

***QU.B'D DESIGN
DOCUMENT***

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*Simple shapes with
complex connections*

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Overview

Concept

Qu.b'd is an abstract puzzle game for computers and mobile devices which creates complex puzzles using interconnected multicolor blocks. The player must manipulate these blocks in a 3D space with a set number of moves to fit them within a target area. Different blocks have different properties and they all can potentially be connected to one another causing certain blocks to move others. It is because of these connections and the various properties that the player must interact with the game in a thoughtful and strategic way.

World

Each level is set in an empty white space. The only elements in the level are the blocks, their connections, the target area, and the UI. This space is purposefully minimalistic and meant to be highly stylized in order to draw the player into the puzzle since the game is abstract.

Beginning

Each level begins with a number of colored blocks spread out in 3D space, a target area set in the middle, and zero moves on the moves counter.

Ending

The level ends when the player has fit all the blocks into the target area.

Goal

The goal of each level is to fit all of the colored blocks in the level into the target area in the least number of moves possible.

Reward

The player is rewarded actively during the level by feedback and observing themselves come closer to the solution of the puzzle. At the end of the level they are rewarded through the knowledge that they overcame the challenge of the level, the score and judgment they receive for their work, and by unlocking the next level. In addition the player can make it a personal goal to beat the level in fewer moves than necessary and will be rewarded internally and through feedback by accomplishing their goal.

Failure

There is no formal way for the player to fail in *Qu.b'd*. However, the player can render the level unbeatable in several ways which are a form of failure. This happens if the player gets the blocks into a position which they cannot get out of or a timer block runs out of moves and is destroyed. In both these cases the player will no longer be able to complete the level and so much use the undo button or restart.

Content

Qu.b'd consists of a Main Menu, a Credits screen, an Options Menu, a Level Selection menu, a Pause Menu, a Win Menu, a Gameplay Screen where each level is played, 30 individual Levels, and a set of Tutorials which take place during various levels. All menus are placed on the side of a large cube known as a menu cube.

Buttons

Every menu screen contains buttons which are used to move from menu to menu or to a different screen entirely. When the player mouses over these buttons they shrink along the z axis but maintain their distance from the menu cube. If the player clicks on a button it will bounce toward the menu cube and return to its original position. Both of these behaviors are accompanied by a sound effect.

Transitions

Transitions between menus take the form of a camera movement which either changes its position or rotates it around the y axis of the menu cube. There are no loading screens between scene changes due to the quick loading of all scenes, however there may be a quick fade out and in. If loading times increase then a loading screen will be investigated

Title Menu

The title menu is the first screen that the player sees. The menu contains the game's title, a "play" button leading to the Level Selection menu, an "i" button leading to the Credits screen, and a "gear" button leading to the Options Menu. This menu serves as a hub leading to all other menus.

Credits

The Credits screen contains information about me and my role in the development of the game, information and the role of anyone else who worked on the game with me, any legal information that needs to be placed in the game, and any other miscellaneous information that is relevant to the player. The screen also contains a back button which leads to the Title Menu.

Options Menu

The options menu allows the player to change various things about the game. This includes turning on and off/adjusting the volume of in game music and sound effects, resetting the player's progress in the game, and unlocking all the levels. The menu also contains a button to lead back to the last menu the player was on which could be either the Title Menu or the Pause Menu.

Level Selection

The Level Selection menu allows the player to choose which level they would like to play. It displays a full list of all levels in the game but only allows the player to select levels that they have unlocked. If a level is locked there will be a lock in front of the button and it will not respond to mouse over effects. The level list is arrayed on the sides of a cube with nine levels per side and covers four sides in total. In addition to the level buttons there is a back button which leads to the Title Menu and two navigational buttons to switch between sets of levels.

Gameplay Screen

The Gameplay Screen is where the game is played. It contains all blocks that are in the level, the target area, a move counter, a level indicator, a reset button, an undo button, and a pause button which opens the Pause Menu. When the level is beaten the Win Menu will appear over this screen.

Pause Screen

The pause menu gives the player extra functionality while playing the game. It contains buttons to resume the game, return to the Level Selection menu, go to the Options Menu, and restart the level. It also tells the player their best score on the current level. This screen keeps the move counter and level number visible so that the player still has access to this information while paused. Both this menu and the Win Menu slide in from the top of the screen. This menu also slides out via the top edge of the screen.

Win Menu

The win menu appears when the player has beaten a level. It consists of the player's score, three small award cubes and the score required to get them, a button to restart the level, a button to move on to the next level, and a button to return to the Level Selection menu.

When the win menu appears the various award cubes will fill with either a bronze, silver, or gold color depending on how well the player did. The fill is fast and results in a small jump away from the menu cube when the cube reaches full. The cube will also emit a short burst of square particles the same color as itself when it jumps. After, the cube will fall back down to its previous location.

Tutorials

There are a number of tutorials in *Qu.b'd* explaining the various mechanics used to solve the puzzles that constitute the game. These tutorials are simple visual tutorials that take place during regular play in certain levels.

Levels

There are 30 unique levels total in the game. This outlines their purpose in the game's progression, move limit, and intended difficulty on a scale of 1 (easiest) to 10 (impossible).

- **Level 1**
 - Purpose: Introduce basic block movement
 - Star Requirements: 1:2:3
 - Difficulty: 1
- **Level 2**
 - Purpose: Introduce camera movement
 - Star Requirements: 1:2:3
 - Difficulty: 1
- **Level 3**
 - Purpose: Introduce more than one block
 - Star Requirements: 2:3:5
 - Difficulty: 1
- **Level 4**
 - Purpose: Practice basic camera and block movement
 - Star Requirements: 5:6:8
 - Difficulty: 2
- **Level 5**
 - Purpose: Introduce static blocks
 - Star Requirements: 3:4:6

- Difficulty: 2
- **Level 6**
 - Purpose: Practice block can camera movement, and static block skills
 - Star Requirements: 6:8:12
 - Difficulty: 3
- **Level 7**
 - Purpose: Introduce unidirectional connection
 - Star Requirements: 2:3:4
 - Difficulty: 1
- **Level 8**
 - Purpose: Introduce non-collision connection idea
 - Star Requirements: 3:4:6
 - Difficulty: 2
- **Level 9**
 - Purpose: Introduce multiple connections to the same block
 - Star Requirements: 4:6:8
 - Difficulty: 3
- **Level 10**
 - Purpose: Introduce multi-connection unidirectional connections
 - Star Requirements: 3:5:8
 - Difficulty: 3
- **Level 11**
 - Purpose: Introduce connections to blocks with connections
 - Star Requirements: 3:5:8
 - Difficulty: 3
- **Level 12**
 - Purpose: Practice with connections
 - Star Requirements: 3:6:9
 - Difficulty: 4
- **Level 13**
 - Purpose: Introduce bidirectional connections
 - Star Requirements: 2:3:4
 - Difficulty: 1
- **Level 14**
 - Purpose: Practice with bidirectional connections
 - Star Requirements: 3:5:7
 - Difficulty: 2
- **Level 15**
 - Purpose: Introduce connection squish
 - Star Requirements: 1:2:4
 - Difficulty: 4
- **Level 16**
 - Purpose: Introduce connection squish against other blocks
 - Star Requirements: 3:5:7
 - Difficulty: 4

- **Level 17**
 - Purpose: Practice with bidirectional connections
 - Star Requirements: 1:3:6
 - Difficulty: 5
- **Level 18**
 - Purpose: Test all skills
 - Star Requirements: 2:4:6
 - Difficulty: 6
- **Level 19**
 - Purpose: Test all skills
 - Star Requirements: 7:10:12
 - Difficulty: 7
- **Level 20**
 - Purpose: Test all skills
 - Star Requirements: 8:11:14
 - Difficulty: 8
- **Level 21**
 - Purpose: Introduce locked block
 - Star Requirements: 1:3:5
 - Difficulty: 2
- **Level 22**
 - Purpose: Practice with locked block
 - Star Requirements: 2:3:5
 - Difficulty: 2
- **Level 23**
 - Purpose: Introduce two locked blocks connected to one block
 - Star Requirements: 2:4:6
- Difficulty: 2
- **Level 24**
 - Purpose: Introduce one locked block connected to two blocks
 - Star Requirements: 2:5:7
 - Difficulty: 3
- **Level 25**
 - Purpose: Practice with locked blocks
 - Star Requirements: 3:6:8
 - Difficulty: 4
- **Level 26**
 - Purpose: Practice with locked blocks
 - Star Requirements: 3:6:8
 - Difficulty: 5
- **Level 27**
 - Purpose: Test all skills
 - Star Requirements: 9:12:16
 - Difficulty: 7
- **Level 28**
 - Purpose: Test all skills
 - Star Requirements: 4:7:10
 - Difficulty: 8
- **Level 29**
 - Purpose: Introduce timer block
 - Star Requirements: 2:3:5
 - Difficulty: 1
- **Level 30**

- Purpose: Practice with timer block
- Star Requirements: 2:3:5
- Difficulty: 2

Mechanics and Systems

Block Types

There are four of block types in cubed each of which has its own particular properties.

Basic

The basic block can be moved by the player in six separate directions and can be connected to any other blocks. If it runs into another block it will not be able to move unless it the other block is connected to it.

Large

The large block is double the size of the basic block and looks similar to two basic blocks side by side or up and down depending on the rotation of the block. They conform to the same grid and behave in the same way as basic blocks.

Locked

The locked block acts the same as the basic block but cannot be moved directly by the player. It can only be moved through connections with other blocks.

Timer

Timer blocks functions the same as basic blocks but will only last for a certain number of moves. They have a counter on the side of them which decreases each time they are moved. When the counter reaches zero if they are moved again they will explode and the player will lose.

Connections

Various blocks have the ability to be connected to other blocks in the level. When this happens a line will be displayed between the two connected blocks. There are two types of possible connections in any given level.

Unidirectional

Unidirectional connections go from one block, the control block, to another, the connected block. The direction this connection goes is shown by the connection passing through the connected block and out the other side. If two blocks are connected through a unidirectional connection then when the control block is moved the connected block will move in the same direction for the same distance. However, if the connected block is blocked in some way by another block it will not move when the control block is moved. This allows the angle and length of the connection to change but the same blocks to be connected.

Bidirectional

Bidirectional connections are equal connections from one block to another. This connection type is shown by the connection passing through both the blocks in either direction. In this type of connection both blocks are control and connected blocks. When one moves the other one will unless blocked. If one block becomes blocked the connection works the same as the unidirectional connection.

Controls

The controls in *Qu.b'd* are meant to be simple and intuitive.

Block Movement

Certain blocks can be moved by the player. This is accomplished by clicking and holding on a face of the block and dragging in any given direction. The block will move along a two dimension plane which is parallel to the side that the player clicked on. When the player moves a block a short sound will play to provide feedback and the block will move to its new position. If the player attempts to move the block and it is blocked a different sound will play and the cube will squish

slightly in the direction the player attempted to move it then return to its original shape. Each time the player moves a block then releases the mouse the number of moves they have made will be incremented. Because of this if the player moves a block multiple units on the grid without releasing the mouse it will only be counted as one move.

Camera Movement

The camera can be rotated around the blocks in the level by clicking and dragging anywhere on the screen that is not a block which can be moved by the player. The camera can move 360 degrees around the blocks but is constrained when rotating above and below them to prevent the player from becoming disoriented.

Movement Limits

There is a limit of 5 units for how far a block can be moved from the center of the level. Blocks cannot be moved past this point unless they are pushed via connection. If a block is pushed past the limit by connection it will not be able to be moved any farther past the limit but can be moved back toward it.

Target Area

The target area is positioned in the center of every level. It is mostly transparent to allow the player to see through it and allows all blocks to move freely through it. When all the colored blocks in the level are inside of the target are the player has beaten the level.

Scoring

The player's score is the number of moves they used to beat a level. Their moves are incremented each time they release a block after moving it. Because of this the player can move a block multiple times without releasing the mouse and have it counted as one move. It allows the player to not build up as many moves and encourages more thoughtful play.

The player is also scored through cubes they earn at the end of a level. Each cube has a certain number of moves to earn it. That number of less must be used to beat the level in order to earn that

cube. The cubes come in three varieties: bronze, silver, and gold with gold being the minimum number of moves possible to beat the level.

UI

The UI in *Qu.b'd* is minimal and designed to not distract the player from the puzzle.

Move Counter

The move counter displays the number of moves the player has made.

Pause Button

The pause button pauses the game causing the UI to fade and the pause menu to slide in from the top.

Reset Button

The reset button resets the level. All the blocks will return to their original places and the score will reset.

Undo Button

The undo button reverses the last move made. All blocks involved will return to their positions and states at the time before the move was made. The score will also be decremented when this button is pressed.

Level Indicator

The level number reminds the player what level they are currently on and does not interact with the gameplay.

Movement Plane Indicator

The movement plane indicator shows the player what plane they can move a block on while they have the current side clicked on. It also shows the player the limits of where they can move in the level. The movement plane indicator takes the form of a two dimensional grid of small cubes which aligns itself to the plane the currently selected block can be moved on.