Working with Redis in Unity

Getting Started

Make sure Unity is installed and running on your local machine. For more instructions and details, visit Unity's documentation.

This guide assumes that you have a Unity project up and running and at least 1 `GameObject` created.

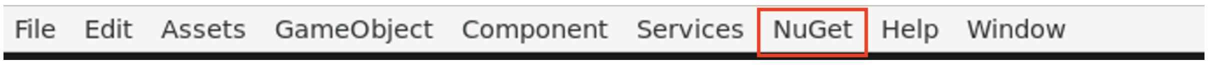
Requirements

- `Unity 2022.3`
- `StackExchange.Redis`: the client library that we will be using to interface with Redis.
  - This library is a NuGet library, which is a popular package manager for C#/.NET. However, NuGet is not directly supported in Unity, so we will need to install a NuGet client to run inside of Unity Editor, called `NuGetForUnity`.
  - In the next section, we will explore how to install `NuGetForUnity`, `StackExchange.Redis`, and any relevant components to get it ready to use in Unity.

Set up

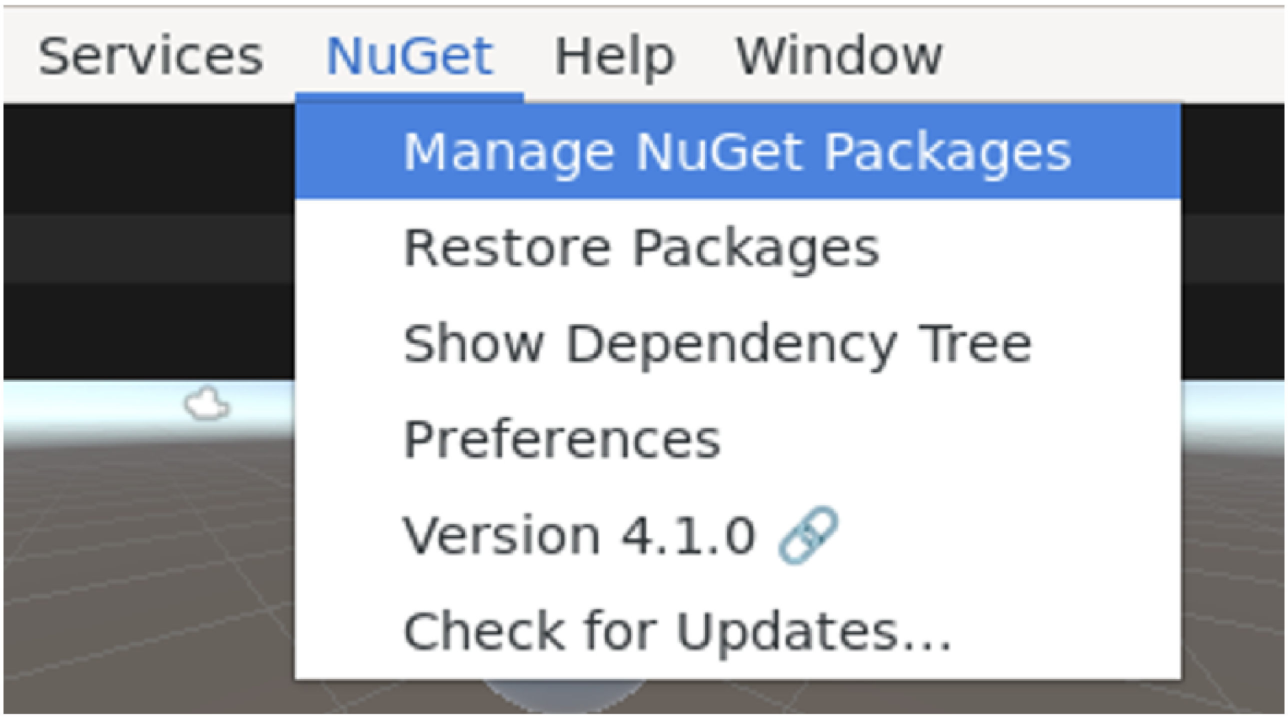
1. Install `NuGetForUnity` (easiest way):

   - Install the provided Unity package into your Unity project. Located here.
   - Download the `*.unitypackage` file. Right-click on it in File Explorer and choose "Open in Unity."
   - Once done, you should see a `NuGet` tab in the menu.

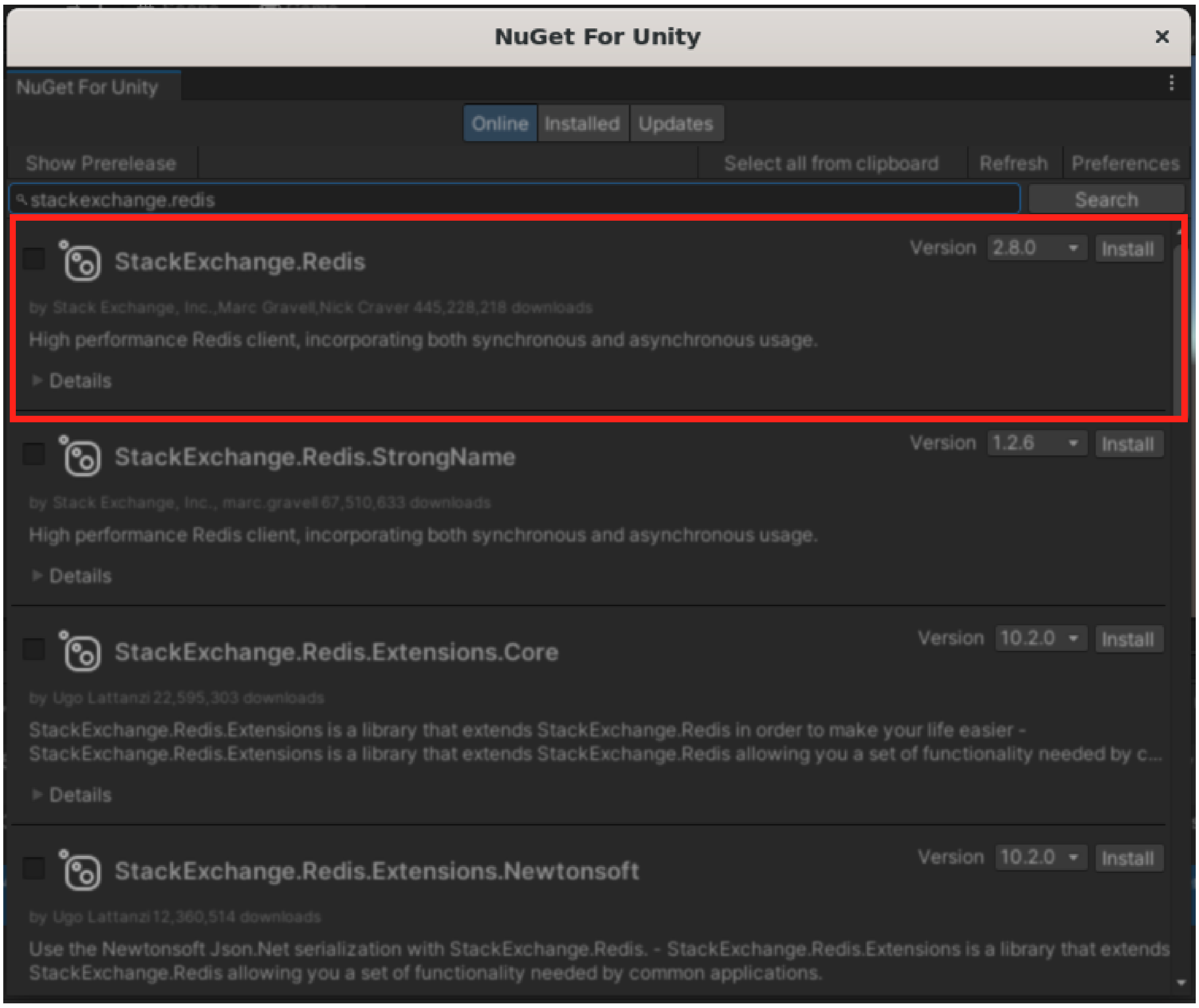


   Note: For other installation options, visit this here

2. Select `NuGet` -> `Manage NuGet Packages` to open the package manager.



3. Search for and install `StackExchange.Redis`. This will install a package in your `Assets/Packages` folder.



StackExchange.Redis
by Stack Exchange, Inc.,Marc Gravell,Nick Craver 445,228,218 downloads
High performance Redis client, incorporating both synchronous and asynchronous usage.
Details

StackExchange.Redis.StrongName
by Stack Exchange, Inc., marc.gravell 67,510,633 downloads
High performance Redis client, incorporating both synchronous and asynchronous usage.
Details

StackExchange.Redis.Extensions.Core
by Ugo Lattanzi 22,595,303 downloads
StackExchange.Redis.Extensions is a library that extends StackExchange.Redis in order to make your life easier -
StackExchange.Redis.Extensions is a library that extends StackExchange.Redis allowing you a set of functionality needed by c...
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StackExchange.Redis.Extensions.Newtonsoft
by Ugo Lattanzi 12,360,514 downloads
Use the Newtonsoft Json.Net serialization with StackExchange.Redis. - StackExchange.Redis.Extensions is a library that extends
StackExchange.Redis allowing you a set of functionality needed by common applications.

Sample Script

This script is an adaptation of Redis' documentation.

1. Declare all the necessary namespaces:

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

using StackExchange.Redis;
using System.Threading.Tasks; // required for running the async xrange
query
using System.Linq; // required for parsing Redis stream query results
```

2. Initialize the multiplexer:

   `StackExchange.Redis` uses the `ConnectionMultiplexer` to handle the commands that you send to Redis. Therefore, the first thing to do is to initialize `ConnectionMultiplexer` and establish a connection to Redis. Once you're connected, the next thing is to grab the correct database in the Redis instance (usually defaulted to database 0).

```
ConnectionMultiplexer redis;
IDatabase db;

void Start()
{
    redis = ConnectionMultiplexer.Connect("localhost");
    db = redis.GetDatabase();
}
```

3. Define a parser helper function:

   This function helps parsed all values in a stream entry into a dictionary.

```
Dictionary<string, string> ParseResult(StreamEntry entry) =>
entry.Values.ToDictionary(x => x.Name.ToString(), x =>
x.Value.ToString());
```

4. Create a XRANGE task and execute it:

   In `StackExchange.Redis`, there are multiple functions that mimic Redis commands, such as `xadd`, `xread`, `xrange`, etc. Each Redis command has 2 functions, one synchronous, and one asynchronous (eg, `StreamRange` and `StreamRangeAsync`). You can learn more about asynchronous programming here, but it is generally recommended to use async since it helps lighter the IO workload.

```
async void Update()
{
    var streamRangeTask = Task.Run(async() => {
        var key = "supervisor_ipstream";
        var result = await db.StreamRangeAsync(key, "-", "+", 1,
Order.Descending);
        if (result.Any())
        {
            foreach (var entry in result)
            {
                var dict = ParseResult(entry);
                UnityEngine.Debug.LogFormat("id: {0}", entry.Id);
                foreach (var ele in dict)
                {
                    UnityEngine.Debug.LogFormat("key: {0}, value:
{1}", ele.Key, ele.Value);
                }
            }
        }
    });
```

```
        await Task.WhenAll(streamRangeTask);
    }
```

5. Run the script and make sure you see the output in the `Console` panel.

Troubleshooting

- If your code gives an error "Could not load file or assembly Systeym.Runtime.CompilerServices.Unsafe", install `Systeym.Runtime.CompilerServices.Unsafe` using `NuGetForUnity`.