

Foundation Databinding (v4.0) 3/8/2015

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Databinding is a mechanism 'connect' your UI widgets (buttons, input, text, lists) to 'view scripts'. This strategy is necessary for the Model-View-ViewModel architecture that is very popular in the C# world. In MVVM Your views's properties, fields and methods are 'observed' by the UI elements and any changes to your view's are communicated to the UI elements so they may update worry free.

- Supports inheritance, interfaces, structs and using DLLs
- Bind to monobehaviours and plain CLR objects (wont have change notification)
- Foundation.Databinding.Model is a dll, so you can place your game model in a class library
- Bind to methods, fields, properties or coroutines
- Uses IObservableModel interface instead of IPropertyNotifyChange. IObservableModel includes the changed value along side the changed property name as to prevent an additional reflection call.

Dependencies

- FullSerializer Json Library
- Foundation.Tasks Async Library
- Foundation.Localization Translation Library
- Localization may be omitted by using the NoLocalization compilation directive

Model Logic

It is recommended that you inherit your monobehaviours from ObservableBehaviour and your clr objects from ObservableObject. These classes implement the IObservableModel interface for you and include a number of helper methods for quickly publishing changes to your views.

Example Model

Here is an example model with a single observable property. when the property changes the

view (or any other listener) will receive the change event and have an opportunity to update itself.

```
public class MyModel : ObservableObject {

    private int _myProperty;
    public int MyProperty
    {
        get { return _myProperty; }
        set
        {
            // Prevent Stack Overflow in two way binding scenarios
            if (_myProperty == value)
                return;

            _myProperty = value;

            // Notify Listeners
            NotifyProperty("MyProperty", value);
        }
    }
}
```

Models vs ViewModels

Extending from ObservableBehaviour requires that you make an instance of your view in the scene (since it is an MonoBehaviour). This has the advantage of letting you set properties in your scene view.

Extending from ObservableScriptableObject requires that you make an instance in your editor (since it is an ScriptableObject). This has the advantage of letting you set properties in your editor.

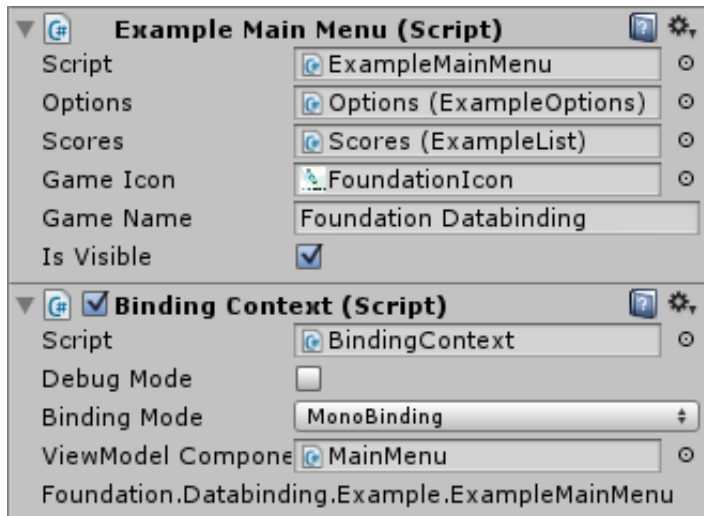
Extending from ObservableObject is my personal choice for most data objects (high scores, profiles, ect). It is a light weight CLR object which does not depend on the UnityEngine.

View Logic

Once you have your model defined and a mockup of your view using Unity's uGUI UI framework it is time to connect the two.

Binding Context

The binding context is responsible for gluing your model to your view elements. Once set child binders will update with a listing of properties to bind to.



This script sits at the root of your UI and operates in one of three modes.

- MonoBinding

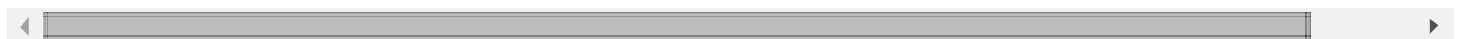
Viewmodel is a monobehaviour (or observable behavior). Drag and drop the behavior into the editor field to bind to it.

- MockBinding

Viewmodel is a late bound. Use this option when you would like to set the datatype for child binders while not actually setting the model instance. Example uses include list controls where you may know the type of the list item but the actual item instance is set at run time.

- Property Binding (Hierarchy Binding)

This allows you to index into a model within another model. For instance `MyModel.MyUser.MyName` where `MyModel` is the parent viewmodel, `MyUser` is a child model and `MyName` is a property of the child most model.



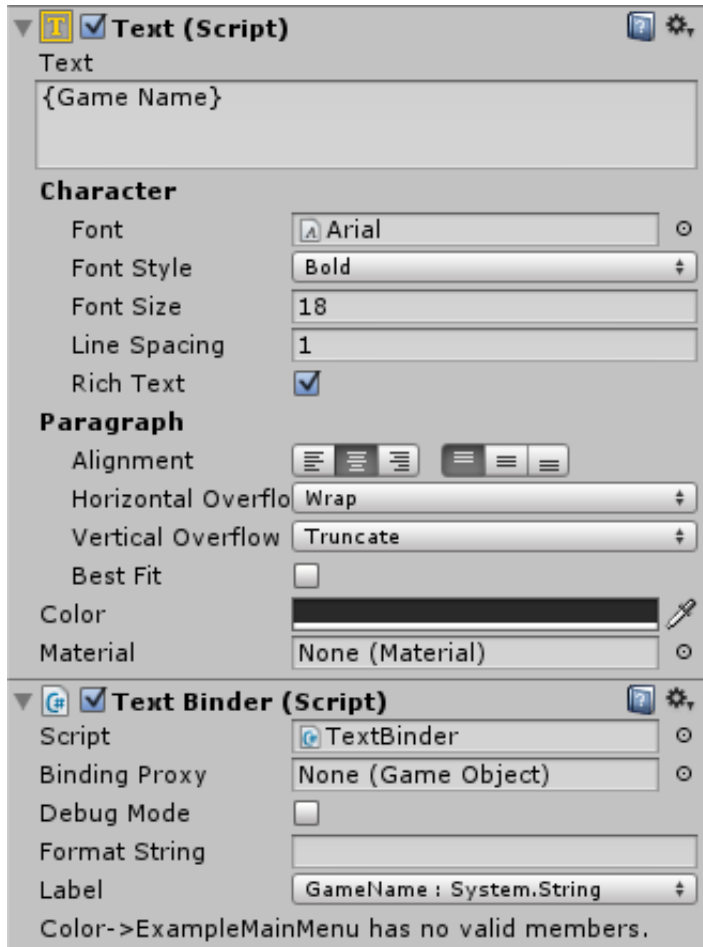
Binders

Binders sit underneath a binding context and next to their associated ui element. When the binding context is set the binders will update with a listing of valid properties and methods from the model.

There are a number of binders including `InputFieldBinder`, `ButtonBinder`, `ListBinder` and

ImageBinders. I believe I have most major controls. If you need a custom binder inherit from BinderBase. If you feel that I have neglected a non specialized binder, let me know and I will make it.

Using a binder is straight forward. Just drag and drop the script onto the control that it will bind to. For instance if you want databinding on an Input Field include the Input Field binder as well.



AudioManager

I have included a AudioManager in this library. The AudioManager extends Unity's audio system with audio layers. This will allow the players to fine tune audio volume by layer (music, sound, ect).

- **Audio2DListener** : Attach to the main camera(s). Used to spawn audio sources for UI elements.
- **Audio2DSource** : for global (ui) sounds. Use just like the AudioSource.
- **AudioRegulator** : Attach to AudioSources to regulate audio volume by layers (music, ui, ect)
- **AudioManager** : A C# manager for mediating changes to layer volumes.