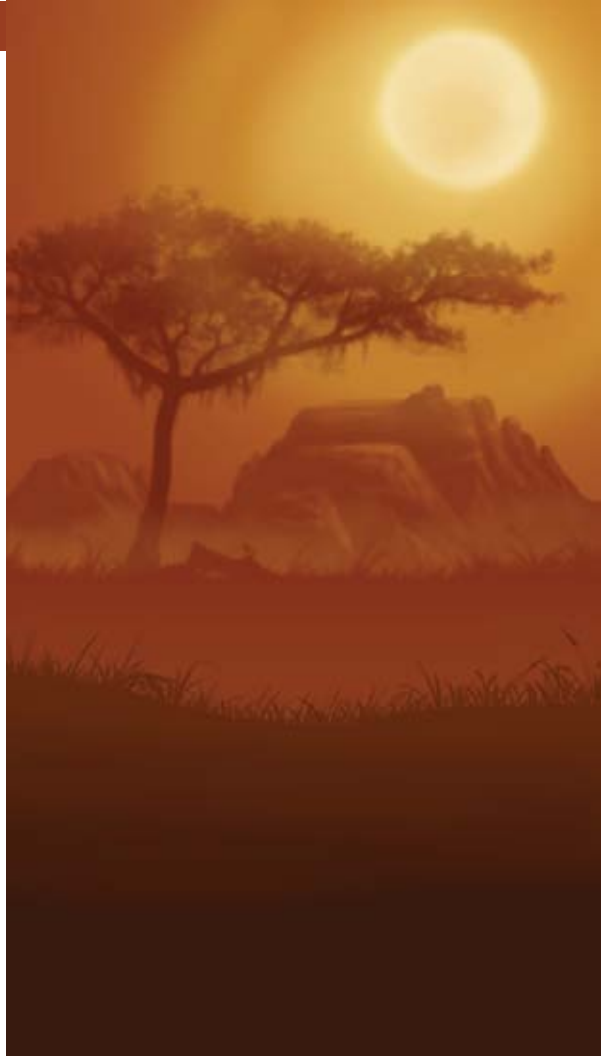
THE SAVANNAH

What's Hard?

All the new items definately made the game harder, but I think the change that added the greatest amount of difficulty is not something we added...but something we removed.

Every level in the Rainforest was bordered by tall bamboo. That made it impossible to lose an Aniball on either side of the screen. Players could bounce balls off the walls all they wanted, and the Aniballs always returned safely back to the play area of the level. Beginning in the Savannah we removed one or both side walls which made the level much more dangerous.

At only a week old, Dama Gazelles are strong enough to run at 68 mph.

THE ARCTIC

Feeling Blue

The final environment in Aniballs is the Arctic. Once again, we wanted a change of color to the new levels and the Arctic left us with lots of white and cool blues. If you'll excuse the pun, it provided the perfect polar opposite of the warm colors of the Savannah.

Let it Snow

The most dramatic new addition to the Arctic levels was arctic wind. Wind that could blow so hard that it could actually lift the smallest Aniballs into the air. The problem was, how do you see wind? After messing around with various direction lines and transparent waves...and failing, the answer was much simpler. Snow.

On each level of the arctic that had wind effect, we made sure there was plenty of snow in the air to get blown around. The snow served as the perfect visual aid to where the wind was and roughly how hard it was blowing.

All Wet

To subtly illustrate the melting of the polar caps we carried over the water hazard from the Savannah to the Arctic. It fit the theme very well and the cool blue color of the water worked even better alongside the blue and whites of the Arctic than with the warm tones of the Savannah.

Polar bears are so well insulated, they are practically invisible to infrared cameras.
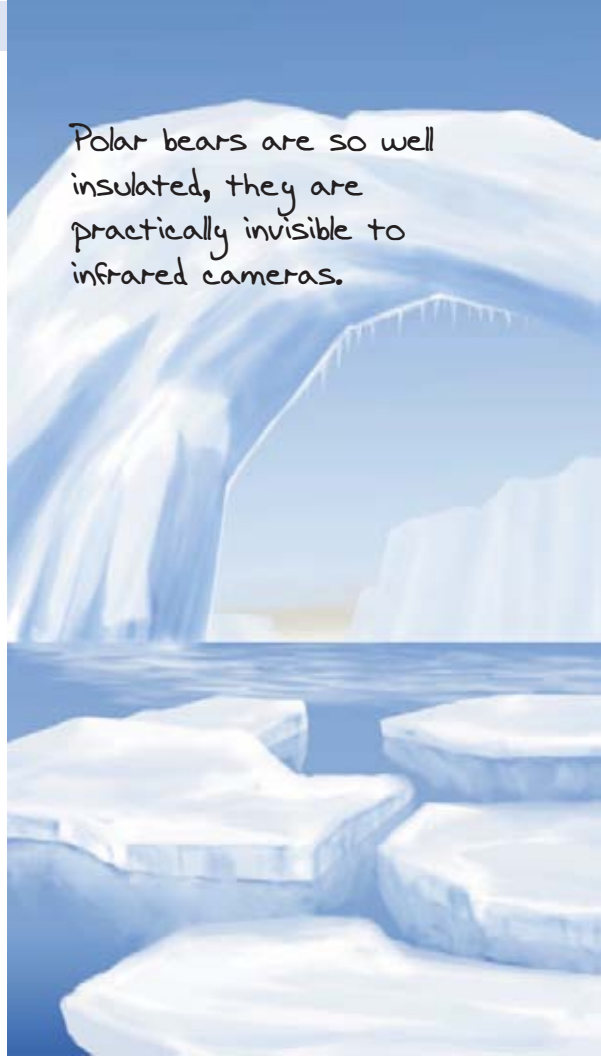
The Arctic features the Polar Bear, the Arctic Fox,
and the Snowshoe Hare.

THE ARCTIC

Finding Fruit

One of the biggest design challenges we faced with the arctic environment took us by complete surprise. A key element in the game is eating all the fruit on the level. One type of fruit was stationary, while the other moved from side to side.

In the Rainforest and the Savannah finding exotic fruits that were unique to each environment was fairly easy to do, but we realized pretty quick that finding two types of native fruits in the arctic was proving harder to find. What kind of fruit grows in the snow and ice?

After a good while of scouring the internet we finally stumbled across a couple of very unique fruit types that were native to the arctic, the Cloudberry and Crowberry.

Cloudberry   Crowberry

THE ARCTIC

Cloudberry

The Cloudberry resembles a raspberry or blackberry. They are incredibly hardy plant can withstand temperatures as cold as -40°C. It does not grow on the icy glaciers, but instead grows on the outskirts of the arctic environment in the mountains.

More interesting, was that 16th century sea explorers had journals and reports that showed that cloudberry did miraculous things for sailors that had come ill with scurvy.

Crowberry

The Crowberry looks a lot like a blueberry in appearance. Usually the berrys are harvested in the fall. But if they are not picked at that time, then they remain on the plant and can be picked in the spring instead.

The oversized feet of a snowshoe hare prevent it from sinking in the snow when it hops.

LEVEL DESIGN

The Right Tools

It doesn't take the latest cutting edge technology to create a game. As you can see here, the Aniballs team used the very latest in high-tech crayons in our initial level designs.

We color coded the game objects, green represented grass platforms, purple and red represented the fruit and yellow marked the location of our cages in the level.

All team members were familiar with crayons so they were free to focus purely on the level designs. Creating the levels on paper also forced the team to make preleminary calculations in their head on how the physics would affect the path of the falling Aniballs. Sometimes we guessed well, other times served as a good lesson in basic physics.

Notes:

Notes: Heavy

Notes: Bouncey

HighTech Crayola design tools!

LEVEL DESIGN

Going Digital

After we had stacks of levels designed in crayon, we took those levels, selected ones that looked particularly interesting, and created them in a tool called "Gumbo". It is ia shareware level design tool for Corona.

Much of the interface was drag-and-drop which made it easy for Katie and myself to use. It just took a few minutes of instruction before Katie was able to design the levels in Gumbo and transfer them to .lua programming (and Corona).

Once the levels were in the game there was still a lot of tweeking and adustments to be made. Sometimes the physics didn't play out like we thought they would. Sometimes the levels just looked "strange". Othertimes the levels just didn't seem to be possible to complete at all.

Build, Play, Repeat

We went through a cycle of building the levels, then playing the levels, then making any changes to the levels to improve them, then playing them again. This was done over and over again for each level, until the level had a good "look" to it, and it was "fun" to play.
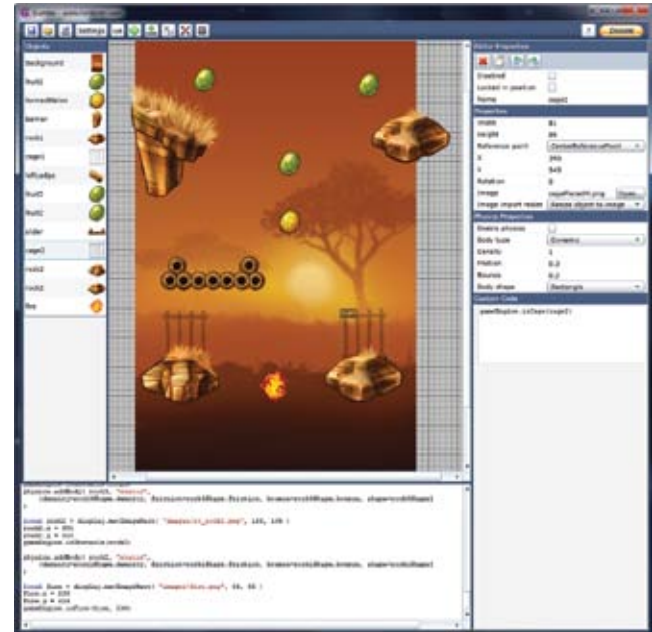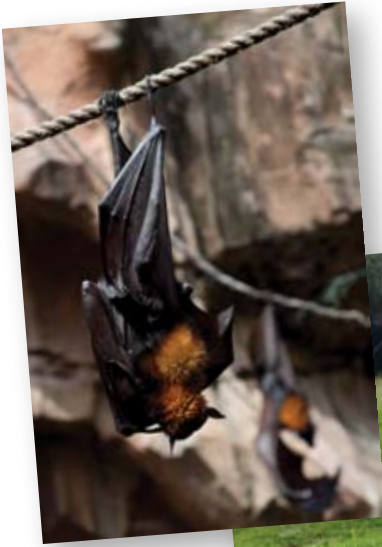
BADGES

A Collection of badges from the game, inspired by Boy Scout merit badges.
The borders of the badges indicate how difficult they are to obtain. Bronze borders
are easy. Silver borders are hard. And Gold borders take a lot of effort to collect.

Always Learning

Throughout the course of development, we continued our animal research in various ways. Connor was really good about checking out books on animals that he saw at the library. We would then read those books at bedtime or for his school reading assignments. We also spent some time at the local zoos and were even lucky enough to visit Disney's Animal Kingdom and take a tour of their nature reserve.

FERAL FACTS

Really Cool Stuff

After doing all the research about animals, we discovered a lot of really cool info. Did you know that Polar bears spend more of their life in the water than on land? Or that some Chimpanzees have shown an aptitude toward photographic memory? And did you know that elephants have over 40,000 muscles in their trunks? That's a lot of muscle, and that is some seriously cool trivia.

We felt these cool facts should be shared with the players and we felt that the level loading screen was the perfect place to share them. We figured, if you're going to be waiting a few seconds for each level to load then you could at least pick up a cool bit of trivia while you're at it.

We brainstormed on a few names, and "Feral Facts" immerged as the clear winner. Feral is another word for "wild", and well, I'm big on illiteration (just look at Katie and Connor's names.)

The response from early playtesters was very positive. Many made comments about liking the facts shown before each level, and to date...we haven't had a single person complain about level loading times.

Elephants can communicate over many miles by creating sub-sonic rumbles in the ground.

Be Careful, You Might Learn Something

While I'm not sure Aniballs could jump through all the hoops that would enable it to officially be labeled "educational software" we're strong believers that games are a great way to learn new things. If you can teach people, in a truely fun way then why pass up that opportunity.

A "Voice" for the Aniballs

Once we developed the Feral Facts, we thought it might be good to give them a human face. We tried briefly to have a professional animal expert present the info, but in the end that wasn't possible so we opted to create a character based around Katie instead. Aniballs was her idea after all so it seemed fitting. Not to mention the fact that there are few people I can think of that love all animals more than Katie.

Ranger Katie

HOW TO HELP

One factor that is causing a lot of animals to become endangered is global warming. The good news is, there are things you can do wherever you live that can actually help reduce global warming. Here are five simple things you can do at home to help prevent global warming, and it may even save you some money at home.

1. Recycle

Paper, plastic, newspaper, glass and aluminum cans. See if there is a recycling program at your work or school. If there's not, ask a supervisor or adult about starting one.

2. Change Your Lightbulbs

Whenever possible replace regular light bulbs with compact fluorescent light bulbs. Replacing just one 60-watt incandescent light bulb with a CFL light bulb will save you $30 over the life of the bulb. They also last 10 times longer, use two-thirds less energy, and give off 70% less heat.

3. Turn it Off

If you're not using it, turn it off. Turn off lights when you're not in the room, turn off the TV when you're not watching it. And this doesn't apply just to electricity. If you're washing your car or dog, or brushing your teeth only turn the water on when you need to rinse. You'll save yourself some money on your water bill and help conserve water.

4. Plant a Tree

Each year millions of trees are lost to fire, deforestation, and other human activities. If you have the means, plant one of your own. A single tree will absorb approximately one ton of carbon dioxide during its lifetime.

5. Control Your Temperature

Turn down your heater while you're sleeping at night. Try setting your thermostat just two degrees cooler in the winter and two degrees hotter in the summer. Not only will it save you some cash yearround, it will also save about 2,000 pounds of carbon dioxide each year.

Everyone can help make a difference and it doesn't take much.

Go Do It!

Our advice to people, young or old, that are interested in creating games is simple, just do it. You don't have to be a computer whiz, or have a degree in programming. There are plenty of tools available that will allow just about anyone to create just about any type of game you can imagine. Some of these tools require a little investment, others are completly free. We've listed some on the last page of the book.

Get a Little Help

If you're young, ask your parents to help. If you're a parent, ask your kids for help (believe me, they'll come up with ideas you would have never thought of.)

Creating a game is a pretty big job, and it's more fun if you do it with a friend.
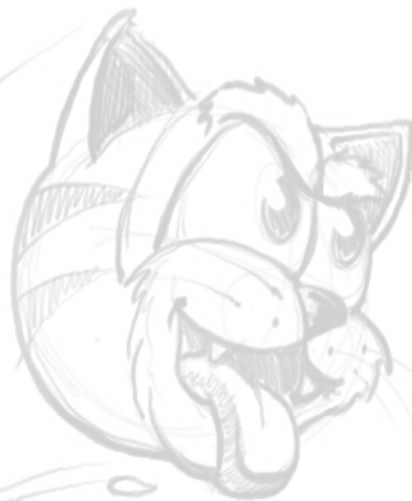
SPECIAL THANKS

Honorary Rangers

Fifth grade teachers at Dickenson Elementary School Jamie Long and Sheri Merrill.

Facebook Rangers

Robert John Boehmer, Steve Glenn Smith, Curry McKnight, Steve Clements, Nora Nelson, Stephaine Smith, Christine Shelton Lakatos, Eric Schaefer, Tony Bountwell, Rusty Bentley, Apryl Taylor Herrell, Jennifer Medina, Darrick Barron, Patrick Sneeringer, Rhonda Johnson, Monica Eva Fashfellow VanBeekum, Becca Smith, Jessie Smith, Brooke Helm, Rachel McNeill, Ally McNeill, Phong Hong, Beth McFayden, Max Bolen, Catherine Sagers Davis, Jay Rutherford, Kevin Harris, Derrick Lord, Eugene Heckert, Chris Batchelor, ZooKeeper Rick, Peach Pellen, Sonia Edith Saldaña Aleman.

Visit the Aniball's site and like us on Facebook.

http://aniballs.toddworld.com
http://www.facebook.com/aniballs

CREATE A GAME

Corona
http://www.anscamobile.com/corona
The tool we used to create Aniballs with. It's great for 2d mobile games and apps. It's free to download and learn with. The fully licensed version will require a small investment but it's well worth it. Some programming experience helps.

Unity 3d
http://www.unity3d.com
If 3d is your thing then the Unity 3d engine is about as good as it gets...while keeping the price below the cost of a car. You'll need a way to create 3d assets, and it uses both Javascript and C# as programming languages. Some programming and 3d experience is required. There is a basic FREE version, but it takes a substantial investment to develop mobile games.

Scratch
http://scratch.mit.edu/
Developed by the smart folks at MIT this is a great tool for beginners. It has a simple to use drag and drop interface that still teaches basic programming structure and methods. It's a little like programming with LEGOs. It's absolutely FREE. It's pretty limited in terms of possible game mechanics, but it's a great learning tool for simple games. No experience required.

RPG Maker
http://www.rpgmakerweb.com/
If Roll Playing Games (RPG's) are more your style then this engine for you. You can create an entire game without touching code at all. Simple drag and drop interface and tons of built in graphics and sound assets mean you can start building your game on day one. For more indepth customization and game options some Ruby programming is required. Priced at less than $50 and no programming experience makes this a super tool for future RPG developers.

Adventure Game Studio
http://www.adventuregamestudio.co.uk/
Remember the golden age of point-and-click adventure games? Kings Quest? Space Quest? Maniac Mansion? If you've ever wanted to create your own adventure this is the way to do it. It has a drag and drop interface and it's own simply scripting language which keeps the barrier to entry low. Best of all, it's FREE. No programming experience is required.