Definitive Guide to Disney Infinity NFC cards

Before You Do Anything

This guide only applies to the PS3, PS4, PS5, Wii, Wii U, Xbox 360, and 3ds versions of the games. The Xbox One games do not work with this guide unfortunately. It is most likely due to a difference in the Infinity Base compared to the other versions.

Also this guide was adapted from this one and if my guide doesn't help you, you should try that one.

What you need

- ACR122U NFC Reader/Writer
- Mifare Mini S20 UID 7 byte rewritable 13.56mhz rfid Card (Not the same as ones used for skylanders)
- PCSC_Mifare (The zip password is: mtoolstec.com)
- Mifare Card Programming
- <u>DITool</u>
- .bin file dumps (From the <u>DI Discord</u>)
- A hexadecimal editor to view the file data (You can use hexed.it)
- Willpower

How Disney Infinity Works Intro

The next three slides explain how the figure data works for disney infinity. The guide on how to write this data to a nfc card is after these but I highly encourage you to read this section and try understand how the figures work so you have a better understanding of how a nfc card clones one.

How Disney Infinity Works Part 1

Every single figure has a UID (Unique Identifier). An example would this Mr Incredible dump:

The blue highlighted area is the UID. This is unique for every single figure. So two Mr Incredibles will have unique IDs from each other.

Every figure has 89 44 C2 00 00 00 00 00 after their UID. I do not know if this is true but I saw somewhere while doing research that this is the copyright "logo" in each figure's data.

🔝 The Incredib	oles -	Mr.	Incre	dible	e.bin											
Offset(h)	00	01	02	03	04	05	06	07	08	09	0A	0B	00	OD	0E	OF
00000000	04	21	75	72	33	2D	81	89	44	00	C2	00	00	00	00	00
00000010	7D	A7	C1	91	78	71	E2	AB	86	1A	FE	DD	30	AF	1A	1A
00000020	28	F9	22	A6	C5	5D	D3	Dl	27	4C	EA	1E	3C	A2	84	90
00000030	00	00	00	00	00	00	17	87	8E	00	00	00	00	00	00	00
00000040	CF	B7	7E	6E	EC	82	4D	27	24	E9	CB	DC	04	3C	88	38
00000050	28	F9	22	A6	C5	5D	D3	Dl	27	4C	EA	1E	3C	A2	84	90
00000060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000070	00	00	00	00	00	00	77	87	88	00	00	00	00	00	00	00
00000080	3D	EE	35	06	9D	BA	OF	CC	9E	8E	31	B5	40	25	73	2D
00000090	A4	FB	58	A2	00	B2	5B	E6	A4	C6	57	94	ED	F4	09	CF
000000A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000000B0	00	00	00	00	00	00	77	87	88	00	00	00	00	00	00	00
00000000	4B	81	FB	B8	4E	13	63	74	B 3	CO	47	6C	F7	66	39	OA
000000D0	4B	81	FB	B8	4E	13	63	74	B 3	CO	47	6C	F7	66	39	OA
000000E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000000F0	00	00	00	00	00	00	77	87	88	00	00	00	00	00	00	00
00000100	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000110	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000120	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000130	00	00	00	00	00	00	77	87	88	00	00	00	00	00	00	00

How Disney Infinity Works Part 2

In order for the game to properly read and write the figure, it needs to have its key.

In this dump the key is missing (where the key would be copy and pasted is highlighted in blue), however since we have the UID we can calculate the key using this python program (You can use <u>Online Python</u> to run it if you do not have python on your computer). Just paste in your UID and it will give you your Key which must be pasted in where the blue highlights are (before and after 17 87 8E 00 and 77 87 88 00).

The Incredit	oles -	Mr.	Incre	dible	e.bin											
Offset(h)	00	01	02	03	04	05	06	07	08	09	OA	OB	oc	OD	0E	OF
00000000	b 4	21	75	72	33	2D	81	89	44	00	C2	00	00	00	00	00
00000010	7D	A7	Cl	91	78	71	E2	AB	86	1A	FE	DD	30	AF	1A	1A
00000020	28	F9	22	A6	C5	5D	D3	Dl	27	4C	EA	1E	3C	A2	84	90
00000030	00	00	00	00	00	00	17	87	8E	00	00	00	00	00	00	00
00000040	CF	B7	7E	6E	EC	82	4D	27	24	E9	CB	DC	04	3C	88	38
00000050	28	F9	22	A6	C5	5D	D3	Dl	27	4C	EA	1E	3C	A2	84	90
00000060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000070	00	00	00	00	00	00	77	87	88	00	00	00	00	00	00	00
00000080	3D	EE	35	06	9D	BA	OF	CC	9E	8E	31	B5	40	25	73	2D
00000090	A4	FB	58	A2	00	B2	5B	E6	A4	C6	57	94	ED	F4	09	CF
000000A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000000B0	0.0	00	00	0.0	00	00	77	87	88	00	00	00	00	00	00	00
00000000	4B	81	FB	B8	4E	13	63	74	B 3	CO	47	6C	F7	66	39	OA
000000D0	4B	81	FB	B8	4E	13	63	74	B 3	CO	47	6C	F7	66	39	OA
000000E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000000F0	00	00	00	00	00	00	77	87	88	00	00	00	00	00	00	00
00000100	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000110	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000120	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000130	00	00	00	00	00	00	77	87	88	00	00	00	00	00	00	00

How Disney Infinity Works Part 3

The picture here is a decrypted Mr.Incredible dump that will fully work when put on the nfc card. Any other data besides the UID and Keys is the character's level, skill

tree, and experience. This data is not as important to the functionality of the character as the UID and Keys are. I don't believe anyone has figured out how to edit these values but it doesn't matter as those values are stored on the console as well. Editing them would only affect the game if you're playing on a system/save that has not previously used that figure before.

The Incredit	oles -	Mr.	Incre	dibl	e_co	nvert	ed.d	mp								
Offset(h)	00	01	02	03	04	05	06	07	08	09	0A	0B	00	OD	0E	OF
00000000	04	21	75	72	33	2D	81	89	44	00	C2	00	00	00	00	00
00000010	7D	A7	Cl	91	78	71	E2	AB	86	1A	FE	DD	30	AF	1A	1A
00000020	28	F9	22	A6	C5	5D	D3	Dl	27	4C	EA	1E	3C	A2	84	90
00000030	77	BD	E5	60	6E	3C	17	87	8E	00	77	BD	E5	60	6E	30
00000040	CF	B7	7E	6E	EC	82	4D	27	24	E9	CB	DC	04	3C	88	38
00000050	28	F9	22	A6	C5	5D	D3	Dl	27	4C	EA	1E	3C	A2	84	90
00000060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000070	77	BD	E5	60	6E	3C	77	87	88	00	77	BD	E5	60	6E	30
00000080	ЗD	EE	35	06	9D	BA	OF	CC	9E	8E	31	B5	40	25	73	2D
00000090	A4	FB	58	A2	00	B2	5B	E6	A4	C6	57	94	ED	F4	09	CF
000000A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000B0	77	BD	E5	60	6E	3C	77	87	88	00	77	BD	E5	60	6E	30
00000000	4B	81	FB	B8	4E	13	63	74	B 3	CO	47	6C	F7	66	39	0A
00000D0	4B	81	FB	B8	4E	13	63	74	B 3	CO	47	6C	F7	66	39	OA
000000E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000000F0	77	BD	E5	60	6E	3C	77	87	88	00	77	BD	E5	60	6E	30
00000100	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000110	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000120	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000130	77	BD	E5	60	6E	3C	77	87	88	00	77	BD	E5	60	6E	30

On to the NFC guide!

Decrypting the dumps

So once you have downloaded and unzipped everything, the first thing you must do is run the DITool-v0.8.exe. You should be greeted with something like this over here \rightarrow You should check the boxes I have in the picture (Output: DMP and Options: Compute KeyA) and then click browse at the top right and select the NFC Infinity folder you extracted earlier. It should take a minute or two to make converted versions of every .bin file as .dmp files.



Writing the UID Part 1

Make sure your ACR122U is plugged in and the card is on it. Now open the PCSC Mifare program. You should see the image on top left. Now click the reset button and your ACR122U should beep and then it should display the information in the top left of the program. The ATQA should be 4400 and the SAK should be 09 if it is a Mifare Mini S20 UID 7 byte card.



Writing the UID Part 2

Now you're going to want to click on S20 button on the top bar and it should bring up this menu. -> Focus on top section and ignore the bottom part. Now open the _converted.dmp of the character you want to put onto the NFC card and find the first row of numbers.

Offset(h)	00	01	02	03	04	05	06	07	08	09	OA	0B	00	OD	OE	OF
00000000	04	21	75	72	33	2D	81	89	44	00	C2	00	00	00	00	00



The Incredit	bles -	Mr.	Incre	dible	e_co	nvert	ed.d	mp								
Offset(h)	00	01	02	03	04	05	06	07	08	09	0A	0B	oc	OD	0E	OF
00000000	04	21	75	72	33	2D	81	89	44	00	C2	00	00	00	00	00
00000010	7D	A7	Cl	91	78	71	E2	AB	86	1A	FE	DD	30	AF	1A	1A
00000020	28	F9	22	A6	C5	5D	D3	Dl	27	4C	EA	1E	3C	A2	84	90
00000030	77	BD	E5	60	6E	3C	17	87	8E	00	77	BD	E5	60	6E	30
00000040	CF	B7	7E	6E	EC	82	4D	27	24	E9	CB	DC	04	3C	88	38
00000050	28	F9	22	A6	C5	5D	D3	Dl	27	4C	EA	1E	3C	A2	84	90
00000060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000070	77	BD	E5	60	6E	3C	77	87	88	00	77	BD	E5	60	6E	30
00000080	ЗD	EE	35	06	9D	BA	OF	CC	9E	8E	31	B5	40	25	73	2D
00000090	A4	FB	58	A2	00	B2	5B	E6	A4	C6	57	94	ED	F4	09	CF
000000A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000B0	77	BD	E5	60	6E	3C	77	87	88	00	77	BD	E5	60	6E	30
00000000	4B	81	FB	B8	4E	13	63	74	B 3	CO	47	6C	F7	66	39	OA
000000D0	4B	81	FB	B8	4E	13	63	74	B 3	CO	47	6C	F7	66	39	OA
000000E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000000F0	77	BD	E5	60	6E	3C	77	87	88	00	77	BD	E5	60	6E	30
00000100	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000110	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000120	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
00000130	77	BD	E5	60	6E	3C	77	87	88	00	77	BD	E5	60	6E	3C

Writing the UID Part 3

Take the first 14 numbers from the first row and put them into the UID box with no spaces. Then put the rest of the numbers (which should be 89 44 00 C2 00 00 00 00 00) without spaces into the S&B box below the UID box. It should look like my example on the right. Then you should click the Set UID Info button. Your ACR122U should beep and it should say SET UID Info Success

Offset(h)	00	01	02	03	04	05	06	07	08	09	0A	0B	00	OD	0E	OF
00000000	04	21	75	72	33	2D	81	89	44	00	C2	00	00	00	00	00

1.00	04217572332D81	tes Card	DI Defecti UD lafe	Class UID lafe
UID:			Fill Default OID Into	Clear OID Into
28B 0((7-15B): 894400C2			
	Get UID Info	Set UID Info	Set UID++ Info	Lock UID
	UID7BS2((32) ATQA = 4 SAK = 09	0 Mifare Mini S2 20 Bytes. 5 Sector 400	20 UID 7 Bytes Card rs. 20 blocks)	
UID4BS2	UID7BS2((32 ATQA = 4 SAK = 09 0 S20 UID 4 By 041219C3	0 Mifare Mini S2 20 Bytes. 5 Sector 400 tes Card	20 UID 7 Bytes Card rs. 20 blocks) Fill Default UID Info	Clear LIID Info
UID4BS2	UID7BS2((32) ATQA = 4 SAK = 09 0 S20 UID 4 By 041219C3	0 Mifare Mini S2 20 Bytes. 5 Sector 400 tes Card Get UID	20 UID 7 Bytes Card rs. 20 blocks) Fill Default UID Info	Clear UID Info
UID4BS20 UID: S&B 0(UID7BS2((32) ATQA = 4 SAK = 09 0 S20 UID 4 By 041219C3 (5-15B): 890400C0	0 Mifare Mini S2 20 Bytes. 5 Sector 400 tes Card Get UID	20 UID 7 Bytes Card rs. 20 blocks) Fill Default UID Info 3	Clear UID Info

Inserting Keys and Extra Data

You are almost done. Now open the Mifare Card Programming Program and put the card on your ACR122U. Then after the light turns green, in this order, click "Initialize", "Connect" buttons and "Browse". Then navigate to the .dmp file that you want to clone and click on it. Leave the Empty Card Key section as is. Press CopyCard and it should work and at the end it will give this error here -> That actually means that it worked and your card should now work.

MiFare Card Programming					- 🗆 ×
Select Reader	ID Block		Block 1	Block 2	Block 3
Initialize Connect	Reset				
Clear Output	Quit				
Import Dump File					
	Browse				
Card Keys					
Empty Card Key FFFFFFFFFFF	CopyCard				
	<				
winare card prog	ramming	× ×			
	10000				



Common Issues

If the numbers in the Mifare Card Programming App just say error when trying to write the .dmp file, wait a few seconds until it's done giving errors, the ACR122U should beep, and then click the "Initialize" then "Connect" button. Then just click CopyCard again and it should work. If it does not work again close the program and unplug your ACR122U. Then plug it back in and try the steps from the start of Mifare Card Programming section again.

When it comes to using the card on the base, you might have to hold it about 1cm above the base for a second or two before the game recognizes it properly.

Sources

<u>Nfc.toys</u> - Although this site does not provide the info on how to make the nfc cards work it provides the insight on how to read the data from the figure, calculate the keys, and write your own data to your own figures.

Forum Post as PDF - This guide I found on the DI Discord provided by Wings Of Freedom. If they didn't put this pdf file in the discord I don't think I would have ever figured this out.

Random Researcher - On the Nfc.toys site the decryption method is attributed to a random researcher. I have searched high and wide but I could not find who this researcher was. Whoever they were I put a thanks here for making this possible!