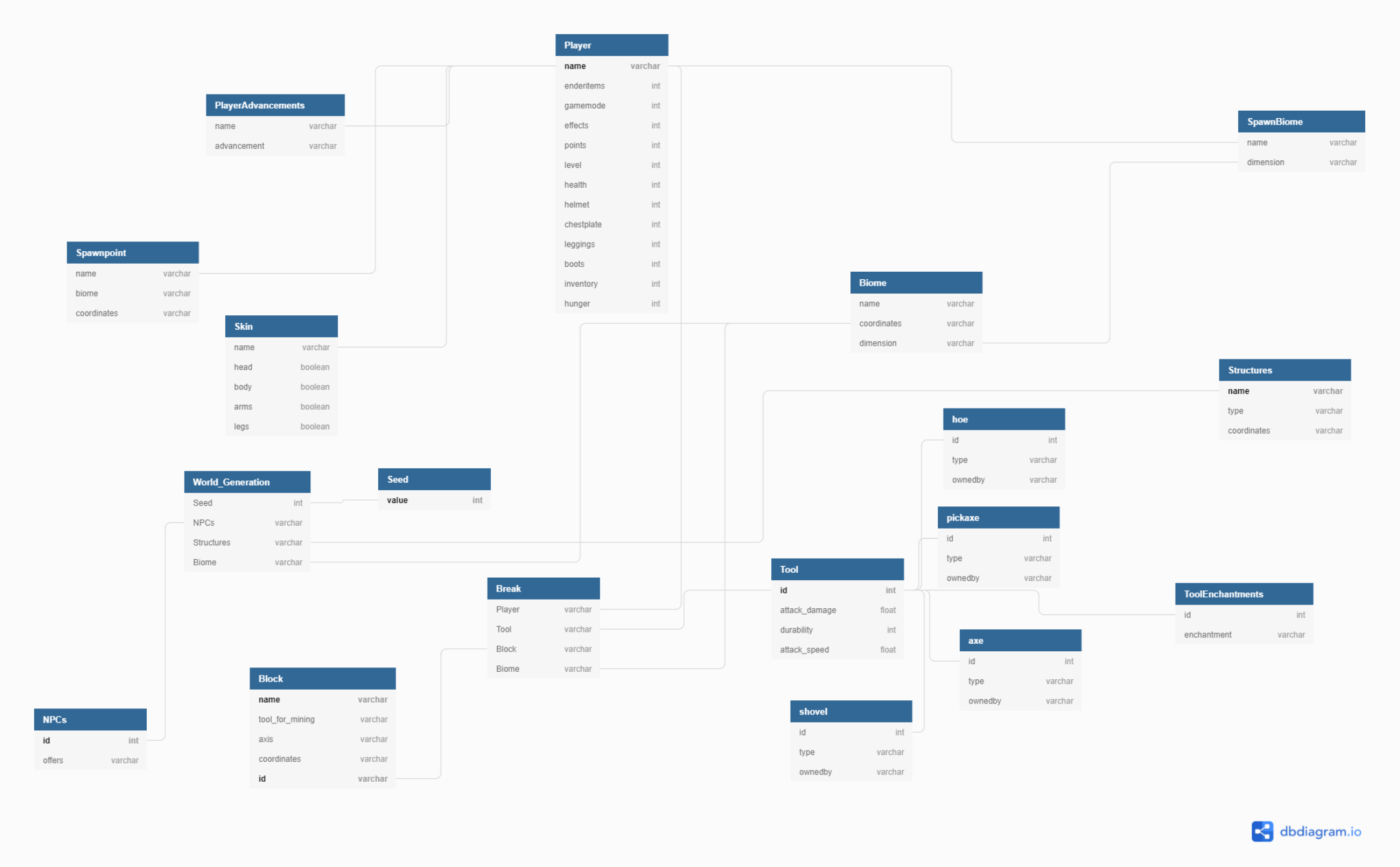
# Relational Model

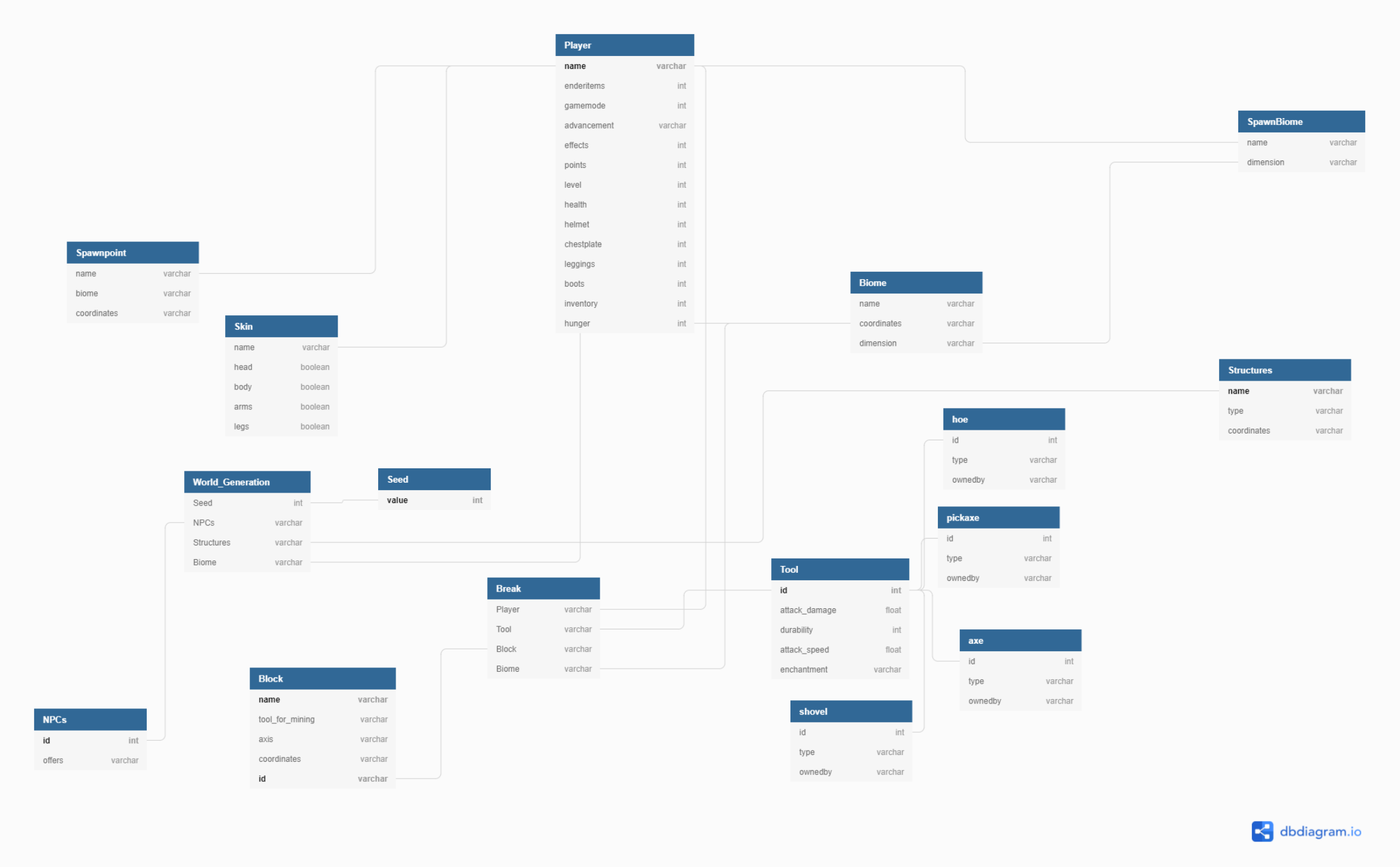
The EER diagram was converted to a relational model,


Player
name varchar
enderitems int
gamemode int
effects int
points int
level int
health int
helmet int
chestplate int
leggings int
boots int
inventory int
hunger int
PlayerAdvancements
name varchar
advancement varchar
SpawnBiome
name varchar
dimension varchar
Spawnpoint
name varchar
biome varchar
coordinates varchar
Skin
name varchar
head boolean
body boolean
arms boolean
legs boolean
Biome
name varchar
coordinates varchar
dimension varchar
Structures
name varchar
type varchar
coordinates varchar
hoe
id int
type varchar
ownedby varchar
World_Generation
Seed int
NPCs varchar
Structures varchar
Biome varchar
Seed
value int
pickaxe
id int
type varchar
ownedby varchar
Break
Player varchar
Tool varchar
Block varchar
Biome varchar
Tool
id int
attack_damage float
durability int
attack_speed float
ToolEnchantments
id int
enchantment varchar
axe
id int
type varchar
ownedby varchar
Block
name varchar
tool_for_mining varchar
axis varchar
coordinates varchar
id varchar
NPCs
id int
offers varchar
shovel
id int
type varchar
ownedby varchar
dbdiagram.io

- **Relational model after conversion to 1NF:**

While making the original model we had already handled the composite attributes by adding its composites to the relation.
For example: Composites of armor i.e. helmet, chestplate etc. were added to the attributes of the player.

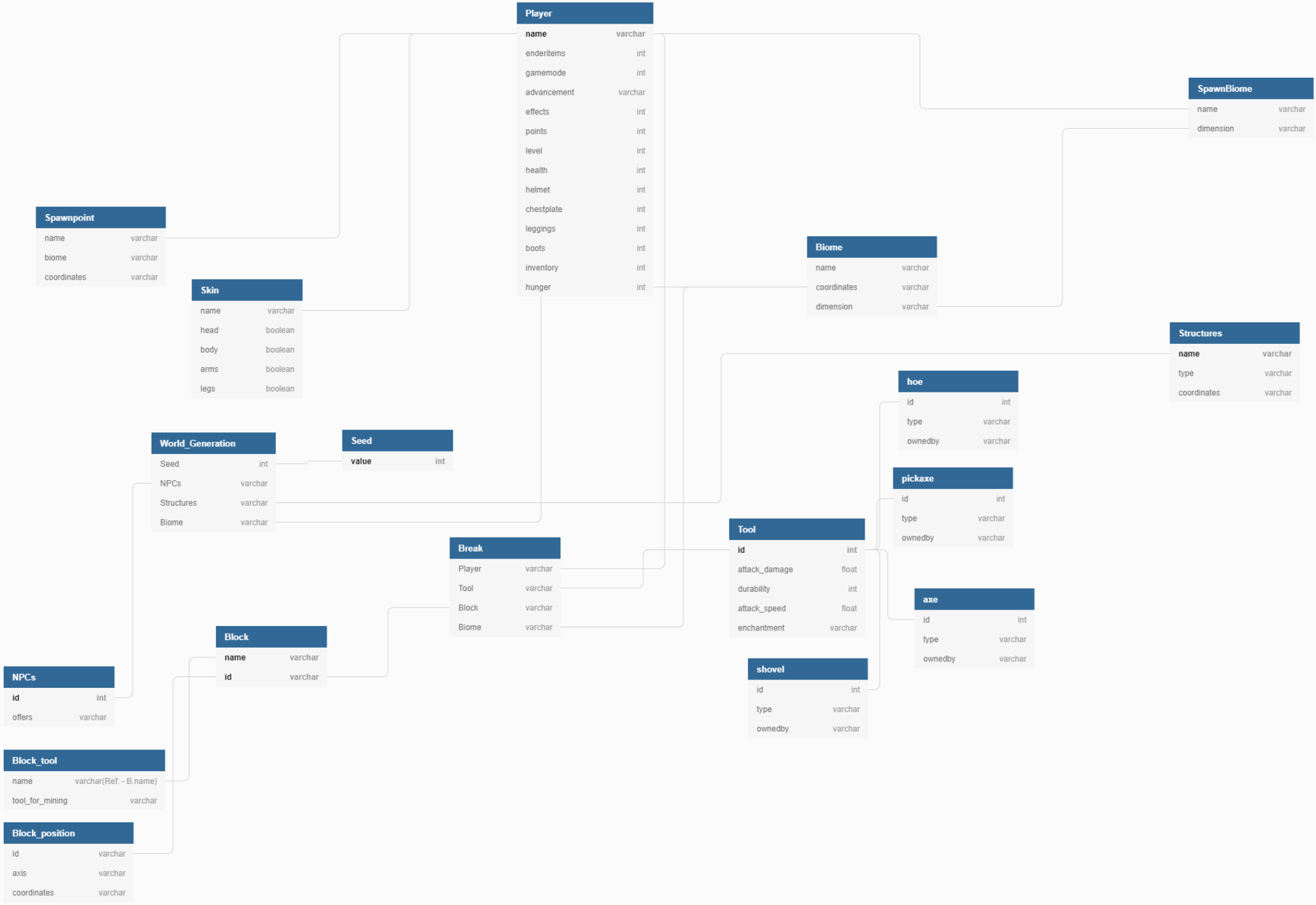
For the multivalued attributes which originally had a separate table with the primary key of the entity as a foreign key were also directly added to the relation.
For example: Player advancements was an individual table which was moved to player as an attribute.


Player
name varchar
enderitems int
gamemode int
advancement varchar
effects int
points int
level int
health int
helmet int
chestplate int
leggings int
boots int
inventory int
hunger int
SpawnBiome
name varchar
dimension varchar
Spawnpoint
name varchar
biome varchar
coordinates varchar
Skin
name varchar
head boolean
body boolean
arms boolean
legs boolean
Biome
name varchar
coordinates varchar
dimension varchar
Structures
name varchar
type varchar
coordinates varchar
hoe
id int
type varchar
ownedby varchar
World_Generation
Seed int
NPCs varchar
Structures varchar
Biome varchar
Seed
value int
pickaxe
id int
type varchar
ownedby varchar
Break
Player varchar
Tool varchar
Block varchar
Biome varchar
Tool
id int
attack_damage float
durability int
attack_speed float
enchantment varchar
axe
id int
type varchar
ownedby varchar
Block
name varchar
tool_for_mining varchar
axis varchar
coordinates varchar
id varchar
NPCs
id int
offers varchar
shovel
id int
type varchar
ownedby varchar
dbdiagram.io

- **Relational model after conversion to 2NF:**

There were some partial dependencies in relation block as non-prime attributes were dependent on id and name which are proper subsets of the candidate key for block.

We solved this by splitting that table into 2 more with each table having one element of the candidate key and attributes that are dependent on it.
For example: id was grouped with axis and coordinates while tool_for_mining was grouped with name.


Player
name varchar
enderitems int
gamemode int
advancement varchar
effects int
points int
level int
health int
helmet int
chestplate int
leggings int
boots int
inventory int
hunger int
SpawnBiome
name varchar
dimension varchar
Spawnpoint
name varchar
biome varchar
coordinates varchar
Skin
name varchar
head boolean
body boolean
arms boolean
legs boolean
Biome
name varchar
coordinates varchar
dimension varchar
Structures
name varchar
type varchar
coordinates varchar
hoe
id int
type varchar
ownedby varchar
World_Generation
Seed int
NPCs varchar
Structures varchar
Biome varchar
Seed
value int
pickaxe
id int
type varchar
ownedby varchar
Break
Player varchar
Tool varchar
Block varchar
Biome varchar
Tool
id int
attack_damage float
durability int
attack_speed float
enchantment varchar
axe
id int
type varchar
ownedby varchar
Block
name varchar
id varchar
NPCs
id int
offers varchar
shovel
id int
type varchar
ownedby varchar
Block_tool
name varchar(Ref: - B.name)
tool_for_mining varchar
Block_position
id varchar
axis varchar
coordinates varchar
dbdiagram.io

- **Relational model after conversion to 3NF:**

The model is already in the third normal form as it does not have any transitive dependencies.