

INVADER BREAKOUT GAME SPECIFICATION

GAME SPECIFICATION

BASICS

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| Name: | Invader Breakout |
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| Date End: | |

PREMISE

Invader Breakout is an expansion on Space Invaders, where the game adds a number of enhancements and an additional mode of game-play. Was written to learn the intricacies of programming the Atari 800 computer.

MODES OF PLAY

The game features the following modes of Play:

- **Space Invaders**, shoot the falling invaders from the sky from your base on the Moon with your trigger button controlling the laser blaster. 5 Rows of invaders, each with a different row hue, all arranged in exactly the same rows, and moving in unison, marching first, across the screen to the right, then marching downward for one row, then marching to the left, repeating the process until all invaders are killed, or the invaders reach the moon landscape. If invaders are killed, the game progresses to the next stage, if the invaders reach the moon, the game is over. Power ups alter the mode of play or augment it. Power ups are acquired by shooting invaders, and catching the resulting dropped power up. Only some invaders will emit power ups.
- **Invader Breakout**. Reached by grabbing a break-out power up, causes a comet to appear. A shield appears around the ship, turning the player into a break-out paddle. Gun fire stops functioning, the invaders still shoot. Comet will fall toward the bottom of the screen which must be deflected with your ship's generated shield. If the comet falls to the moon., your ship will be destroyed. If all the invaders are destroyed, the comet will disappear and the next stage will begin.

POWER UPS

Power-Ups were designed with deliberate actions and consequences in mind, in order to balance out the game play. This is to cause a moment of thinking of whether a power-up would be useful at a given point in the game, and to enhance the depth of the gameplay by providing additional difficulty.

The game will feature the following Power Ups:

- **Double Ships**. A second ship will appear, subtracting one ship from your available ships. A collision of one ship, causes that ship to be destroyed, continuing game play. If both ships are destroyed, a new ship is subtracted from your available ships and put into play.
- **Speed**. Overall game speed will increase slightly for both you and the enemies. Subsequent catching of this power up will increase speed further.
- **Extra Life**. Intended to balance out the double ships mode, gives an extra life to the available ships.
- **Break-Out Mode**. Causes the game to change modes into the Break-Out mode described above. Grabbing the Break-Out power-up again, will cause the comet to disappear and return to normal mode.

ALL SPECIFICATIONS MAY BE SUBJECT TO CHANGE DURING DEVELOPMENT

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GAME STATES

The game software will be running in one of the following states throughout its entire execution, and are divided as follows:

- **Global States**, which are states that affect the entire program as a whole, this includes the Start Screen, The Game Screen, and the Get Ready Screen.
- **Vertical Blank States**, which are states that execute on at least some vertical blank interval, and are handled by the Vertical Blank Interrupt (VBI). These include animation, and soundtrack.
- **Display List Interrupt States**, which are states that execute at specific points on the display list, which define color or scrolling movements that need to happen on a per-line basis.

GLOBAL STATES

- **Title Screen**, Shows splash screen, and score, as well as basic enemy synopsis with point value.
- **Get Ready Screen**, Shows when the player presses Start, and when all players on screen die.
- **Game Screen**, Shows the active game in progress.

VERTICAL BLANK STATES

- **Housekeeping**, the state which causes the controllers to be read, and update various counters not related to animation. Intermittent game states and the Start console switch are also read here. Scoreboard is also updated here.
- **Character Set Rotation**, changes the visible character set for animation purposes.
- **DLI housekeeping**. Changes DLI states for simple color changes that only happen intermittently.

DISPLAY LIST INTERRUPT STATES

- **Basic Color Hue Application**. The main part of these DLIs is to apply colour to the monochrome shaded tiles in character memory.

CONSCIOUS PROGRAMMING DECISIONS

- Player and enemy movement are done via playfield, to ease the development of smooth movement, while allowing me to use shaded look for the characters.
- Players and Missiles will be used for static background elements, due to the use of HSCROL and VSCROL registers on the playfield. Will also be used for missile fire, the comet, and power ups.
- Pre-calculate anything repeatable. tables tables tables tables.
- Hard code as much as possible during the DLI to save cycles. Use narrow playfield to conserve DMA for more cycles during DLI and VBI.

FUTURE SPECIFICATION

ALL DESIGN DECISIONS FOR THIS GAME ARE TENTATIVE, AND ARE SUBJECT TO CHANGE DURING GAME DEVELOPMENT, WITH SUBSEQUENT MODIFICATIONS MADE TO REVISIONS OF THIS DOCUMENT.

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