Pre Normalization

This table is created to hold all information regarding a player, their created character and whether or not their character has eaten a devil fruit. It is primarily dependent on PLAYER_ID and CHAR_ID which doesn't hold well for data integrity. The table itself is also missing valuable information for each player or not splitting it correctly.

PLAYER_ID	PLAYER_USER	PLAYER_PASSWORD	PLAYER_PHONE	CHAR_ID	CHAR_NAME	CHAR_LEVEL	DF_ID	DF_NAME	DF_TYPE	DF_ABILITY
1	pirateking27	Xxxxxx23	317-LUF-FFYY	1	Monkey D. Luffy	15	1	Gum-Gum Fruit	Paramecia	Stretching of body
2	secondbest27	Xxxxxx45	317-ZOR-OOOO	2	Roronoa Zoro	7				
3	WhiteBeard55	xxxxx53	317-BEA-RDED	3	Edward Newgate	77	3	Gura Gura Fruit	Paramecia	Earthquakes on anything
4	bluedragon112	Xxxxx55	317-KAI-BLUE	4	Drago Kaido	102	7	Uo Uo No Mi: Model Seiryu	Zoan	Turn into a Dragon

Conversion to 1NF

To convert this table to its first normal form we need to eliminate any repeating groups and atomize it, leaving behind nulls and repeating groups. We also see that the table has two primary keys PLAYER_ID and CHAR_ID which gets us any and all information about a player and their respective character. Although because of this we still have partial and transitive dependencies. The partial depencies lie in having PLAYER_ID determine PLAYER_USER, PLAYER_PASSWORD, and PLAYER_PHONE. While CHAR_ID determines CHAR_NAME and CHAR_LEVEL. We also have a transitive dependancy with DF_ID as it determines the DF_NAME, DF_TYPE, and DF_ABILITY.

PLAYER_ID	PLAYER_USER	PLAYER_PASSWORD	PLAYER_PHONE	CHAR_ID	CHAR_NAME	CHAR_LEVEL	DF_ID	DF_NAME	DF_TYPE	DF_ABILITY
1	pirateking27	Xxxxxx23	317-LUF-FFYY	1	Monkey D. Luffy	15	1	Gum-Gum Fruit	Paramecia	Stretching of body
2	secondbest27	Xxxxxx45	317-ZOR-OOOO	2	Roronoa Zoro	7				
3	WhiteBeard55	xxxxx53	317-BEA-RDED	3	Edward Newgate	77	3	Gura Gura Fruit	Paramecia	Earthquakes on anything
4	bluedragon112	Xxxxx55	317-KAI-BLUE	4	Drago Kaido	102	7	Uo Uo No Mi: Model Seiryu	Zoan	Turn into a Dragon

1NF Dependancy Diagram

1NF(**<u>PLAYER_ID, CHAR_ID,</u>** PLAYER_USER, PLAYER_PASSWORD, PLAYER_PHONE, CHAR_NAME, CHAR_LEVEL, DF_ID, DF_NAME, DF_TYPE DF_ABILITY)

<u>PARTIAL DEPENDANCIES</u>
(PLAYER_ID -> PLAYER_USER, PLAYER_PASSWORD, PLAYER_PHONE)
(CHAR_ID -> CHAR_NAME, CHAR_LEVEL)

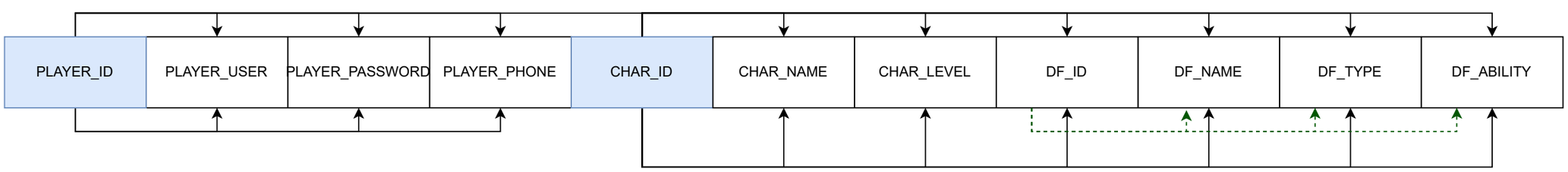
<u>TRANSITIVE DEPENDANCIES</u>
(DF_ID -> DF_NAME, DF_TYPE, DF_ABILITY)

The table is now technically in first Normal Form. Although we still have NULL values that will be fixed when converting to the third normal form.

When looking at our dependancy diagram we can see that we still have partial and transitive dependancies that need to be dealt with.

How do we fix this?

To set the table to 2NF we need to address all the partial dependancies by seperating them into their own tables



Conversion to 2NF

PLAYER TABLE

PLAYER_ID	PLAYER_USER	PLAYER_PASSWORD	PLAYER_PHONE
1	pirateking27	Xxxxxx23	317-LUF-FFYY
2	secondbest27	Xxxxxx45	317-ZOR-OOOO
3	WhiteBeard55	xxxxx53	317-BEA-RDED
4	bluedragon112	Xxxxx55	317-KAI-BLUE

STORY_CHARACTER TABLE

CHAR_ID	CHAR_NAME	CHAR_LEVEL
1	Monkey D. Luffy	15
2	Roronoa Zoro	7
3	Edward Newgate	77
4	Drago Kaido	102

PLAYER_CHARACTER TABLE

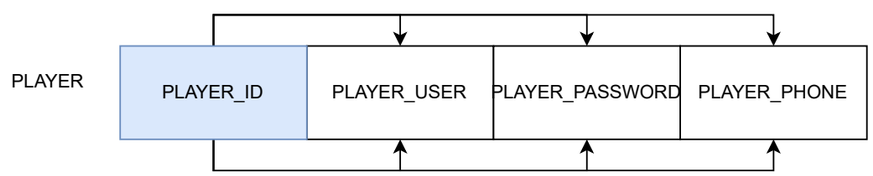
PLAYER_ID	CHAR_ID	DF_ID	DF_NAME	DF_TYPE	DF_ABILITY
1	1	1	Gum-Gum Fruit	Paramecia	Stretching of body
2	2				
3	3	3	Gura Gura Fruit	Paramecia	Earthquakes on anything
4	4	7	Uo Uo No Mi: Model Seiryu	Zoan	Turn into a Dragon

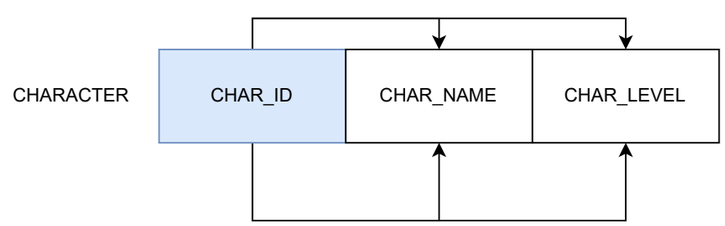
With this conversion we have effectively split the table into 2NF eliminating
any partial dependancies. Each table has its own PK and relies on our composite primary key.
But we can still see that there are transitive dependencies
and NULL values in the tables, as well as some missing or combined information.

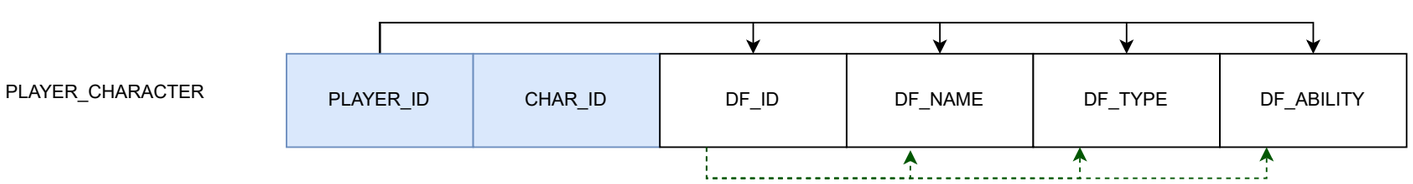
How do we fix this?

We fix this by converting our tables to the third normal form. To convert them we need to remove any transitive dependencies.
I also plan to fill in any missing information and effectively remove NULLs.

2NF Dependancy Diagram







PLAYER(**PLAYER_ID**, PLAYER_USER, PLAYER_PASSWORD, PLAYER_PHONE)

STORY_CHARACTER(**CHAR_ID**, CHAR_NAME, CHAR_LEVEL)

PLAYER_CHARACTER(**PLAYER_ID, CHAR_ID**, DF_ID, DF_NAME, DF_TYPE, DF_ABILITY)

TRANSITIVE DEPENDANCIES
(DF_ID -> DF_NAME, DF_TYPE, DF_ABILITY)

Conversion to 3NF

PLAYER TABLE

PLAYER_ID	PLAYER_USER	PLAYER_PASSWORD	PLAYER_PHONE	PLAYER_DATE
1	pirateking27	Xxxxxx23	317-LUF-FFYY	12-23-2002 15:20:23
2	secondbest27	Xxxxxx45	317-ZOR-OOOO	02-01-2025 17:36:59
3	WhiteBeard55	xxxxx53	317-BEA-RDED	03-02-2025 01:01:33
4	bluedragon112	Xxxxx55	317-KAI-BLUE	07-20-2006 08:33:33

DEVIL FRUIT TABLE

DF_ID	DF_NAME	DF_TYPE	DF_ABILITY	CHAR_ID
1	Gum-Gum Fruit	Paramecia	Stretching of body	1
3	Gura Gura Fruit	Paramecia	Earthquakes on anything	3
7	Uo Uo No Mi: Model Seiryu	Zoan	Turn into a Dragon	4

STORY_CHARACTER TABLE

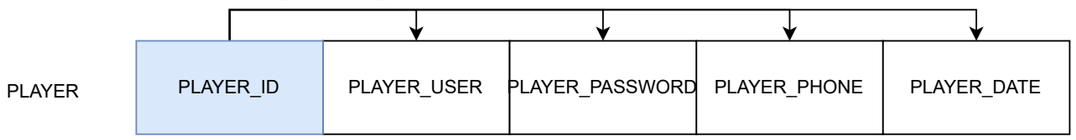
CHAR_ID	CHAR_FNAME	CHAR_MI	CHAR_LNAME	CHAR_LEVEL	PLAYER_ID
1	Luffy	D.	Monkey	15	1
2	Zoro	/	Roronoa	7	2
3	Edward	/	Newgate	77	3
4	Drago	/	Kaido	102	4

By splitting up these tables, they are now in the third normal form. I changed PLAYER_CHAR to a DEVIL FRUIT table to remove any issues with Devil Fruit information, therefore there are no repeating groups or missing information.

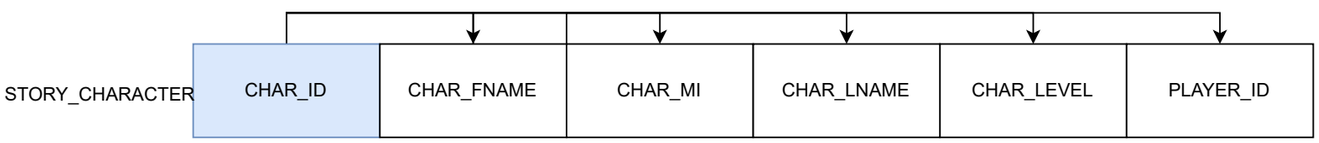
We effectively eliminated any partial and transitive dependancies, each table relies only on their primary keys. We also have foreign keys to point to other tables. All tables are also atomic and their are no repeating groups.

I also decided to split up the names of users to effectively hold the information. More columns were added to my tables as I continued my data book as well.

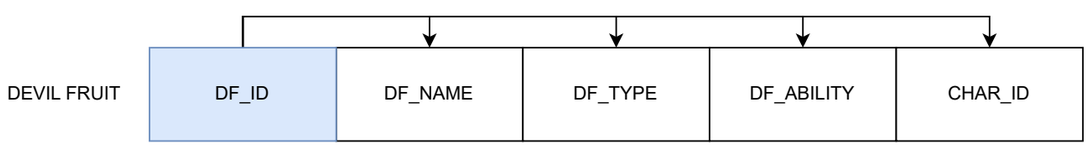
3NF Dependancy Diagram



PLAYER(**PLAYER_ID**, PLAYER_USER, PLAYER_PASSWORD, PLAYER_PHONE, PLAYER_DATE)



STORY_CHARACTER(**CHAR_ID**, CHAR_MI, CHAR_LNAME, CHAR_LEVEL, PLAYER_ID)



DEVIL FRUIT(**DF_ID**, DF_NAME, DF_TYPE, DF_ABILITY, CHAR_ID)