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Game Resources / SNES / Mega Man X / RAM Map

This is a RAM Map for Mega Man X.

Address	Byte length	Description
$7E:0000	16 bytes	Scratch RAM
$7E:003B	1 byte	Intro sequence timer for the title screen. Counts down from #$FF at the title screen. When it reaches 0, there is a fade out and the intro sequence starts again. The counter is reset to #$EA when a new option is selected.
$7E:003C	1 byte	The currently selected option on the title screen. #$00 = Start Game, #$01 = Password Screen, #$02 = Options Menu.
$7E:00A7	1 byte	Controller data 1, current frame. Format: axlr---- a = A; x = X; l = L; r = R, - = unused.
$7E:00A8	1 byte	Controller data 2, current frame. Format: byetUDLR b = B; y = Y; e = Select; t = Start; U = Up; D = Down; L = Left; R = Right.
$7E:00A9	1 byte	Controller data 1, previous frame. Format: axlr---- a = A; x = X; l = L; r = R.
$7E:00AA	1 byte	Controller data 2, previous frame. Format: byetUDLR b = B; y = Y; e = Select; t = Start; U = Up; D = Down; L = Left; R = Right.
$7E:00AB	1 byte	Controller data 1, button press (current frame and not previous frame). Format: axlr---- a = A; x = X; l = L; r = R.
$7E:00AC	1 byte	Controller data 2, button press (current frame and not previous frame). Format: byetUDLR b = B; y = Y; e = Select; t = Start; U = Up; D = Down; L = Left; R = Right.
$7E:00B3	1 byte	Used as a counter for the screen's level of brightness when fading (bits 0 to 7). #$0F = full brightness, #$00 = completely faded.
$7E:00B4	2 bytes	Camera X-position, in pixels.
$7E:00B6	2 bytes	Camera Y-position, in pixels.
$7E:0100	unknown	Sound effects?
$7E:0300	512 bytes(?)	Graphics?
$7E:0740	unknown	Sound effects?
$7E:0B9B	1 byte	Frame counter. Differs from the other two in that this one pauses during loading screens.
$7E:0B9C	1 byte	"Effective" frame counter. Stops when the player dies, among other things.
$7E:0B9D	1 byte	If the value in it is not zero, run the actual game; otherwise, loop forever. It's set to a non-zero value during NMI, and it's set to zero after the game mode has been run, so that the game runs exactly once a frame - one NMI trigger per frame.
$7E:0B9E	1 byte	"True" frame counter. Always increments once per frame.

$7E:0BA6	2 bytes	Value of Pseudo-Random Number Generator.
$7E:0BAC	1 byte	X's sub-pixel X-position.
$7E:0BAD	2 bytes	X's X-position, in pixels.
$7E:0BAF	1 byte	X's sub-pixel Y-position.
$7E:0BB0	2 bytes	X's Y-position, in pixels.
$7E:0BBB	1 byte	X's blink (close and open eyes) animation timer. If X is standing still, begin the following cycle: - Start with #$50, decrease by one every frame until it reaches 0; - Make X blink once (#$08-frame-long blink); - Set to #$30, decrease by one every frame until it reaches 0; - Make X blink twice (#$04-frame-long blinks); If X is moving, reset the cycle.
$7E:0BBF	1 byte	X's sprite (bits 0-7).
$7E:0BC2	2 bytes	X's X-velocity, in sub-pixels per frame.
$7E:0BC4	2 bytes	X's Y-velocity, in negative sub-pixels per frame.
$7E:0BC6	1 byte	X's Y-acceleration, in sub-pixels per frame per frame.
$7E:0BCF	1 byte	X's current health.
$7E:0BDB	1 byte	Current weapon selected. A list of values can be found here.
$7E:0BDD	1 byte	Number of bullets (of any shot type) onscreen.
$7E:0BDE	6 bytes	Controller data. Disabled buttons (such as default X and select) are not included.
$7E:0BF8	1 byte	Timer for how long to display X's buster after shooting. Set to #$FF when X's buster isn't out, set to #$0F and decreases once per frame after shooting. Is reset to #$0F with each successive shot.
$7E:0BFA	1 byte	Dashing timer. Decreases by one every frame. Once it hits 0, X stops dashing. Freezes at the last value it was at if X stop dashing before it reaches 0.
$7E:0BFF	1 byte	Timer for the level of X's charge shot, while charging. Starts at #$95 and decreases once per frame. #$95 = green shot charged, #$4F = blue shot charged, #$01 = pink shot charged.
$7E:0C03	1 byte	Level of X's charged shot, while charging. #$00 = not charging, #$01 = pink shot charged, #$02 = blue shot charged, #$03 = green shot charged.
$7E:0C06	1 byte	Bitflags: Standing = #$04, hanging on left wall = #$02, right wall = #$01.
$7E:0C11	1 byte	X's direction. #$00 = left, #$40 = right.
$7E:0C13	1 byte	X's recovery (flashing) time after a hit. Decreases by one every frame.
$7E:0C30	96 bytes	Stuff for armor parts (position, type, and so forth). TODO
$7E:0E18	1 byte	Ride armor exist flag (#$00 = ride armor does not exist, #$01 = ride armor exists).
$7E:0E1A	1 byte	Ride armor's current state. (#$00 = empty, #$02 = still, #$04 = walking, #$06 = punching, #$08 = jumping, #$0E = dashing, #$14 = mount ride armor, #$16 = dismount ride armor)
$7E:0E1C	1 byte	Ride armor's sub-pixel X-position.
$7E:0E1D	2 bytes	Ride armor's X-position, in pixels.
$7E:0E1F	1 byte	Ride armor's sub-pixel Y-position.
$7E:0E20	2 bytes	Ride armor's Y-position, in pixels.
$7E:0E32	2 bytes	Ride armor's X-velocity, in sub-pixels per frame.

$7E:0E34	2 bytes	Ride armor's Y-velocity, in negative sub-pixels per frame.
$7E:0E36	1 byte	Ride armor's Y-acceleration, in sub-pixels per frame per frame
$7E:0E4B	1 byte	Ride armor's heading (#$00 = facing left, #$40 = facing right).
$7E:0E4E	6 bytes	Controller data, if ride armor is nearby. Disabled buttons (such as default X and select) are not included. Data for previous frame not included.
$7E:0E68	64*15 bytes	Enemy data. Each enemy is given 64 bytes.
$7E:1228	64*8 bytes	X's shot/bullet data. Each shot is given 64 bytes.
$7E:1428	64*8 bytes	Enemy shot/bullet data. Each shot is given 64 bytes.
$7E:1628	48*16 bytes	Misc. data (such as item drops). Each item is given 48 bytes.
$7E:1928	Unknown	Unknown data (possibly including shot impact and explosion sprites). Each part is given 32 bytes.
$7E:1ED2	1 byte	Current item selected on the pause menu. #$00 = X Buster #$01 = Homing Torpedo #$02 = Chameleon Sting #$03 = Rolling Shield #$04 = Fire Wave #$05 = Storm Tornado #$06 = Electric Spark #$07 = Boomerang Cutter #$08 = Shotgun Ice #$09 = Escape Unit #$0A = Sub Tank 1 #$0B = Sub Tank 2 #$0C = Sub Tank 3 #$0D = Sub Tank 4
$7E:1F7A	1 byte	Current level ID. #$00 = Highway/intro stage #$01 = Launch Octopus #$02 = Sting Chameleon #$03 = Armored Armadillo #$04 = Flame Mammoth #$05 = Storm Eagle #$06 = Spark Mandrill #$07 = Boomer Kuwanger #$08 = Chill Penguin #$09 = Sigma Stage 1 #$0A = Sigma Stage 2 #$0B = Sigma Stage 3 #$0C = Sigma Stage 4
$7E:1F7E	1 byte	Increases by one each time you visit the Hadoken capsule location. It's used when determining whether or not to make the capsule appear.
$7E:1F80	1 byte	Life counter. Capped at #$09.
$7E:1F87	16 bytes	Weapon Energy. Each weapon's energy is stored as two bytes. First byte: Sub-unit amount. Second byte (bits 0 to 5): Unit amount. Once unit amount is 0, sub-unit amount cannot be used even if it is not 0.

		Usage: Homing Torpedo and Chameleon Sting: 1/2 unit; Fire Wave: 1/16 unit; Everything else: 1 unit.
$7E:1F99	1 byte	Bitflags for upgrades and sub-tanks collected. Format: dcbaZYXW Upgrades: W = Head; X = Arm (Buster); Y = Body (Armor); Z = Leg (Dash). Sub-tanks: a = Eagle; b = Armadillo; c = Mandrill; d = Mammoth.
$7E:1F9A	1 byte	X's maximum health. Increases by 2 per heart tank.
$7E:1F9C	1 byte	Bitflags for heart tanks collected. Format: hgfedcba a = Penguin; b = Armadillo; c = Eagle; d = Chameleon; e = Mammoth; f = Kuwanger; g = Mandrill; h = Octopus.

Enemy/Object data

Offset	Byte length	Description
#$0	1 byte	Object in memory flag. #$00 = No object in memory. #$01 = Object exists in memory.
#$1	1 byte	Object's action 1.
#$2	1 byte	Object's action 2.
#$4	1 byte	Object's sub-pixel X-position.
#$5	2 bytes	Object's X-position, in pixels.
#$7	1 byte	Object's sub-pixel Y-position.
#$8	2 bytes	Object's Y-position, in pixels.
#$A	1 byte	Object ID.
#$13	1 byte	Animation countdown (animates and reset when zero).
#$17	1 byte	Object sprite (bits 0-7).
#$1A	2 bytes	Object X-velocity, in sub-pixels per frame.
#$1C	2 bytes	Object Y-velocity, in negative sub-pixels per frame.
#$1E	1 byte	Object Y-acceleration, in sub-pixels per frame per frame.
#$22	2 bytes	Object X-position, in pixels.
#$24	2 bytes	Object Y-position, in pixels.
#$27	1 byte	Object's current health.
#$28	24 bytes	Unknown. Contains further data about the object, such as recovery timers for bosses. Data may not be fixed.