

1 Read this first

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1.1 Document revision history

YYYY-MM-DD	Version	Description
2012-12-12	1.00	Initial version, cover art TBA.

1.2 Author's notes, December 2012

The original goal was to create development tools for the Studio II by the 35th anniversary of the console, January 2012. At present, tools are still a work in progress. After almost missing the anniversary year completely (11 months late as I write this), I decided to compile sample code written in last two years into a game instead. This collection is all new, built for the Studio II interpreter using a prototype compiler written in C#. Paul Robson's documentation was instrumental in this project, which was developed using Marcel van Tongeren's *Emma 02* emulator. Dedicated to Joseph Weisbecker, and his development team, for their groundbreaking work on the RCA family of computers, and the processors that powered them. Happy anniversary Studio II.

2 How to play *TV Arcade 2012*

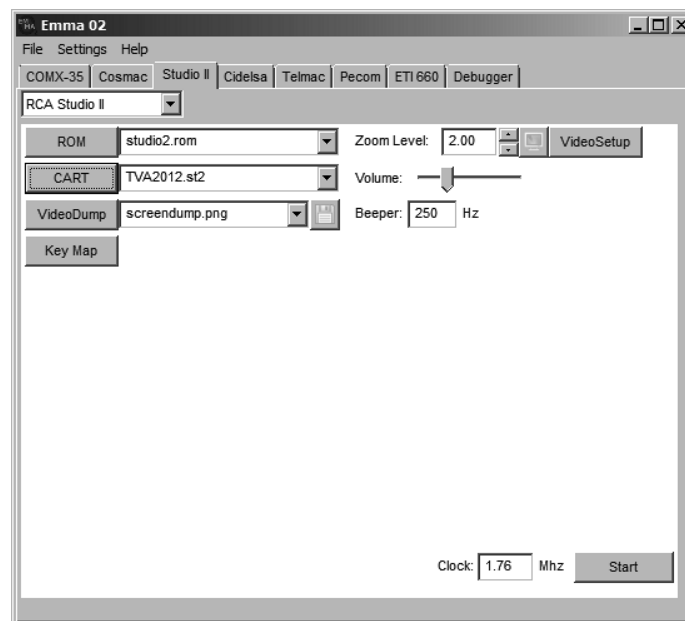
The game program is distributed as an ST2 file, which is a cartridge format defined by Paul Robson for use with Studio II emulators. It includes the binary game code along with a descriptive header. *TV Arcade 2012* has been tested with the *Emma 02* Emulator by Marcel van Tongeren.

You can download *Emma 02* here: <http://www.emma02.hobby-site.com/>

After starting up *Emma 02*, click on the Studio II tab. Load the game by clicking the "CART" button, and navigating to the "TVA2012.st2" file. Start the game by pressing the "Start/Reset" button at the bottom right of the window. See below for a screenshot.

The game instructions will refer to the numeric keys as if you were using an actual Studio II console. Keyboard A is on the left side of the console, and keyboard B on the right. When using *Emma 02*, the layout of Studio II keys is mapped to a PC keyboard with the defaults shown in Table 1 on the following page. More information on keyboard mapping is available in the emulator's help file. To reset the Studio II emulator, press the F12 key. You can also use the "Start/Reset" button, but you will have to give the game window focus before it will respond to the keyboard. The F3 key toggles full screen mode.

TV Arcade 2012 starts up in the game select loop, with a blank screen. Pressing number keys on keyboard A will start the games, refer to the game instructions for specific details. You can return to the game selection loop at any time by resetting the emulator.



Emma 02 screenshot, Studio II tab



Studio II keyboard	Emma 02 keyboard mapping																																					
Keyboard A/B	Keyboard A	Keyboard B (NumPad)																																				
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Table 1: *Emma 02 key assignments*

3 *Craps*

Craps is a gambling game for 1 player, where bets are made on the outcome of rolling a pair of dice. On the first roll, totals of 7 or 11 win even money (a *natural*), while totals of 2, 3 or 12 lose (*craps*). Any other totals (4, 5, 6, 8, 9, 10) are known as the *point*. If you roll your point again, before rolling a 7, you win twice your wager. The player begins the game with a wallet of \$25.00. Minimum bets are \$1.00, maximum bets are \$9.00. You may only bet funds that you actually have, and the game ends if the balance of your wallet reaches \$0.00. The maximum allowable winnings that can be held in the players wallet is \$255.00.



Snake eyes



A natural

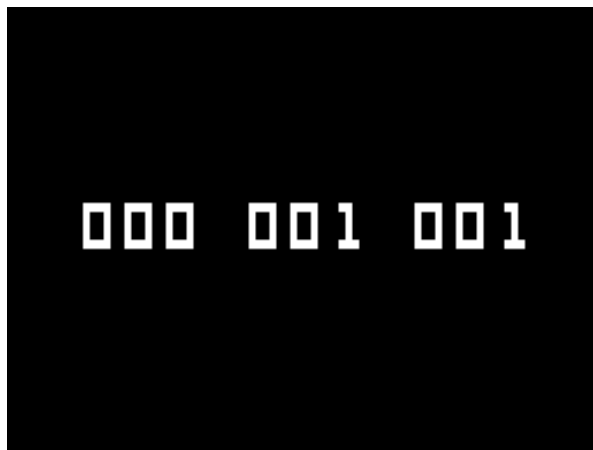
- I. To play *Craps*, at the game select loop press key 1 on keyboard A.
- II. A pair of numbers are shown on the screen. The number on the left represents the sum of two dice, the number on the right is money in the players wallet.
- III. To place your bet, press a non-zero key on keyboard A which corresponds to a bet from \$1.00 to \$9.00. The dice will automatically be thrown.
- IV. If the total on this first roll is 7 or 11, you win the amount of your bet. If the total is 2, 3 or 12, you lose your bet. In either case there is long series of beeps to indicate the end of the round, and the player's wallet is updated. If you rolled 4, 5, 6, 8, 9 or 10, the round continues, re-rolling the dice by pressing any non-zero key on keyboard A until you roll the same number (winning twice your bet), or lose by rolling 7. The end of the round will be marked by a long series of beeps, and an update to the player's funds.
- V. If the balance of the player's wallet is above \$0.00, the game continues from step III. If the balance is \$0.00, the game is over. You can play a new game by pressing 1 on keyboard B.

4 *Moon Lander*

Moon Lander simulates a lunar landing for 1 player. The objective is to set down on the lunar surface at a safe velocity using limited fuel. The game begins with the lander descending at a velocity of 10 feet per second, from a height of 100 feet. The initial supply of fuel on board is 50 units. Burning 5 units of fuel cancels gravity, and holds your velocity constant. A burn over 5 units will result in upward acceleration, while a burn below 5 allows gravity to increase downward velocity. If you run out of fuel, the lander will free-fall, and crash on the surface. Final velocity of 5 feet per second, or less, is considered a safe landing.



New game



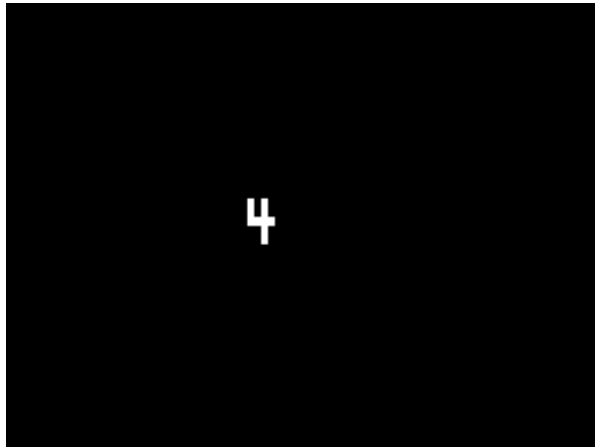
Successful landing

- I. To play *Moon Lander*, at the game select loop press key 2 on keyboard A.
- II. Distance to the surface, downward velocity, and available fuel are shown as three numbers on the screen; distance (x) on the left, velocity (v) in the center, and fuel (f) on the right.
- III. Each turn you burn from 0 to 9 units of fuel by pressing that number on keyboard A. If you request more fuel than you actually have, the computer will burn what is available.
- IV. The computer calculates the new values for x , v and f , and updates the display. While x is greater than 0, the game continues from step III. When x reaches 0, the lander is on the surface and the game is over. You win if the final value of v is not higher than 5. You can play a new game by pressing 1 on keyboard B.

Note: Do not apply excessive thrust (i.e., pressing 9, 9, 9, 9 as your first entries). Too much thrust makes the downward velocity value negative, which is upwards velocity. These negative values appear as a high decimal value (around 250). This exceeds the precision of the calculations being used, and messes up the game.

5 *Repeat After Me*

Repeat After Me is a memory game for 1 player. The computer plays a series of random numbers (single digits from 1 to 4), which you try to match by repeating the numbers on the keyboard. Each time you correctly enter the sequence, another digit is added to increase difficulty. If you make a mistake the game ends, and the computer shows your score - the highest number of digits you successfully memorized. The maximum sequence the computer can generate is 25 digits.



Sequence plays ...

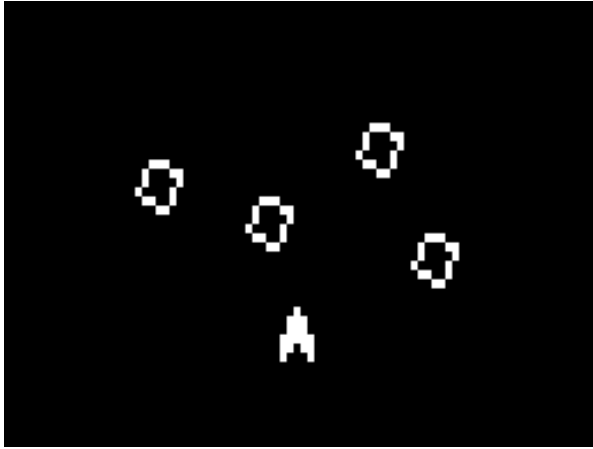


Final score

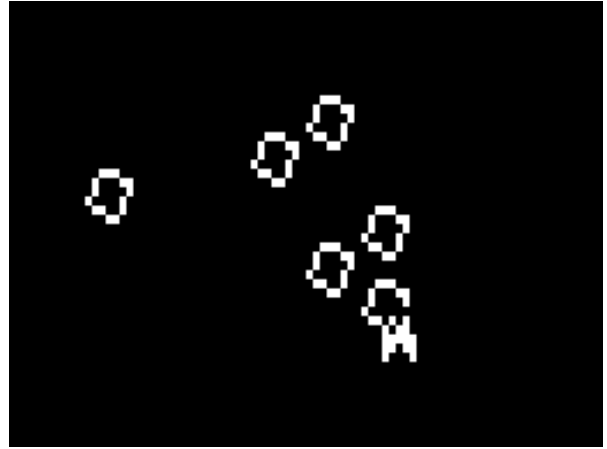
- I. To play *Repeat After Me*, at the game select loop press key 3 on keyboard A.
- II. The game starts with the computer playing the random sequence. Numbers momentarily appear near the center of the screen, accompanied by a beep sound. Try to memorize the order of the numbers as they play. When finished, the computer waits for the response.
- III. Now replay the number sequence, using keys 1 to 4 on keyboard A. The computer checks the entries as you make them. If replayed correctly, another number is added to the series, and the game continues from step II. If you make a mistake, the game ends with a long series of beeps, and your score is displayed on the screen. If you successfully memorize a sequence of 25 digits, the game ends with a perfect score.
- IV. Once the game is over, you can play a new game by pressing 1 on keyboard B.

6 *Space Rescue*

Space Rescue is an action game for 1 player. You are the pilot of a space ship, responding to distress call from a mining operation in deep space. On your way to the rescue, you encounter a field of asteroids. A collision would destroy your ship, so you will need all your skill as a pilot to successfully navigate through the asteroids - good luck!



That space ship looks familiar ...



Crashed

- I. To play *Space Rescue*, at the game select loop press key 4 on keyboard A.
- II. Randomly placed asteroids scroll down from the top of the screen. Try to avoid hitting the asteroids for as long as possible. Steer the space ship left with key 4 on keyboard A. Steer right with key 6 on keyboard A. You are not allowed to move past the edges of the screen.
- III. If the ship collides with an asteroid, a long series of beeps will be heard and the game is over. You can play a new game by pressing 1 on keyboard B.

7 *Nim*

Nim is a game of math and logic for 2 players. This game is played with a single pile of 21 stones, and has 2 variations. The players alternate turns, and remove 1, 2, or 3 stones. The game ends once the pile is empty. The object of the game depends on the *Nim* version being played. In version 1, the player removing the last stone loses. In version 2, the player removing the last stone wins.



New Game



Player 1 wins a third game

- I. To play *Nim 1* (last stone loses), at the game select loop press key 5 on keyboard A. To play *Nim 2* (last stone wins), press key 6 on keyboard A.
- II. Player 1 uses keyboard A, player 2 uses keyboard B.
- III. The computer displays 3 rows of numbers on the screen. The top row shows the number of games each player has won, player 1 score on the left, player 2 on the right. The middle row shows is the number of stones in the pile, and the bottom row indicates whose turn it is. Each players keyboard is active only during their turn.
- IV. Player 1 has the first turn in a new game. In each turn, 1 to 3 stones is removed from the pile by pressing that number on the active keyboard. The pile is updated, and then the other player's turn begins. You can reset the game (including scores) by pressing 0.
- V. Players alternate turns until the last stone is taken, ending the game. The winner scores a point, and the computer sets up a new game where the loser of the previous game takes the first turn.