

Quokka Blokka Design Document

High Concept

Quokka Blokka is a unique spin on the endless runner genre that requires players to combine problem-solving skills with quick reflexes.

A Quokka runs across the screen to escape from a bushfire, and in order to keep him alive the player must create a pathway out of falling blocks that keeps them running safely for as long as they can. However, these aren't just any blocks- they're tetrominoes, and the rules of Tetris apply to them! Forming a straight line of 7 blocks will cause the row to disappear, which could help you lower an obstacle, but might also send you plummeting into an abyss! To make things even more exciting, some blocks will be imbued with special properties, like the Slippery block that will send your Quokka gliding through the air.

Target Genre, Audience, and Platform

Quokka Blokka is designed for PC as a primary platform, but may one day be adapted for tablets. Quokka Blokka, due to its difficulty, leans towards a 'hardcore casual' audience but truly anyone can play it. Due to how quickly a death can come, the game's actual play time is usually quite short. This makes it a 'pick up and play' kind of game- it's easy to learn, but continues to provide further complexity the more you play it. Mistakes are punished harshly which is popular within that more hard core community.

Quokka Blokka's easy to learn nature makes it a game that is possible for all audiences to give it a try. The game's momentum mechanic means the game will only play as fast as you are able to make it go. This means that the more hard-core audience can try and keep momentum mechanic at max speed. Whereas the less confident players will not be able to maintain that level and will have a slower game.

Quokka Blokka will also tap into many established fan bases, such as Tetris fans, arcade fans, and endless runner fans. The game draws mechanics and traits from each of those varieties of games, and combines them all in a way that hasn't been seen before.

Design Goals

Challenge

Quokka Blokka is a game designed to challenge a person's ability to problem solve quickly and effectively whilst multitasking. The true challenge lies in having the short term strategic thinking without losing concentration and making a mistake.

Building a path for the Quokka requires keen problem solving skills and strategic planning. You need to work out the most effective way of keeping the quokka moving without climbing too often or falling through holes. The player needs to understand how best to use each block to create a safe path for the Quokka. They also need to incorporate power ups in a way that maximises their usefulness, all the while remembering that forming a row of 7 blocks will result in your blocks disappearing.

Player 'mistakes' are a large part of the deaths that occur in Quokka Blokka, resulting in deaths that are frustrating but also inspire the player to try one more time because they'll be thinking "I could

have done that better". These 'mistakes' are scenarios where the player does something along the lines of: trapping the Quokka (i.e. making him bump his head on a block above), squishing the Quokka with the player block, clearing a row beneath the Quokka or stacking the blocks too high to allow the fire to catch up. There are very few situations in Quokka Blokka that result in instant death, death for most players come as a sequence of mistakes that build upon the player. It's the ability to make as few mistakes as possible and keep a constant concentration.

Drama

The dramatic arc of this game is tied closely to the momentum mechanic. As the Quokka's momentum increases the intensity increases. The player has less time to place their blocks and consequently less time to think.

Though the player wishes initially to be fast to outrun the fire, the faster they go the harder the game becomes. It becomes a balancing act trying to keep speeds high but manageable.

There is a small period of relief given during gameplay through the sprint mechanic power up. Since it gives a slight break through its path generation and allows the player to have a small break from the tension.

Consequence

A single block can have huge effects on the game when placed- it could cause a row to disappear, it could help the player over an obstacle, it could even trap the player and kill them. Quokka Blokka is a game that encourages players to look ahead and plan a strategy, thinking through the consequences of each block they place. This becomes increasingly difficult and exciting as the Quokka's momentum increases, as the player has less time to think through their actions.

Mechanics

Movement

The Quokka is a two-block tall, two-block wide creature which must navigate through the level on the player-made path over and under obstacles, all the while keeping off the 'ground' and ahead of a pursuing wall of fire. To do this, it has a range of movements it can make:

Running

The Quokka travels right across the screen. The Quokka can run whilst there is a block underneath it and there is no block in front of it. The score that is displayed in the top-right corner of the screen tracks the number of block units that the Quokka has travelled past. The player can increase the momentum of the game by letting the Quokka run. Every four blocks the Quokka runs without *climbing* or *falling* increases the game speed by one. There are four achievable speeds; slow, medium, fast and very fast. Increasing momentum is the best way to increase the Quokka's distance from the fire, however the trade-off is that forming a connected path becomes increasingly hard. At higher speeds the player is better off forming platforms for the Quokka to jump between, rather than one continuous path.

If the Quokka runs into a block, they will begin climbing. If the Quokka is no longer supported whilst running, they will begin falling.



Figure 1 - The Quokka running across a platform

Climbing

The Quokka travels up towards the top of the screen. The Quokka can climb whilst there is a block in front of it. The player can decrease the momentum of the game by letting the Quokka climb. Every two blocks the Quokka climbs decreases the game speed by one. Decreasing momentum is a good way to reduce the franticness of the game and make it easier to form a connected path, however the trade-off is that it becomes more difficult to maintain a distance from the fire, and there is little room for any further climbing before the Quokka is caught by the fire.

If the Quokka encounters a block above its head or reaches the top of the screen whilst climbing, it will lose a life and be resurrected. If the Quokka encounters no block in front of it whilst climbing, it will begin running on top of the block it previously climbed.



Figure 2 - The Quokka climbing a stack of blocks

Falling

The Quokka falls diagonally, right and downwards. The Quokka falls whilst there is neither a block beneath it to run on, nor a block in front of it to climb. Falling is a useful tool in avoiding some

obstacles and avoiding hitting the top of the screen, but more than often is a frantic accident which the player must manage carefully to avoid the Quokka falling to the bottom of the screen. Often falling will necessitate climbing, which will lower the speed of the game and makes it easier to avoid long falls. This helps the player to keep the game at a manageable speed.

If the Quokka falls to the bottom of the screen, the Quokka loses a life and is resurrected.

If the Quokka encounters a block beneath its feet whilst falling, it will begin running. If the Quokka encounters a block in front of it, it will begin climbing.



Figure 3 - The Quokka falling off a stack of blocks

Player Blocks

Random Tetris Blocks spawn from a portal-like Spawner located two-thirds towards the right of the screen. These blocks are in the traditional Tetris shapes (the O, I, S, Z, L, J and T blocks) and all have equal chance of being selected. Player Blocks are made up of individual units, and appear in four visually distinct varieties – one for each of the power-ups and one for no power-ups. There is a 10% chance of a block being spawned that has a power-up attached to it.



Figure 4 - The varieties of player blocks

The player uses these blocks to form a path for the Quokka. The player can perform four actions with the block: move to the left, move the right, move down and rotate (using the arrow keys – Left, Right, Down, Up respectively). A block travels a block unit every movement and rotates 90 degrees clockwise every rotation. These blocks are also subject to gravity and will move down the screen once every second, however the timer resets if the player moves the block down manually.

Once any part of a block is supported by a non-player-controlled block on screen or contacts the bottom of the screen, the current Player Block is locked in position, its' individual block units are considered separate, and a new Player Block is spawned. If the player moves their block left, past the fire – that block will be destroyed and a new block will be generated.

If the placing of a Player Block results in a consecutive row 7 or more blocks long, that row will be removed from play and every block located above that row will be made subject to gravity and will fall down one block unit every second until they are either supported by another block or contact the bottom of the screen. Row elimination can be a good method to simplify obstacles or stopping the Quokka from running into an impossible climb if the player is lucky enough to pull it off.

The Quokka interacts with blocks in several different ways. If a Player Block or any falling block, (as a result of row elimination) falls onto it, the Quokka loses a life and is resurrected. A Quokka can run on and climb on blocks depending on its position. Depending on its mode of travel, and the power-up that a non-player-controlled block has, the Quokka will activate special modes that allow it to overcome the limitations of its movement.

Random Spawn Blocks

Blocks will spawn from the right side of the screen at random heights as the game is played. These blocks can only spawn as low as an eighth of the screen's height, while no higher than half-way up the screen.

These limitations ensure they do not spawn too close to the spawner and cause a newly spawned player controlled block to instantly fall onto it without allowing the player to move it, while also providing enough room for the player to manoeuvre the falling block around the game space. The blocks have a minimum height in order to be of use and not limit players who end up at the bottom of the screen.

The point of the blocks spawning like this add an element of randomness to the game, which requires the player to figure out how to best use a situation of randomly spawned blocks to create a smooth path for the Quokka to run along efficiently. Without them, the game would just consist of a loop of the player constructing a staircase to the top, then letting the quokka fall to a block placed at the bottom.

These blocks constantly spawn throughout the game, only stopping when an obstacle appears, and have no special effects.

Resurrection

Upon the Quokka bumping its head, falling into the abyss, or being squished, it will be brought back to life in exchange for one of its lives, allowing the player to continue their run. Resurrection does not work when being caught by the fire, or any situation where the player is out of lives. In these instances it will be a Game Over

Upon being resurrected the blocks around the Quokka will be deleted, and a small straight platform will appear for the Quokka to run along. The blocks are deleted around the Quokka to give a clear area to begin constructing new paths, while a small path is made to allow the player to have some time to begin constructing a path from or near the platform.

If the Quokka dies from falling to the bottom of the screen, then it is raised slightly to allow for some height on the new life. If it dies from hitting the top of the screen, then it is lowered slightly before resurrecting to allow for some room to build a path. Otherwise it is resurrected on the spot it dies in.

Every 100 metres run by the Quokka (1 block = 1 metre) earns the player an extra life. This is to reward skilful players with leeway for their mistakes.

Roof and Floor Deaths

If the player climbs too high or hits the bottom of the screen, then they will be killed and resurrection takes place.

The roof and floor are death mechanics as they are areas that are intended to be avoided. Having the Quokka be able to climb too high would cause the game to be too easy by just placing as many blocks as possible to keep the Quokka high. Similarly, placing minimal blocks or not creating a path for the Quokka will cause it to fall and it would be too simple to allow the Quokka to walk along the floor.

This death mechanic forces players to engage with the mechanics, and not just sit back and let the game play itself.

Power up blocks

These allow for the Quokka to interact with the environment in a different way than normal, in order to give it an advantage in its progression. Each player controlled block has a 10% chance of having a power-up effect attached to it, ensuring for an adequate chance of spawning while not making them too frequent.

Sprint - activated by Running on a lightning block.

Sprint clears blocks from a large area around the Quokka, and creates a growing straight path for 15 blocks in front of the Quokka. This is to enable the Quokka to get out of any tight spots that it might be in, as well as to gain a large amount of acceleration for some easy points.

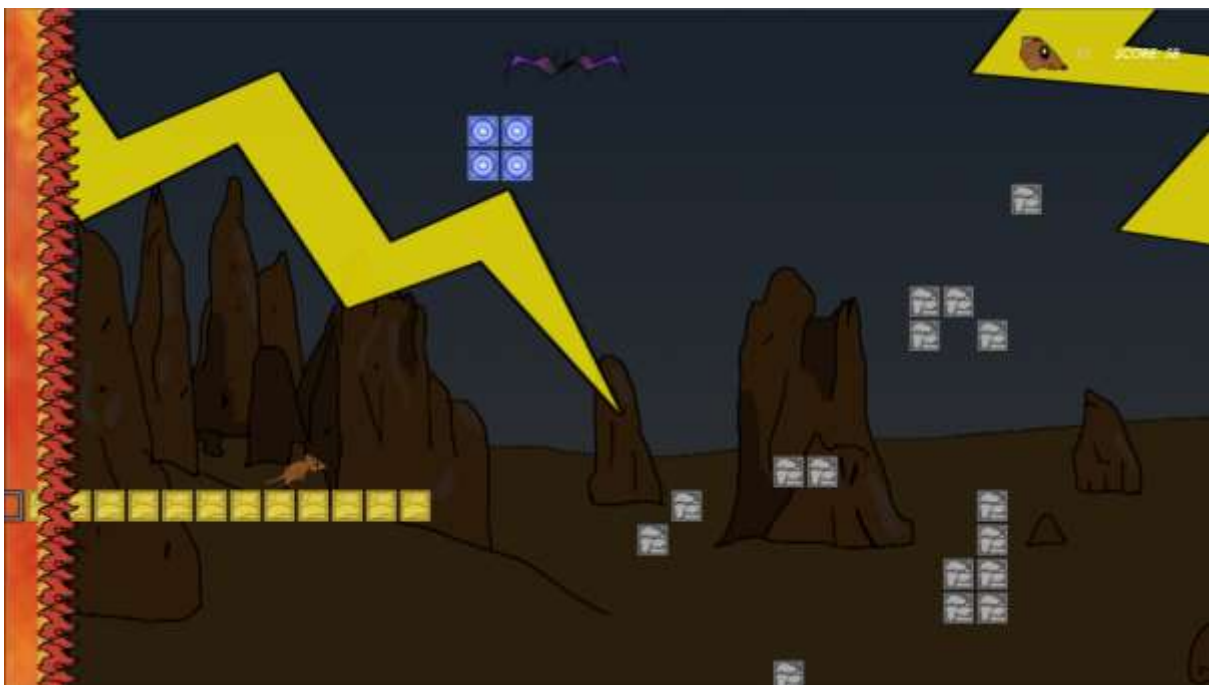


Figure 5 - The effect upon activating a sprint power up block

Elevator - activated by climbing a wind block.

Elevator allows for the Quokka to climb up a block without having to slow down as it normally would

do on a standard block. This can be most efficiently used when the Quokka needs to get up high to avoid danger or quickly manoeuvre around an obstacle, but the cost of climbing would otherwise be too damaging to its progression away from the fire.



Figure 6 - The effect upon activating an elevator power up block

Slippery - activated by Running on water painted block.

Slippery allows the Quokka to float forward over gaps for a distance equal to the number of slippery blocks the Quokka walked on, where normally it would fall through the gap. If the Quokka was to walk on three slippery blocks, then it will float three blocks forward after the slippery blocks end. This usage can allow for the player to have quick solutions to any gaps within the Quokkas path, some of which can occur accidentally from block line removal.



Figure 7 - The effect upon activating a slippery power up block



Figure 8 - The distance travelled when using a slippery power-up block

Pursuing Entity

As the Quokka travels across the screen, it is pursued by a wall of fire displayed on the left of the screen. The primary function of the fire is to encourage the player to minimise the amount of climbing the Quokka performs. As described earlier, when the Quokka climbs, momentum is lost, but the fire also continues to advance upon the Quokka.

The speed at which the fire travels is governed by three rules, in descending order of priority:

Rule 1

While the fire is very close to the left border of the screen, it will match the speed of the Quokka and the camera. Whilst the fire travels like this, it appears to be fixed on the left of the screen. This rule is typically used during normal game-play and allows the fire to remain on screen no matter what speed the game is at.



Figure 9 - The first fire rule in action

Rule 2

Whilst the fire is between approximately 25%-50% of the screen's width away from the Quokka, the fire will travel at the second slowest speed – Medium. With this rule in effect to put any distance between Quokka and fire, the player must increase their momentum (by running uninterrupted for a length of four blocks) to attain a minimum speed of Fast. This rule generates most of the difficulty in the game as players will often find themselves within the threshold and mistakes made are much harder to recover from than under Rule 1. If a player can't reach the Fast Speed, outrun the fire and put Rule 1 back in effect; the fire will keep pace with the quokka and potentially gain ground if any further climbing takes place, leading to:



Figure 10 - The second fire rule in action

Rule 3

Whilst the fire is between 0%-25% of the screen's width away from the Quokka, the fire will travel at the slowest speed – Slow. With this rule in effect, the player must attain a minimum speed of Medium to outrun the fire. This rule is easier to escape than Rule 2, and the player will either transition back to Rule 2 or be caught by the fire rather quickly. In addition to allowing the player a better chance of maintaining some distance between the Quokka and the fire, this rule also allows for a “cinematic” slow death as the fire slowly creeps up on the often slow-climbing Quokka. Climbing whilst this rule is in effect is nearly always game over.



Figure 11 - The third fire rule in action

Obstacles

Each time a new screen is loaded and the camera wraps around to the beginning, a pre-designed obstacle is loaded. These are structures that we have created with our Obstacle Editor that provide a less random element of the game. They are separated into 'high' and 'low' obstacles that appear depending on the player's height and aim to force the user around the screen instead of sticking to a single path. They also test a player's navigation skills, as they usually can't just mash the down button to carry a block through, and will instead have to navigate them through clusters of blocks.

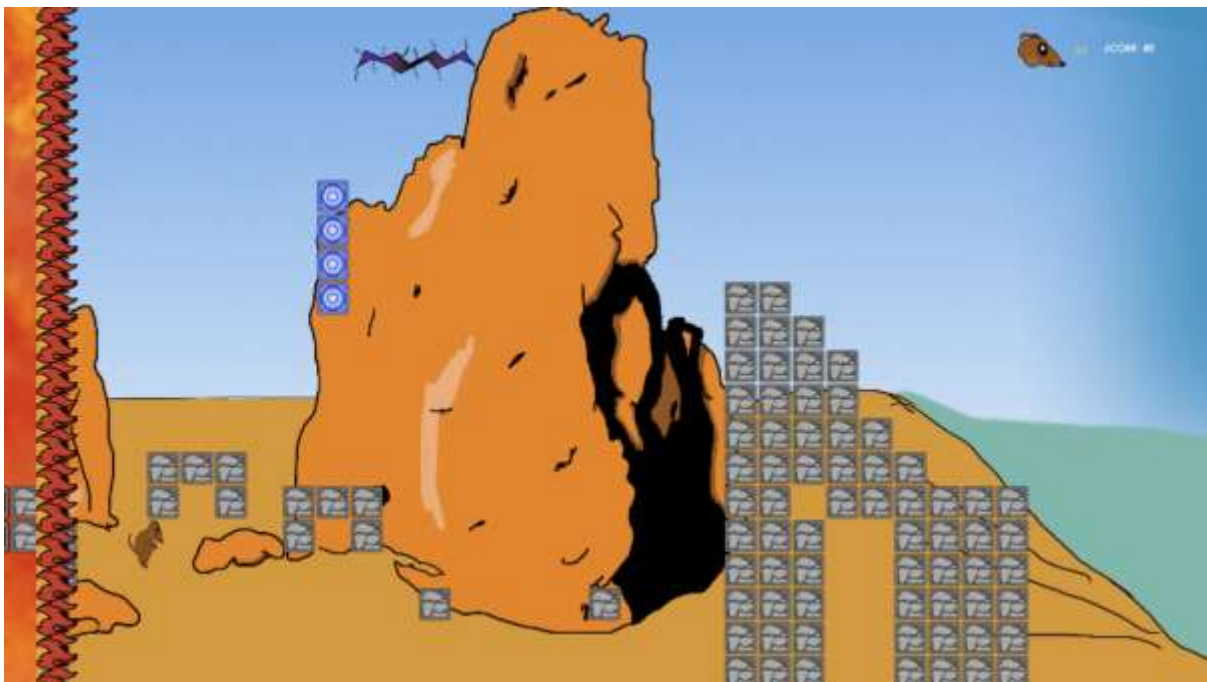


Figure 12 - One of the many obstacles in the game can be seen at the right of the screen

The blocks in each obstacle are affected by the row elimination mechanic just like any other block, which provides a new option to the players- if a certain section of an obstacle is annoying you, you can try to eliminate it. This is especially useful on obstacles that feature a wall, as you could attempt to bring it down rather than slow the Quokka down by climbing the whole thing.

Because of the structured nature of the obstacles, players can develop strategies to apply to each one, which adds another layer of depth onto the reactionary strategizing that the random blocks provide.

Art Style

The art style of Quokka Blokka is a retro cartoon style. Its cute appearance is a distraction from how difficult the game itself is, which makes for a funny juxtaposition. From the cave painting tutorial pages to the cutesy Quokka, there was an overall theme of earth colours that could be found in the Australian landscape. The only exception to the earthy tones were the more 'magical' elements of the game (the 'crack in space and time' spawner, player controlled blocks, fire, power-ups and overlays).

The style for the Quokka sprite draws from Looney Tunes. Simplistic colouring and basic shapes allow for easier animating and speed drawing. Similar to Looney Tunes the death sprite and the resurrection sprite both contain the exaggerated expressions that that brought the humour to Looney Tunes cartoons. The Quokka was based off its real life counterpart and was drawn to emphasis the cheeks and smile that made it famous upon the internet.

The blocks of the game were drawn to be simplistic- the base block of grey rocks was done as grey so as to clearly distinguish it from power-up blocks and the backgrounds. The power-up blocks were done in accordance to the element that each power-up represented. The sprint block was done with a lightning bolt on it, and the sprint blocks that are spawned by it have the same yellow cloud background as its main image. This is done so it's easy for the player to see that the yellow blocks were created in relation to the sprint power-up block. The elevator block has a small cyclone drawn on it, representative of the 'upward draft' that the power-up gives the player. The slippery block has a wave on it to reflect how the block allows you to slide/glide along in the air for a bit after stepping on it.

Along with the blocks all having a separate aesthetics there's an opaque overlay for each power-up that would scroll across the background. The overlays were to be as simple as possible to avoid any major distractions for the player. Again, they all relate to the various nature elements that correspond to their power-up. During sprint, a lightning bolt flashes across sky moving in a jagged motion. For elevator, a gust of wind blows up the screen. And for slippery blocks, bubbles blow up the screen.

The scrolling backgrounds were done in earthy tones and are representative of iconic Australian scenes. There are three main backgrounds, and another three that serve as transitions between the three main ones. The three main backgrounds are:

- A rocky beach face background based of photos of Rottnest Island one of the few places that Quokkas actually live
- A forest of gumtrees, their twisting branches copying that of the iconic Australian bush
- A red desert dotted with termite mounds.

The backgrounds were done so that the player felt as though they were travelling around Australia.

Audio

Mechanical game sounds

The game has sounds for these certain key events:

- Squash sound for when the Quokka hit its head on the roof or on a block
- Resurrection sound for when the player is brought back to life
- Burnt sound for when the Quokka dies to the fire
- Lightning sound for when the sprint power up is activated
- Water sound for when the slippery power up is activated
- Wind sound for when the elevator power up is activated
- Matchstick striking noise for the ready screen

These sounds are used to signify an event, however they are not core to the play experience as the game can be played on mute with mechanics still being understood.

The power up noises are in place to further highlight their significance, as they are core mechanics to be used if the player wishes to reach a high score. Power-ups trigger a variety of visual and auditory effects to emphasise that they're triggering a special ability.

The matchstick noises on the ready screen have three strikes to correspond with the countdown. Each strike is harder than the last and the final strike has the sound of a crackling flame starting just as a match stick set alight would sound, representing the start of the fire, and the start of the chase mechanic.

Environment noises

The game play sound has a fire crackling sound on loop to signify the fire chasing the Quokka. The point of this is to further amplify the threat of the fire to the player by both having a visual and an audio representation of its threat.

Music

The main menu screen plays a playful jungle themed loop which is to reflect the natural environment the game is set in. This is only limited to the main menu and has no relation to mechanics.

Play Dynamics

The placement of blocks in the level is different each time, with a mix of blocks scattered randomly across the bottom half of the screen as well as a pre-designed obstacle placed at the end of each screen. In order to navigate through an ever-changing world, the player must be constantly looking forward and thinking through the consequences of each block placement. The game is deceptively simple because the player actions are limited, but there's a lot to take into account.

If the Quokka keeps running in a straight line, they'll speed up, which makes it easier to stay away from the fire, but gives you less time to think through your actions. The reverse is true as well- by making the Quokka climb they will slow down. This gives you more time to think but means they're more likely to get caught by the fire and end the game.

The fire's not the only problem, because the Quokka can also fall to the bottom, hit their head on another block, and even get squashed by the very blocks you're placing. The player has to constantly be mindful of the consequences of each block placement so as to not set their Quokka up for a premature demise.

Keeping the Quokka at the same height sounds like a good strategy, but if your path is too flat then the row elimination mechanic will send you plummeting towards the bottom of the screen. Players learn to alter the Quokka's height and to not be afraid to let them fall. The best strategy is to not focus on your extending your path, but instead to look ahead and make sure the Quokka has somewhere to go later on. You also have to be prepared for the obstacles, because they'll act to push the Quokka to the other end of the screen.

Power-up blocks add another interesting element to the gameplay- they can be a great boon for the player, but if they think too long about how they can utilise it then it might be too late. Sometimes the power-up can't fit into the Quokka's current path, so the player has to decide to not jeopardise their strategy to try and force a power-up in there.

There's a lot of things to be mindful of while playing that players come to understand over time. The strategies that seem best at first glance are often inefficient, and players will gradually learn how to best use each tool the game provides.