

CSV SERIALIZER

for UNITY

Serialization

- Serialization is the process of translating data structures and reconstructed.
- [ScriptableObject] <https://docs.unity3d.com/Manual/class-ScriptableObject.html>
- [Script Serialization] <https://docs.unity3d.com/Manual/script-Serialization.html>
- [JSON Serialization] <https://docs.unity3d.com/Manual/JSONSerialization.html>

CSV Comma-separated values

- A comma-separated values (CSV) file is a delimited text file that uses a comma to separate values.
- There are many ways to export a .csv file from Excel, Google SpreadSheet, etc...
- In general spreadsheet and csv text are like below.

https://en.wikipedia.org/wiki/Comma-separated_values#Example

Year	Make	Model	Description	Price
1997	Ford	E350	ac, abs, moon	3000.00
1999	Chevy	Venture "Extended Edition"		4900.00
1999	Chevy	Venture "Extended Edition, Very Large"		5000.00
1996	Jeep	Grand Cherokee	MUST SELL! air, moon roof, loaded	4799.00

```
Year,Make,Model,Description,Price
1997,Ford,E350,"ac, abs, moon",3000.00
1999,Chevy,"Venture ""Extended Edition""", "",4900.00
1999,Chevy,"Venture ""Extended Edition, Very Large""",,5000.00
1996,Jeep,Grand Cherokee,"MUST SELL!
air, moon roof, loaded",4799.00
```

Overview

- The CSV file may be more convenient for serializing objects than json because various spread-sheet programs are available.
- To begin with, the data structure is to be declared as a Serializable objects.

[System.Serializable]

```
public class Sample
{
    public int year;
    public string make;
    public string model;
    public string description;
    public float price;
}
```

- Export the data to csv and read it as string.
- Then, deserialize the object.

```
string text = "Year,Make,Model,Description,Price\r\n"
    + "1997,Ford,E350,\"ac, abs, moon\",3000.00\r\n"
    + "1999,Chevy,\"Venture \\\"Extended Edition\\\"\\\",\\\"\\\",4900.00";
Sample[] sample = CSVSerializer.Deserialize<Sample>(text);
```

- You can utilize the data.

sample		UIRanking+ Sample[2]
[0]		{UIRanking+ Sample}
	description	"ac, abs, moon"
	make	"Ford"
	model	"E350"
	price	3000
	year	1997
[1]		{UIRanking+ Sample}
	description	null
	make	"Chevy"
	model	"Venture \"Extended Edition\""
	price	4900
	year	1999

- Note) Only one sheet is supported for CSV. To use multiple sheets, you must use multiple CSV files.

Sample 1-1

- Set up the data table

	A	B	C	D	E	F	G	
1	ranking	driver	constructor	icon	score	podium	country	win
2	1	Louis HA	Mercedes	Assets/CSVSerializer/demo/texture/mclaren.png	408	17	gb	Azerbaijan,Spain,France,Germany,
3	2	Sebastian	Ferrari	Assets/CSVSerializer/demo/texture/ferrari.png	320	12	de	Australia,Bahrain,Canada,Great Br
4	3	Kimi RAI	Ferrari	Assets/CSVSerializer/demo/texture/ferrari.png	251	12	fi	United States
5	4	Max VEF	Red Bull	Assets/CSVSerializer/demo/texture/redbull.png	249	11	be	Austria,Mexico
6	5	Valtteri E	Mercedes	Assets/CSVSerializer/demo/texture/mercedes.png	247	8	fi	
7								

- Declare the structure

```
public class RankingData : ScriptableObject
{
    public enum Country
    {
        gb=1,
        de=2,
        fi,
        be
    }
    [System.Serializable]
    public class Item
    {
        public int ranking;
        public string driver;
        public string constructor;
        public int score;
        public int podium;

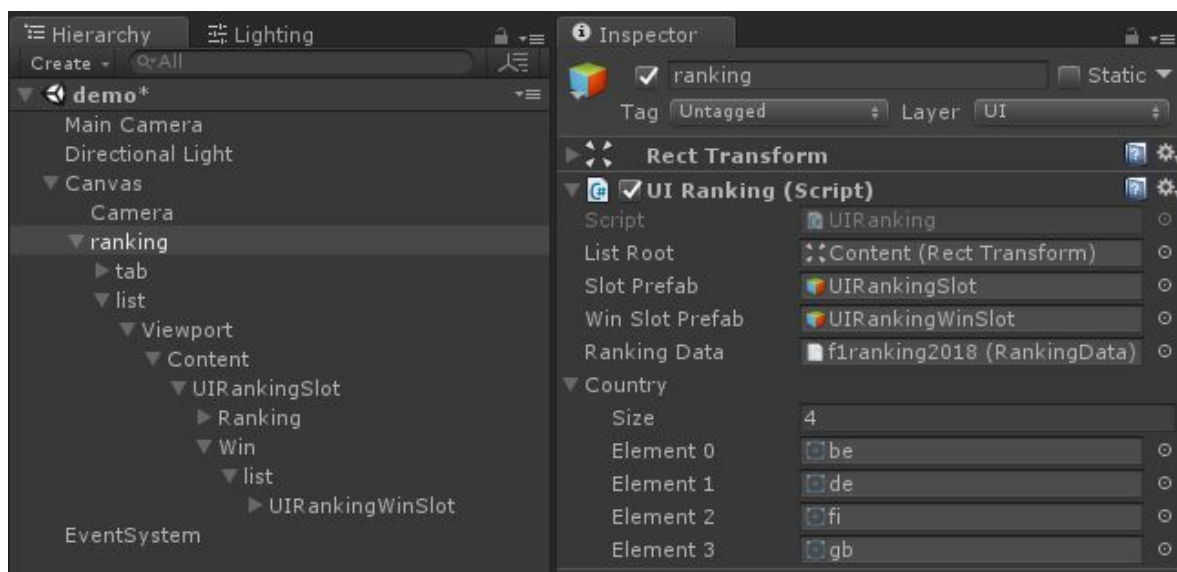
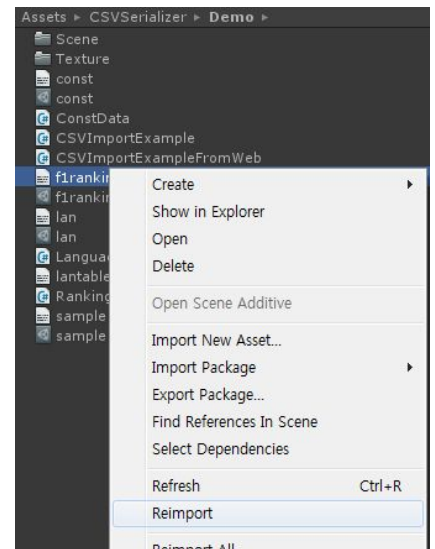
        public Sprite icon;
        public Country country;
        public string[] win;
    }






    public Item[] m_Items;
}
```

- Note that the order in which the declaration is made does not make a difference.
- You can make use of enum type. (country)
- Texts separated by comma are read into an array. (win)
- If you modify the source code, you can extend different types, such as sprite types. (Sprite values are set from `AssetDatabase.LoadAssetAtPath` - Note this can only be done in an editor)

```
#if UNITY_EDITOR
else if (fieldinfo.FieldType == typeof(UnityEngine.Sprite))
{
    Sprite sprite = AssetDatabase.LoadAssetAtPath<Sprite>(value.ToString());
    fieldinfo.SetValue(v, sprite);
}
#endif
```

- Test code that reads csv and imports it as an asset file (CSVImportExample.cs)
If the file in the csv format is transformed, it is automatically imported and can be imported manually.
- Assign the imported data.



RANKING	CONSTRUCTOR	DRIVER	SCORE	PODIUM
1	Mercedes	 Louis HAMILTON	408	17
Azerbaijan Spain France Germany Hungary Italy Singapore Russia Japan Brazil Abu Dhabi				
2	Ferrari	 Sebastian VETTEL	320	12
Australia Bahrain Canada Great Britain Belgium				
3	Ferrari	 Kimi RAIKKONEN	251	12
United States				
4	Red Bull	 Max VERSTAPPEN	249	11
Austria Mexico				
5	Mercedes	 Valtteri BOTTAS	247	8

demo scene

Sample 1-2

- Application to localized data is easy by constructing string.id as data.

`fX` `=GoogleTranslate(B6,"en","ja")`

	A	B	C	D	E	F
1	id	en	jp	ru	ch	fr
2	mode.other	Game modes	ゲームモード	Режимы игры	游戏模式	Modes de jeu
3	mode.choose	Choose a game mode	ゲームモードを選択しま	Выберите режим игры	选择游戏模式	Choisissez un mode
4	mode.single	Single player	シングルプレイヤー	Один игрок	单人玩家	Un joueur
5	mode.multi	Multiplayer	マルチプレイ	Мультиплеер	多人	multijoueur
6	mode.local	Local multiplayer	ローカルマルチプレイ	Локальный мультиплеер	本地多人	multijoueur local
7	mode.online	Online multiplayer	オンラインマルチプレイ	Мультиплеер в сети	在线多人游戏	multijoueur en ligne

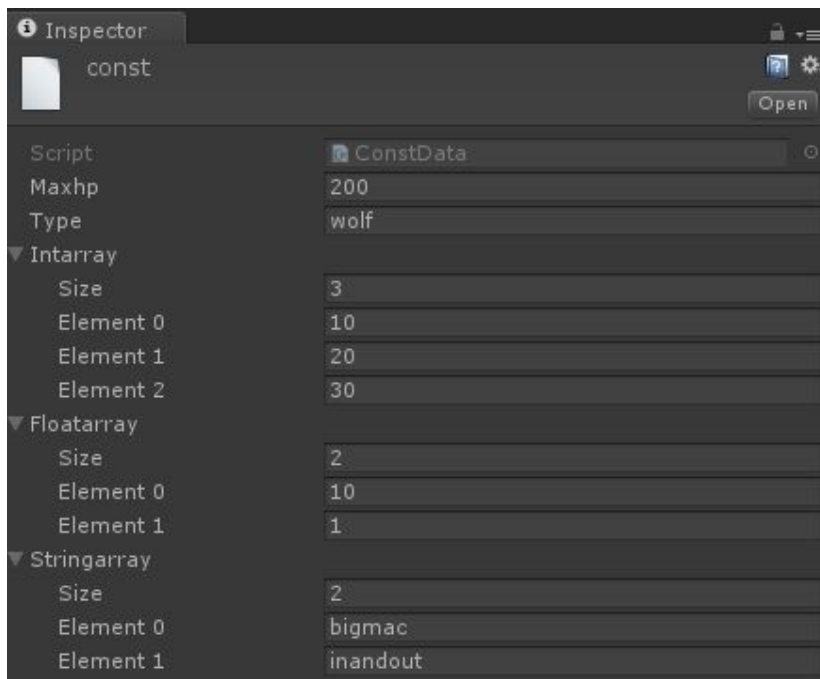
Sample 2

- Single object with many variables can be programmed to read data in rows.

	A	B	
1	id	value	
2	maxhp	200	
3	type	wolf	
4	intarray	10,20,30	
5	floatarray	10,1	
6	stringarray	bigmac,inandout	

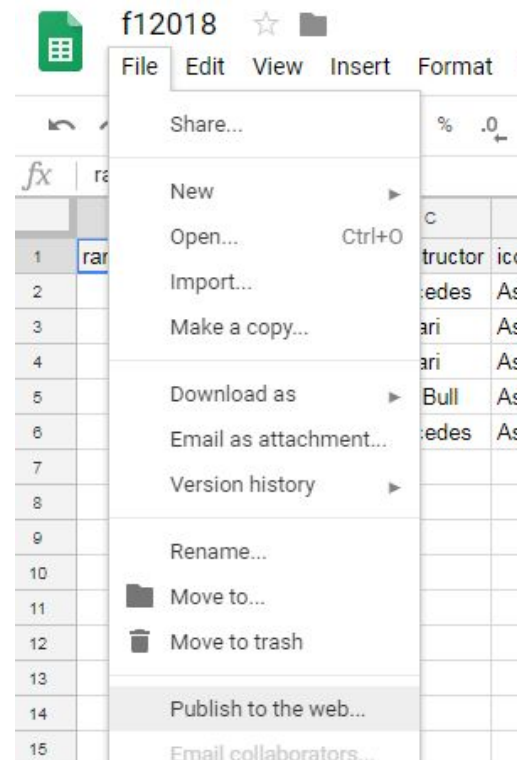
```
public class ConstData : ScriptableObject
{
    public int maxhp;
    public string type;
    public int[] intarray;
    public float[] floatarray;
    public string[] stringarray;
}
```

```
ConstData readdata = CSVSerializer.DeserializeIdValue<ConstData>(text);
```

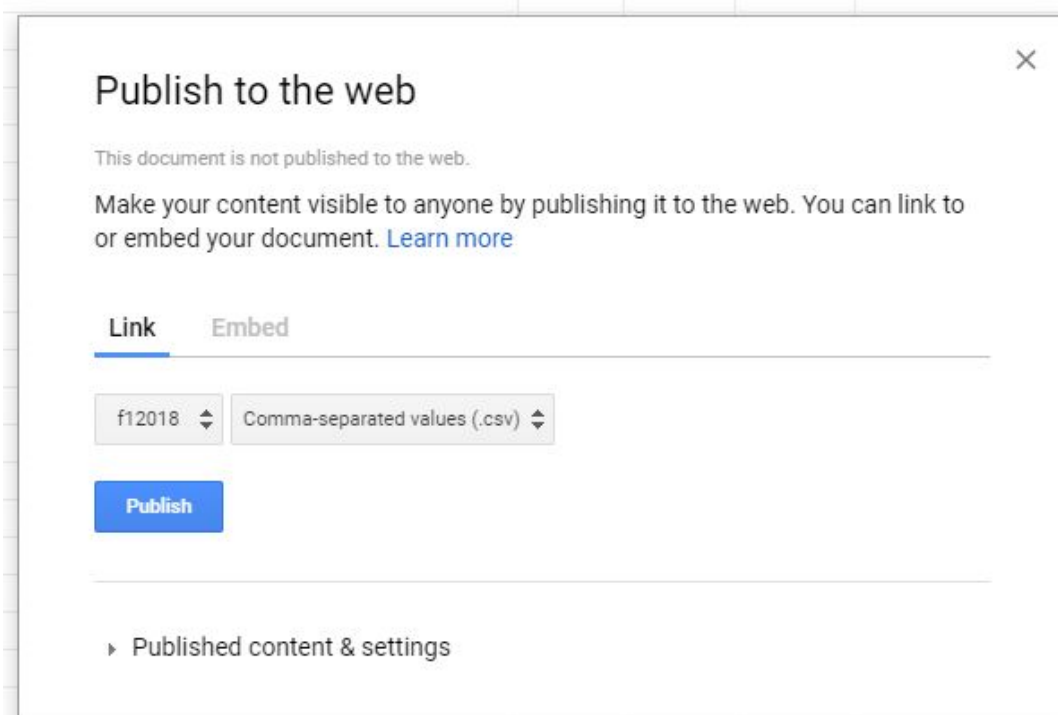


Tip1

- If it is possible to access the csv file directly from the web, the development can be repeated quickly.
- Depict a case of using the Google Spreadsheet.
- To start with, create a document in Google Sheets.
- Choose the 'Public on the web' menu.



- Choose the sheet and CSV object you intend to access and select the Publish button.



- After, Copy the URL and use it.

Link Embed

f12018

Comma-separated values (.csv)

<https://docs.google.com/spreadsheets/d/e/2PACX-1vRIHsXztnzjmijMJkly5JRRvgC>

Or share this link using:    

Note: Viewers may be able to access the underlying data for published charts. [Learn more](#)

Published

- If there is no need to authenticate the page, you can use data directly from an editor or game. (Networking.UnityWebRequest, UnityEngine.WWW)
See **CSVImportExampleFromWeb.cs** for an example describing how to import from an editor.
- Test URL in demo
https://docs.google.com/spreadsheets/d/e/2PACX-1vTzdUCZ3VJYDjTY8IJcv7IBXYoi_ek4ZYqslqNSY46FNEaBPiWnHytGT6kg7r0nxa0QTRYs1SaHRdYg/pub?gid=0&single=true&output=csv

Tip 2

You can handle a hierarchy by recombining parsed rows.
See an example of the protocols below.

```
[System.Serializable]
public class Packet
{
    public class Variable
    {
        public enum Type { String, Int };
        public string name;
        public Type type;
        public int version = 0;
    }
    public string id;
    public int code;
    public Variable[] val;
}
```


	A	B	C	D	E	
1	id	code	name	type	version	
2	create_account	91	uuid	String		
3			type	Int		
4	login_account	93	authid	String		
5			authkey	Int		
6			ver	Int	1	
7	ping	70				
8	pong	71				
9	purchase_complete	78	productid	String		
10			developerpayload	String		
11			hash_text	String		
12			signature	String		
13			purchasetoken	String		
14						

```

id,code,name,type,version
create_account,91,uuid,String,
,,type,Int,
login_account,93,authid,String,
,,authkey,Int,
,,ver,Int,1
ping,70,,,
pong,71,,,
purchase_complete,78,productid,String,
,,developerpayload,String,
,,hash_text,String,
,,signature,String,
,,purchasetoken,String,

```

```

List<string[]> row = CSVSerializer.ParseCSV(text);
List<Packet> packet = new List<Packet>();
for (int i = 1; i < row.Count;)
{
    List<string[]> items = new List<string[]>();
    items.Add(row[0]); // id,code,name,type,version
    do
    {
        items.Add(row[i++]);
    } while (i < row.Count && row[i][0] == "");

    Packet p= new Packet();
    p.id = items[1][0];
    p.code = (int)Convert.ChangeType(items[1][1], typeof(int));
    if (items.Count == 2 && items[1].Length > 2 && items[1][2] == "")
        p.val = new Packet.Variable[0];
    else
        p.val = CSVSerializer.Deserialize<Packet.Variable>(items);
    packet.Add(packet);
}

```