

GAME STANDARDS AND PROCEDURES

ATARI 7800 PROSYSTEMS

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The following documents the user interface and coding standards desired for 7800 games. This is meant both to provide a guide to program development and as a check list for finished carts. Please compare these against any existing games. Some of these standards are changed, and they supercede previous standards. Note that these standards may be waived on a case-by-case basis to maintain copyright loyalty or for games with special requirements.

SECTION I: USER INTERFACE

I.1) Power-up

Games should power-up displaying a TITLE PAGE. Game parameters should be single player and DEFAULT DIFFICULTY. After about 20 seconds, the game should go into AUTO-PLAY mode. From then on the game alternates between TITLE PAGE and AUTO-PLAY. This is called the IDLE SEQUENCE.

I.1.1) Title Page

The TITLE PAGE should contain spiffy graphics including the game title and logo. The ATARI copyright MUST appear in the form:
(c) 1987 ATARI CORP.

or

copyright 1987 Atari Corporation

Where (c) MUST be a "c" within a circle (not parentheses, as shown here) and the year MUST be the year of the product's first release (if different from the year it was programmed). Some games may also require a copyright message for the licensor. Text to be specified on a per-game basis.

I.1.2) Auto-Play

AUTO-PLAY should display typical game play. Try to show as many different features of the game as possible. If the game has multiple screens, try to show all or many of them. At power-up, scores should be set to zero, otherwise the most recent scores should be displayed. Auto-play should incorporate all game sounds.

1.2) Game Select Menu

All games should have a MENU page which clearly shows all user options and allows the user to change these options. The menu page should also have spiffy graphics, and is thus usually part of the TITLE PAGE or the AUTO-PLAY display. If any game option is changed, all scores must be zeroed.

A typical menu would be:

ONE PLAYER
NOVICE STANDARD ADVANCED EXPERT
TWO PLAYERS

I.2.1) Entering Menu Page

Depressing the SELECT key at any time (except in the menu page) will start the MENU PAGE. Moving player 1's controller in TITLE PAGE or AUTO PLAY will start the MENU PAGE. Whenever the MENU page is started, it should display the current game settings.

I.2.2) Remote Game Select

Any game using a joystick or trackball must use them to change game options. While in menu page, player 1's controller should act as follows:

RIGHT	- increase difficulty
LEFT	- decrease difficulty
UP	- increase #/players
DOWN	- decrease #/players

If the controller position is maintained, the game option should be changed about every half second. If the controller was used to start the MENU PAGE, there should be a half second delay before the same setting changes the game options.

Standards for remote changing of game options using other controllers will be designed on a per-game basis.

I.2.3) Local Game Select

The Remote Game Select is the method of choice due to its convenience, but this is a 2600-compatible unit. All 7800 games must support the standard 2600 game select mechanism. If the SELECT switch is depressed in the MENU page, the difficulty is increased by one. If the difficulty was at the maximum, it is wrapped to the minimum and the number of players is increased. If the number of players is at the maximum, it wraps.

If the SELECT switch is held down, the game options should be changed about every half second. If the SELECT switch was used to start the MENU PAGE, there should be a half second delay before the same depression of SELECT changes the game options.

I.2.4) Leaving Menu Page

Normally, the player will start a game after selecting his options (see Starting a Game). However, if the player leaves the game in the MENU PAGE for 30 seconds or so without changing any options, the game should go to the TITLE PAGE and resume the IDLE SEQUENCE.

1.3) Game Play

This section deals with the mechanics of starting, pausing, and ending game play.

1.3.1) Starting a Game

Depressing the RESET key at any time will start a new game using the current game parameters. A press of player 1's fire button during TITLE PAGE, AUTO-PLAY, or MENU PAGE will start a new game. When a game is started with the joystick button, the game should not use the same button depression for a game action (like firing a shot, for instance). The RESET button should be debounced so it does not start another game until it is first released.

I.3.2) Pause

The PAUSE key is only active during actual game play. When the pause key is depressed, video is frozen and audio is turned off. After about 15-30 minutes if there is no input from the player, the screen goes blank. While there is a blank screen, any controller inputs (including fire buttons) should re-display the screen without leaving the PAUSE state. A second depression of the PAUSE key should resume the game as if it had never paused. No sounds or display sequences should be lost.

I.3.3) Screen Display

For the most part, screen display of licensed/converted games will emulate existing screen display. However, these are offered for consideration in the absence of such guidelines:

- In general, suppress leading zeroes.
- Typically, in a 1-player game, the score for player 1 is displayed on the left side of the screen. However, this is not a hard and fast rule and the score in some games may be centered.
- In a 2-player game, if both scores are shown, the number and score for player 1 is displayed on the left side of the screen and the number and score for player 2 is displayed on the right side of the screen.
- The number of game lives is indicated by game life markers and the player's object on the screen. For game life markers, icons should be used instead of numbers to represent game lives. One game life marker disappears each time a defeat occurs until the player is down to his last remaining game life. At that time, the player's last remaining game life is indicated by the player's object on the screen.
Example: If "*" is the game life marker and the player has three game lives left, it should be expressed as "* *" (and the player's object on screen) instead of "3 -*" or some such scheme.
- If applicable, level of play should be indicated on screen.

I.3.4) Game End

A GAME OVER message should be displayed at the end of each player's game telling which player is out of the game. When all games in progress are over, the game freezes on the screen and the fire button is disabled for 2 seconds while the GAME OVER message is displayed. After the 2 second freeze, if the player presses the fire button, the game restarts at the same difficulty level and with the same number of players as was previously selected. If this action is not taken, after 20-30 seconds the game automatically goes to the TITLE PAGE and IDLE SEQUENCE.

I.4) Game Options

This section deals with the various options the player can choose. Most games naturally fall into the "One Player" or "Two Player Alternating" mold. Game programmers are encouraged to explore the possibilities of COMPETITIVE and TEAM play options. In 2-player alternating mode, player 1's joystick should be deactivated while it is player 2's turn, and vice versa.

I.4.1) Difficulty Settings

All games should provide a range of difficulty settings. This is to provide a fun game for everyone from a video-game addict to your grandmother. The DEFAULT DIFFICULTY should be one higher than Novice. The number of settings will change from game to game, but a sample progression might be:

Novice: This should be very easy for anyone with any gaming ability, and is geared toward very young and very old players.

Standard: A setting which involves skill to play, but not much. This is the level that most people would play for their first game.

Advanced: A setting which is about "arcade" level, perhaps a bit easier.

Expert: This is a "killer" setting, but not so hard that no one will be able to enjoy it. This is for the kids who play your game every day and get very, very good at it. Keep in mind that they aren't putting quarters in.

I.4.2) Competitive Play

Competitive play is a version where one player is playing predominately against the other player, and the objective is to have a higher score at the end of the game than the other player.

- In COMPETITIVE play, the players can kill each other, typically by shooting each other. Points are awarded to the player who killed the other.

- Collisions between players can be death for both, obstructive collisions, or just passing through, depending on what makes sense for the game.
- Each player has an individual score displayed on the screen.
- Each player has an individual pool of lives which is displayed on the screen. When a player is killed, he loses one of these lives. Gameplay might stop at any death, or continue smoothly depending on the game.
- Victory is based on high score at game's end. A message such as "Player 1 WINS" should be displayed.
- The game ends when both players are out of lives or one player is out and the other player has more points, depending on the game.

I.4.3) Team Play

TEAM play is a version where both players are playing together as a team and the objective is to maximize the team score. Some features of TEAM play are:

- The players cannot kill each other.
- There is a common pool of lives that the players pull from. When either player dies, a life is lost from the common pool. If the pool runs out, and the remaining player gains a bonus life, it is given to the inactive player. The game ends when the lives run out and both players are dead.
- There may be a common score and individual scores displayed.

I.4.4) Selecting Competitive and Team Play

COMPETITIVE and TEAM play are selected by increasing the number of players. Thus, COMPETITIVE play is the next option after the maximum number of players, and TEAM play after COMPETITIVE play. Of course, a game could have one of these options but not the other.

I.5) Controllers

For a 1-player game, always read the left-most controller. For a multi-player game, assign controllers from left to right. Controllers should only be shared for:

- Games which use all controllers for one player (like Robotron)
- Games with more players than controllers.

Games which use non-standard controllers should support joysticks if possible. Any mixture of valid controllers should be allowed for multi-player games. Games should support single-button 2600 joysticks if possible.

I.6) Difficulty Switches

The difficulty switches can be used to select options not appropriately displayed on the menu screen, or they may be used in the time-honored 2600 tradition.

Players of differing skills may be handicapped by using the difficulty switches. The left position is the easier setting, and the right position is the more difficult setting. Any game using these switches should poll them frequently.

SECTION II: CODING STANDARDS

II.1) Memory Allocation

II.1.1) ROM Allocation

All games should go up to \$FFFF (where the vectors are) down as far as they need. All RAM should be below all ROM. ROM has to start on a \$1000 byte boundary.

II.1.2) Encryption

The memory between \$FF80 and \$FFF7 is reserved for an encryption key. This space must be filled with FFs.

The following two locations have special meanings:

- \$FFF8: "Region verification." Just put an \$FF here.
- \$FFF9: \$X7. The X is the start of your ROM. If you start at \$C000, this should be \$C7. The 7 is there to identify most 2600 carts immediately (they won't usually have a 7).

II.1.3) Vectors

All vectors (NMI, Start, IRQ) must point to within the code. Setting unused vectors should point to an RTI "just in case."

II.2) Startup

Games cannot assume that any state is initialized or zeroed when the cart is powered up. It is possible that the security ROM might presently leave the machine in some state, but a future base unit might have a different security ROM or none at all (such as the PAL machine). The following things should be done in all carts on startup:

- \$07 to INPTCTRL this locks the machine in 7800 mode.
- SEI, CLD to initialize 6502 status.
- \$7F to CTRL: to turn DMA off. Some equivalent may be used, but DO NOT store anything with the \$80 bit on! used, but DO NOT store anything with the \$80 bit on!

- \$00 to OFFSET: for future expansion.
- \$00 to INPTCTRL: make sure joysticks do not freeze.
- \$FF to S: or whatever you want.

Also, do not assume that RAM is zeroed.

II.3) No- Defeat Mode

In a non-release version of all games, a no-defeat mode should be included for test, documentation, and sales purposes. A way is needed for us moderately-skilled gamers to see the higher levels of play.