

Scrap Mechanic - Syntax of Mod Files

Xesau's Modding Guide

Introduction and document information

This document outlines the document structures of the files you can use in mods.

All JSON documents are documented using a table with the following structure:

Type	Field name	Description
Type of field	Name of the field, indented to display nesting. "... " means an item of an array or an object as value of a <i>property</i> field	A description of the field value.
<i>string</i>	<i>color</i>	<i>The default paint color of the object. (Hexadecimal notation)</i>

The field type can be one of the following values:

Field type	Description	Example value(s)
integer	A round number	1, -29, 3480, 10000
string	Any text. Must be enclosed in double "	"Hello"
boolean	True or false	true, false
path	A file path. When referencing to a file in the mod itself, start with \$MOD_DATA. When referencing to a file in the game, start with \$GAME_DATA. Enclosed in "	"\$GAME_DATA/Objects/Textures/industrial/obj_industrial_beams_asg.tga"
object	A JSON object	{ "field": "value" }
array	A JSON array	["item0", "item1", "etc"]
float	A floating-point number / decimal (dot notation)	0.3
empty object	An empty JSON object	{ }
color	A color in hexadecimal notation (rrggbb), enclosed in double "	"22ddff"
property	A property in an object that functions as map. This type is found in the <i>inventoryDescriptions.json</i> files.	"7cf717d7-d167-4f2d-a6e7-6b2c70aa3986"

Files

Data/Gui/Language/~inventoryDescriptions.json

For every language that you want your mod to support, you have to create an *inventoryDescriptions.json* file in the respective language folder. This file defines the names and descriptions for your blocks and parts to show in the inventory folder.

Type	Field name	Description
<i>object</i>	[main]	
<i>property</i>	...	The UUID of the part/block
<i>string</i>	name	The name as displayed in the inventory
<i>string</i>	description	The description as displayed in the inventory

Data/Objects/Database/ShapeSets/blocks.json

In this file, you define all the blocks that your mod adds.

Type	Field name	Description
<i>object</i>	[main]	
<i>array</i>	blockList	List of blocks your mod adds
<i>object</i>	...	
<i>string</i>	uuid	The UUID of the block. (Generate new for every block at www.uuidgenerator.net)
<i>path</i>	asg	Path to the ASG (Alpha, Specular, Glow) texture.
<i>path</i>	dif	Path to the diffuse texture. This texture is not affected by paint.
<i>path</i>	nor	Path to normal map texture. This gives the block 3d-iness.
<i>color</i>	color	The default paint color
<i>float</i>	density	The density. Light: <i>250.0</i> , medium: <i>500.0</i> , heavy: <i>1250.0</i>
<i>integer</i>	tiling	The texture tiling
<i>string</i>	physicsMaterial	Name of the material, found in <i>Data/Objects/Database/physicsmaterials.json</i>

<i>boolean</i>	glass	If your texture is transparent, this must be <i>true</i> . Else it must be <i>false</i>
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Data/Objects/Database/ShapeSets/parts.json

In this file, you define all the parts that your mod adds.

Type	Field name	Description
<i>object</i>	[main]	
<i>array</i>	itemList	List of blocks your mod adds
<i>object</i>	...	(item)
<i>string</i>	uuid	The UUID of the part. (Generate new for every block at www.uuidgenerator.net)
<i>float</i>	density	The density. Light: <i>250.0</i> , medium: <i>500.0</i> , heavy: <i>1250.0</i>
<i>string</i>	color	color/hex
<i>string</i>	physicsMaterial	The name of the physics material found in <i>Data/Objects/Database/physicsmaterials.json</i>
<i>string</i>	rotationSet	The name of the rotation set found in <i>Data/Objects/Database/rotationsts.json</i>
<i>string</i>	sticky	Axes where the object is sticky: which face can be attached to another object or to the ground. Example: "-X+Y+Z-Z"
<i>object</i>	renderable	
<i>array</i>	lodList	L.o.d.'s
<i>object</i>	...	(lod)
<i>path</i>	mesh	Path to the 3D model for this part
<i>string</i>	material	Optional. The material, found in <i>Data/Objects/Materials/partmaterials.json</i>
<i>path</i>	pose0	Optional. Switches: model for when switch is turned on.
<i>path</i>	pose1 and pose3	Optional. Thrusters: model for when thruster is turned on.
<i>array</i>	subMeshList	"Sub meshes"
<i>object</i>	...	(sub mesh)
<i>array</i>	textureList	List of textures (<i>_asg</i> , <i>_dif</i> and <i>_nor</i>) for this texture.
<i>path</i>	...	Path to texture file. \$MOD_DATA & \$GAME_DATA
<i>array</i>	includes	Optional. [NEEDS RESEARCH]

<i>string</i>	...	"Include" [NEEDS RESEARCH]
<i>object</i>	custom	Custom options? [NEEDS RESEARCH]
<i>object</i>	skeleton	Skeleton options [NEEDS RESEARCH]
<i>object</i>	box	Collision type: Box (<i>choose one</i>)
<i>integer</i>	x	The length of the collision box on the X-axis
<i>integer</i>	y	The length of the collision box on the Y-axis
<i>integer</i>	z	The length of the collision box on the Z-axis
<i>object</i>	cylinder	Collision type: Cylinder (<i>choose one</i>)
<i>integer</i>	diameter	The diameter of the collision cylinder [in <i>u</i>]
<i>integer</i>	depth	The height/length of the cylinder [in <i>u</i>]
<i>float</i>	margin	The collision margin/tolerance: the distance you can be inside the collision boundaries
<i>string</i>	axis	The axis (X, Y or Z) of the cylinder. X and Z are horizontal, Y is vertical
<i>object</i>	hull	Collision type: Convex hull (<i>choose one</i>)
<i>integer</i>	x	The size of the hull on the X-axis [in <i>u</i>]
<i>integer</i>	y	The size of the hull on the Y-axis [in <i>u</i>]
<i>integer</i>	z	The size of the hull on the Z-axis [in <i>u</i>]
<i>float</i>	margin	The collision margin/tolerance: the distance you can be inside the collision boundaries
<i>array</i>	pointList	The points in the hull that make the convex
<i>object</i>	...	(point)
<i>float</i>	x	From -1.0 to 1.0, the point in the hull box on the X-axis
<i>float</i>	y	From -1.0 to 1.0, the point in the hull box on the Y-axis
<i>float</i>	z	From -1.0 to 1.0, the point in the hull box on the Z-axis
<i>empty object</i>	logic	Part functionality: logic gate (<i>choose one or none</i>)
<i>empty object</i>	timer	Part functionality: timer (<i>choose one or none</i>)
<i>empty object</i>	lever	Part functionality: switch (<i>choose one or none</i>)
<i>empty object</i>	button	Part functionality: button (<i>choose one or none</i>)

<i>empty object</i>	bearing	Part functionality: bearing (<i>choose one or none</i>)
<i>object</i>	spring	Part functionality: spring (<i>choose one or none</i>)
<i>integer</i>	length	The length of the spring [in <i>u</i>]
<i>integer</i>	defaultStiffnessLevel	The default stiffness level (<i>1, 2, 3, ... 20</i>)
<i>array</i>	stiffnessLevels	The 20 stiffness levels
<i>object</i>	...	(level)
<i>float</i>	stiffness	The stiffness/spring constant [in <i>?/u</i> ?] [NEEDS RESEARCH]
<i>object</i>	steering	Part functionality: steering (<i>choose one or none</i>)
<i>array</i>	bones	The skeleton bones in the character that need special positioning in the seat.
<i>object</i>	...	(bone)
<i>string</i>	name	Name of the bone in the model skeleton
<i>object</i>	offset	(offset)
<i>float</i>	x	Offset X
<i>float</i>	y	Offset Y
<i>float</i>	z	Offset Z
<i>boolean</i>	freeRotation	Optional.
<i>boolean</i>	steers	Optional. Whether this bone steers
<i>path</i>	ragdollFile	The path to the skeleton ragdoll for the character.
<i>float</i>	steerAngle	Optional. Maximum steering angle in either direction.
<i>string</i>	enterAudio	The name of the sound that you hear when entering the seat, as found in the sound bank.
<i>string</i>	exitAudio	The name of the sound that you hear when leaving the seat, as found in the sound bank.
<i>object</i>	seat	Part functionality: seat (<i>choose one or none</i>)
<i>array</i>	bones	The skeleton bones in the character that need special positioning in the seat.
<i>object</i>	...	(bone)
<i>string</i>	name	Name of the bone in the model skeleton
<i>object</i>	offset	(offset)

<i>float</i>	x	Offset X
<i>float</i>	y	Offset Y
<i>float</i>	z	Offset Z
<i>boolean</i>	freeRotation	Optional.
<i>path</i>	ragdollFile	The path to the skeleton ragdoll for the character.
<i>float</i>	steerAngle	Optional. Maximum steering angle in either direction.
<i>string</i>	enterAudio	The name of the sound that you hear when entering the seat, as found in the sound bank.
<i>string</i>	exitAudio	The name of the sound that you hear when leaving the seat, as found in the sound bank.
<i>object</i>	engine	Part functionality: engine (<i>choose one or none</i>)
<i>string</i>	type	Petrol or Electric
<i>array</i>	gears	9 gears
<i>object</i>	...	(gear)
<i>float</i>	velocity	Speed with which the connected bearings rotate
<i>float</i>	power	Power with which the connected bearings rotate
<i>object</i>	thruster	Part functionality: thruster (<i>choose one or none</i>)
<i>array</i>	levels	The different levels of thruster force that you can select in the GUI interface
<i>object</i>	...	(level)
<i>float</i>	averageForce	The average force of the thruster.
<i>float</i>	forceVariation	The maximum random difference from the average force.
<i>empty object</i>	timedjoint	Part functionality: controller (<i>choose one or none</i>)
<i>empty object</i>	sensor	Part functionality: sensor (<i>choose one or none</i>)
<i>empty object</i>	horn	Part functionality: horn (<i>choose one or none</i>)
<i>empty object</i>	tone	Part functionality: farmbot head/tone synthesiser (<i>choose one or none</i>)
<i>array</i>	audio	List of audio events
<i>object</i>	...	(event)
<i>string</i>	event	Audio event name as found in sound bank

<i>string</i>	guiLayout	Layout (.layout file) in Data/Gui
<i>object</i>	spotlight	Part functionality: light/lamp (<i>choose one or none</i>)
<i>float</i>	coneAngle	Angle/width of the light cone
<i>float</i>	coneFade	[NEEDS RESEARCH]
<i>float</i>	minRange	Minimum range of the lamp
<i>float</i>	maxRange	Maximum range of the lamp
<i>float</i>	defaultLuminance	Default luminance level of the light
<i>color</i>	color	Color of the light
<i>object</i>	direction	Direction of the lighting
<i>int</i>	x	Direction on X-axis
<i>int</i>	y	Direction on Y-axis
<i>int</i>	z	Direction on Z-axis