The SMBX64 *.LVL file description

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(100% done)

This is a level map TEXT file. All parameters are written line by line without any blank lines.

Introduction

Standard parameters:

Standard size of one block	32x32 pixels
Possible on screen display height	19 blocks
Possible on screen display width	25 blocks
Height of screen	600 pixels (19 blocks without 8 pixels)
Width of screen	800 pixels (25 blocks)
Max level space size:	419998×419998 pixels (but it is allowed to come out of limits)

Limits of objects on one level map:

Blocks:	20000
NPCs:	5000
Background objects:	8000
Doors:	200

Default section positions

(Section Center)	Section (X and Y axis ranges)
-200000	**01** (-190000 : -219999)
-180000	**02** (-170000 : -189999)
-160000	**03** (-150000 : -189999)
-140000	**04** (-130000 : -149999)
-120000	**05** (-110000 : -129999)
-100000	**06** (-90000 : -109999)
-80000	**07** (-70000 : -89999)
-60000	**08** (-50000 : -69999)
-40000	**09** (-30000 : -49999)
-20000	**10** (-10000 : -29999)
0000	**11** (9999 : -9999)
20000	**12** (10000 : 29999)
40000	**13** (30000 : 49999)
-60000	**14** (50000 : 69999)
80000	**15** (70000 : 89999)
100000	**16** (90000 : 109999)
120000	**17** (100000 : 129999)
140000	**18** (130000 : 149999)
160000	**19** (150000 : 169999)
180000	**20** (170000 : 189999)
200000	**21** (190000 : 209999)

- The standard size of one section zone is 29999×29999 pixels
- Y is always equal to X as Section center coordinates
- where x=0 and y=0 – is a center of 11'th section.

For converting from absolute coordinates to the relative of center by one section:

$$X_{n-section} = X_{absolute} - X_{Current\,section\,center}$$
$$Y_{n-section} = Y_{absolute} - Y_{Current\,section\,center}$$

The section size and position are defined by the position of each side of the section.
height and width are calculated with a formula:

$W = |L\text{-}R| \qquad H = |T\text{-}B|$

0 Left   Right   x

Top

Bottom

y
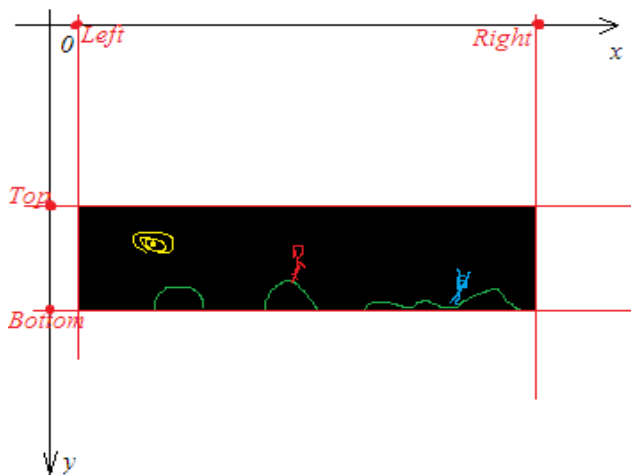
The coordinates of an object's placement is set concerning its upper left corner:
In this example, the mushroom's coordinates on the current section is: X=2150; Y=2600
and the block coordinates are: X=2150; Y=2632
Remember!
As the Y axis is turned to move an object down, it is necessary to add to the Y offset and to move up, it is necessary to subtract.

y=2600

x=2150

y

x

w=h=32

y=2600   w

                 h

y=2632

y

x=2150
x=2150

x
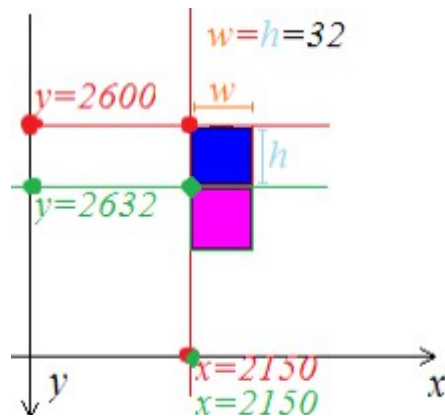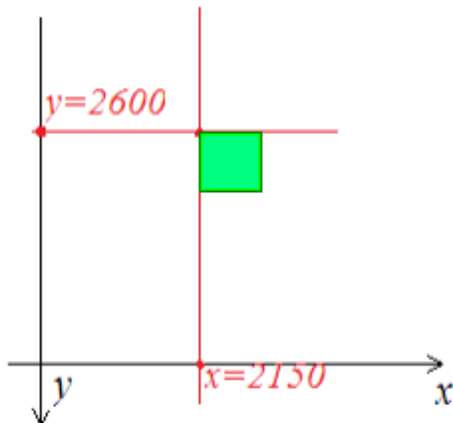
File Format Specification

Structure
- [header]
- [sections settings]
- [player's start points]
- [blocks on level]
- "next"
- [background tiles]
- "next"
- [NPS's options]
- "next"
- [Warps/Doors options]
- "next"
- [Water/Quicksand]
- "next"
- [Layers]
- "next"
- [Events]

The reference designations:
- standard parameter
- **Comment title**
- Comment description
- **loop**
- variable
- *Special option, used only under special conditions, differently is absent*
- The option isn't known yet
- File format version limit
- Data type

File format version:
The version number of the file format defines data present or absent in the file.

--File begin--

First 3th lines (Header):

Parameter	Description
64	(unsigned int) File format number (last in SMBX is 64)
0	(unsigned int) number of stars on this level (>= 17)
"Level name"	(string) Level title (>=62)

Section properties

(loop 21 times) (if <8, loop 6 times)

-200000	(long) **Left** size (-left/+right)
-200768	(long) **Top** size (-down/+up)
-200000	(long) **Bottom** size (full screen is -200600 -down/+up)
-199200	(long) **Right** size (full screen is -199200 +left/-right)
24	(unsigned int) Music number (24 is enable custom music file)
16291944	(long) Background color *(In old versions editors)* [0] = black, [16291944] = blue, [10520656] = dark blue-green
#FALSE#	(bool) Is Level wrap
#TRUE#	(bool) enable Off Screen exit
13	(unsigned int) Background number
#FALSE#	(bool) No turn back
#TRUE#	(bool) Under water (>=32)
"somefile.mp3"	(string) Custom music file (>=2)
(End loop)	

Player start points

-199996	(long) First player Position x (+left/-right) (0 – player point isn't set)
-200600	(long) First player Position y (+up/-down) (0 – player point isn't set)
24	(unsigned int) Width of character (0 – is is first player point isn't set)
54	(unsigned int) Height of character (0 – is is first player point isn't set)
-199242	(long) Second player Position x (0 – player point isn't set)
-200068	(long) Second player Position y (0 – player point isn't set)
24	(unsigned int) Width of character (0 – is is second player point isn't set)
60	(unsigned int) Height of character (0 – is is second player point isn't set)

Blocks

Description of the blocks placed on a map:

(Loop = how many blocks are in this level)			
-241408	(long) Block position x		
-180512	(long) Block position y		
32	(unsigned int) Height		
32	(unsigned int) Width		
63	(unsigned int) Block ID		
0	(unsigned int) Containing NPC number 0 – empty, -99 coins 1000+npc_id – NPC		
#FALSE#	(bool) Invisible		
#TRUE#	(bool) Slippery	(>=62)	
"Default"	(string) Layer name	(>=10)	
"BlockDestroy"	(string) Block destroy event name	(>=10)	
"hitme"	(string) Block hit event name	(>=10)	
"NoMore"	(string) "No more object in layer" event	(>=10)	
(Loop end)			

Note: Array must be sorted by x and by y;

Marker between Backgrounds and blocks:

"next"

Background objects description:

(Loop = how many backgrounds are in this level)		
-199808	(long) Position x	
-200480	(long) Position y	
15	(unsigned int) Background-1 number	
"Default"	(string) Layer name	(>=10)
(Loop end)		

Note: Array must be sorted by x and by y and grouped by special priory by ID;

Marker between NPC and Backgrounds:

"next"

NPC descriptions:

Value	Description	
(Loop = how many NPCs are in this level)		
-199966	(long) Position x	
-200480	(long) Position y	
-1	(int) [-1] left, [0] random/none, [1] right	
91	(unsigned int) NPC number	
71	(int) Special option:	(>=10)
	Included NPC: used only if the NPC is	
	Buuble(283)/Burred(91)/Lakitu(284)/Egg(96)	
	CoopaTroopa algorithm:	
	0 chase, 1 jump, 2 hover L/R, 3 hover U/D, >4 idle in air	
	Cheap-cheap algorithm:	
	0 Swim, 1 jump, 2 projective, 3 swim L/R, 4 swim U/D	
	Firebar position (NPC 260) 0-32	
	Warp to section: -1-20 (Section number -1)	
12	(int) Second special option: (Only for NPC-91 with special=288)	
	Section number for included magic potion: -1-20	
#FALSE#	(bool) Generator enable (>=10)	
3	(int) Special: Generator direction: [1] up, [2] left, [3] down, [4] right (>=10)	
2	(int) Special: Generator type [1] Warp, [2] Projective (>=10)	
155	(unsigned int) Special: Generator period (sec*10) [1-600] (>=10)	
""	(string) Message by this NPC talkative (>=10)	
#FALSE#	(bool) Friendly NPC (>=10)	
#FALSE#	(bool) Don't move NPC (>=10)	
#FALSE#	(bool) LegacyBoss (>=10)	
"Default"	(string) Layer name (>=10)	
"Activate"	(string) Activate event (>=10)	
"GOldCoin D"	(string) Death event (>=10)	
"Talk"	(string) Talk event (>=10)	
"NoMoreObj"	(string) No more object in layer event (>=10)	
"AttachToLayer"	(string) Layer name to attach (>=63)	
(Loop end)		

"next"

Doors description:

(Loop = how many doors are in this level)	
-199824	(long) Entrance position x
-200224	(long) Entrance position y
-199824	(long) Exit position x
-200224	(long) Exit position y
3	(unsigned int) Entrance direction: [3] down, [1] up, [2] left, [4] right
3	(unsigned int) Exit direction: [1] down [3] up [4] left [2] right
1	(unsigned int) Door type: [1] pipe, [2] door, [0] instant
"file.lvl"	(string) Warp to level (>=8)
0	(unsigned int) Normal Entrance / To Warp [0-100] (>=8)
#FALSE#	(bool) Level Entrance (can not enter) (>=8)
#FALSE#	(bool) Level Exit (End of level) (>=8)
-1	(long) Wrap to X on world map (-1 is empty) (>=8)
-1	(long) Wrap to Y on world map (-1 is empty) (>=8)
5	(unsigned int) Need a stars for enter (>=8)
"Default"	(string) Layer name (>=10)
#FALSE#	(bool) <unused>, always FALSE (>=10)
#FALSE#	(bool) No Yoshi (>=28)
#FALSE#	(bool) Allow NPC (>=28)
#FALSE#	(bool) Locked (>=28)
(Loop end)	

Marker between Doors and water/quicksand:

"next" (>=10)

Water/Quicksand descriptions:

(>=32), else skip section

(Loop = how many water ranges are in this level)	
-159968	(long) Position X
-160096	(long) Position Y
160	(unsigned long) Width
64	(unsigned long) Height
0	(int) <unused>, always 0
#TRUE#	(bool) Is Quicksand, else Water (>=63)
"Default"	(string) Layer name
(Loop end)	

Marker between water/quicksand and layers:

"next" (>=10)

Layers descriptions:

(>=10), else skip section

(Loop = how many layers are in this level)	
"Default"	(string) Layer name
#FALSE#	(bool) Is Hidden layer
(Loop end)	

Marker between layers and events:

"next" (>=10)

(Loop = how many events are in this level)	
"New Event"	(string) Event name
"All super-puper!!!))))))"	(string) Show message after start event
0	(unsigned int) Play sound number (0 is don't play sound) (>=18)
0	(unsigned int) End game type (0 – none, or 1 – Bowser Defeat)
⬚ **(loop 20 times = Show/hide/toggle layers lists)**	
"hideme1"	(string) Hide layer
"showme1"	(string) Show layer
"Toggleme1"	(string) Toggle layer
⬚ **(loop 20 times end)**	
Warning: In SMBX exist bug: if you add 21'st layer in any list, you will lose opportunity to delete layers from list. Max 21 layers	
""	(string) Empty string (must by for SMBX)
""	(string) Empty string (must by for SMBX)
""	(string) Empty string (must by for SMBX)
⬚ **(loop 21 times start (for each 21 sections)**	
-1	(int) Set Music ([-1] don't change; [-2] default; or number of music)
-1	(int) Set Background ([-1] don't change; [-2] default; or # of back)
-1	(long) Set Position ([-1] don't change; [-2] default; or **LEFT** x coordinates for section=current_loop)
0	(long) **TOP** y coordinates for section=current_loop
0	(long) **BOTTOM** y coordinates for section=current_loop
0	(long) **RIGHT** x coordinates for section=current_loop
⬚ **(Loop 21 times end)**	
"Trigger event"	(string) Trigger event (>=28)
1532	(unsigned int) Start trigger event after x [sec*10]. i.e. 153,2 sec (>=28)
#FALSE#	(bool) No Smoke (>=28)
#FALSE#	(bool) Hold **ALT-JUMP** player control (>=28)
#FALSE#	(bool) Hold **ALT-RUN** player control (>=28)
#FALSE#	(bool) Hold **DOWN** player control (>=28)
#FALSE#	(bool) Hold **DROP** player control (>=28)
#FALSE#	(bool) Hold **JUMP** player control (>=28)
#FALSE#	(bool) Hold **LEFT** player control (>=28)
#FALSE#	(bool) Hold **RIGHT** player control (>=28)
#FALSE#	(bool) Hold **RUN** player control (>=28)
#FALSE#	(bool) Hold **START** player control (>=28)
#FALSE#	(bool) Hold **UP** player control (>=28)
#FALSE#	(bool) Auto start (>=32)
"MoveMe"	(string) Layer name for movement (>=32)
0	(int) Layer moving speed – horizontal (-Left/+Right) (>=32)
0	(int) Layer moving speed – vertical (+Up/-Down) (>=32)
0	(int) Move screen horizontal speed (-Left/+Right) (>=49)
0	(int) Move screen vertical speed (+Up/-Down) (>=49)
0	(int) Scroll section x, (in file value is x-1) (>=49)
(Loop end)	

--End of file--

Attachment: Background Sorting Priority table

Value	BackGround ID list	Comment
1	76	Backgrounds
2	30, 39, 40, 41, 42, 64, 75, 77, 78	Backgrounds
3	16, 17	Castles
4	14, 15, 47	Walls
5	60, 12	
6	43, 44, 97, 11, 61, 172, 158, 159, 66	
7	165, 65, 169, 82, 166	
8	164, 26, 167, 168, 83	
9	79, 160, 101, 102	
10	186, 110, 153, 152	
11	111, 112, 113	Bones
12	58, 132, 115	
13	116, 133, 117, 118	
14	190, 13, 189	
15	52, 53, 54, 55, 56, 57, 59	Tree
16	185	
17	170, 171	
18	99	
19	22, 21	Mushroom trunk
20	67, 150	
21	81, 151, 142, 162	
22	121, 144, 122, 123, 124, 85, 125	
23	146, 126, 127, 147, 128, 93	
24	148, 103, 149	
25	119, 120, 36, 152	
26	2, 4	Small Hills
27	114	
28	3, 6, 7, 8, 9, 10	Big Hills
29	32, 31	Bush
30	27, 28	SMW Grass
31	18, 19, 20	SMB1 Grass
32	89, 90, 91	Colomn
33	134, 135, 136	Check Point
34	5, 29, 80, 33	
35	38, 62, 63, 108, 109	Palm tree
36	174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184	Fence
37	173	Big bubble
38	15, 37, 84, 86	
39	94, 95	Lamp rope
40	35, 96, 98, 34	
41	163	
42	129	

43	131	
44	130	
45	1	Little bush
46	140, 139	
47	87, 88, 92, 141, 104, 105, 107	Doors
48	100, 74, 71, 70, 72, 73	Platform path
49	48	Spider web
50	161	Cloud
51	106	Little fence 1
52	23, 24, 25	Little fence 2
53	154, 155, 156, 157	Mother Brain Wires
54	137, 138	CheckPoint gates right FG
55	143, 145	Exit gates
56	68, 69	Air-Screw
57	45, 46	Rope 1
58	187, 188	Quicksand foreground
59	50, 51	HandRail Ghost
60	49	HandRail