Building a Real-world C# 10 Application

Introduction

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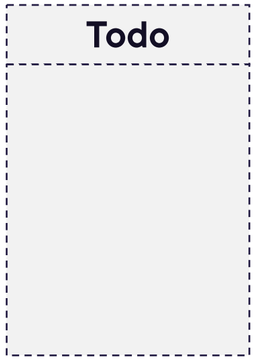
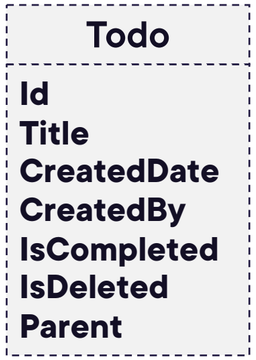
Pause the video at any time to fill in the exercise!

Globomantics ToDo



Globomantics ToDo



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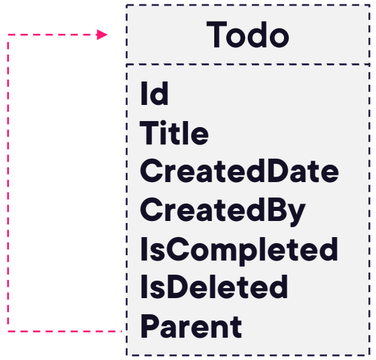

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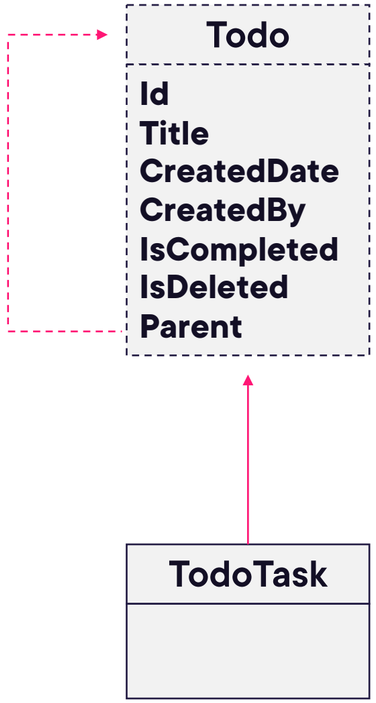

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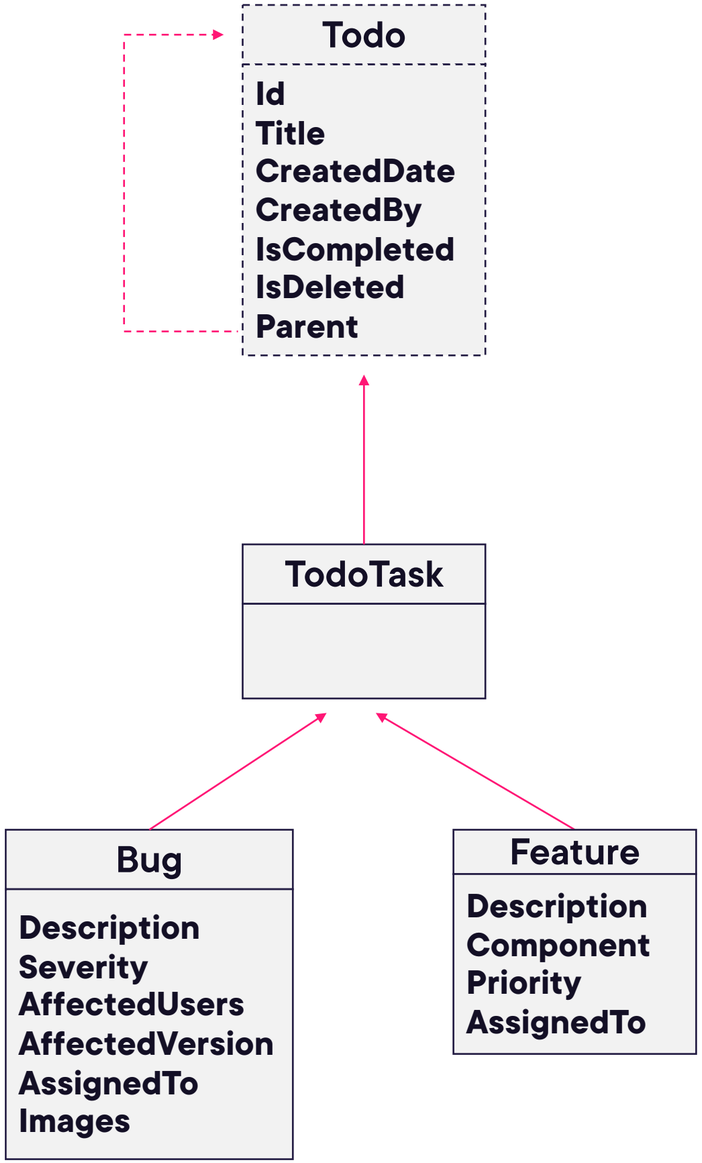

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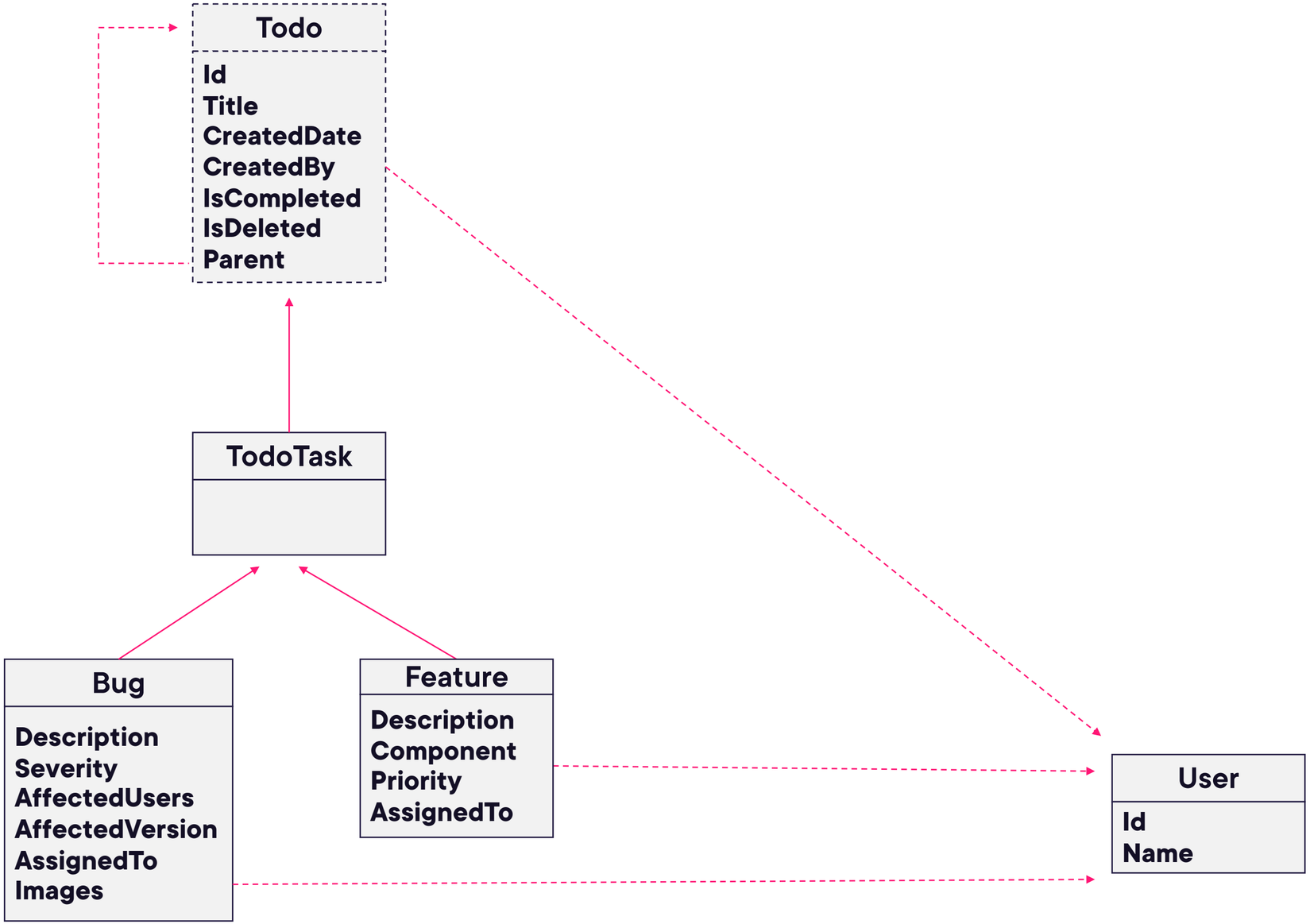

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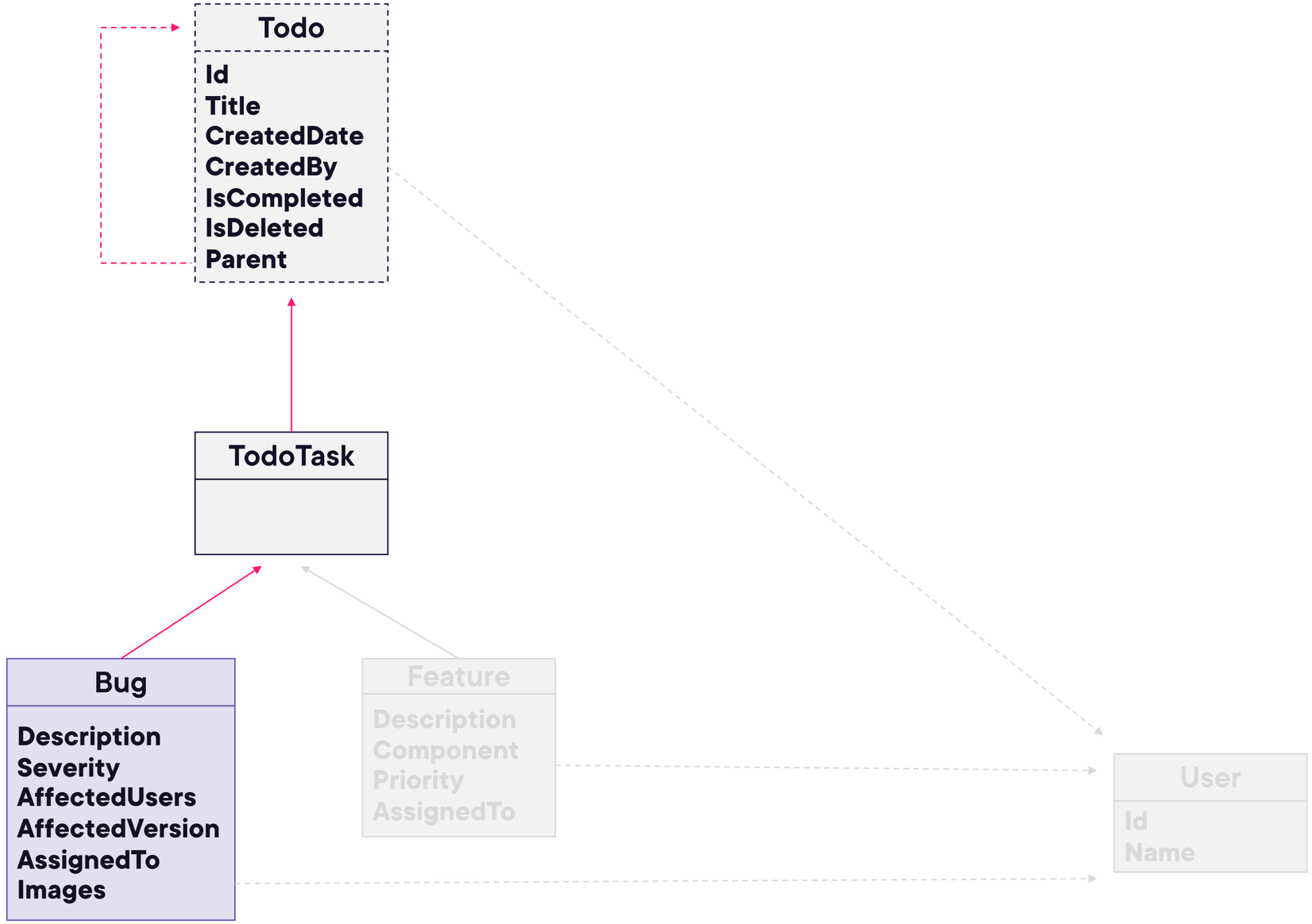

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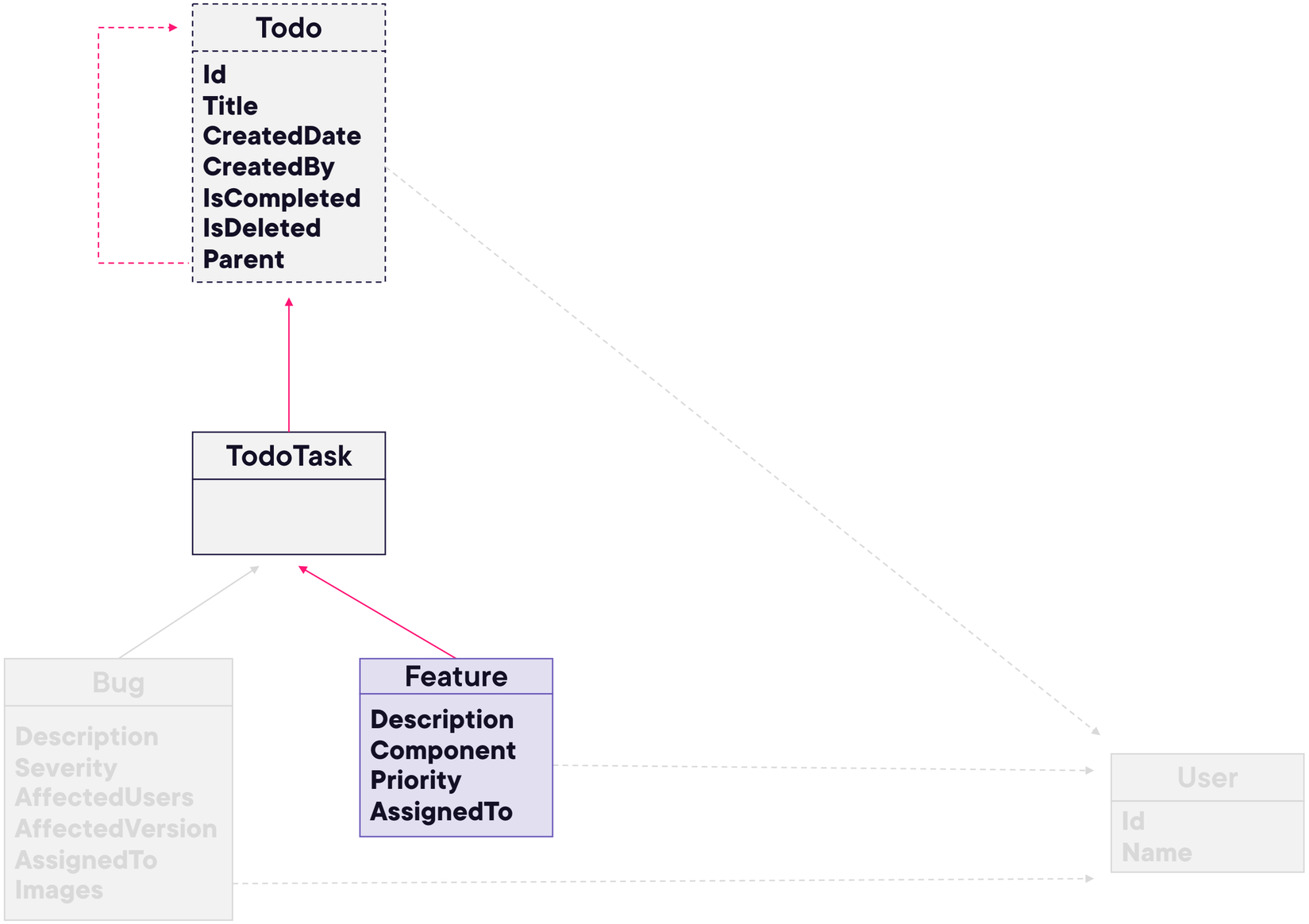


Using Inheritance

```
abstract record Todo(Guid Id,
    string Title,
    DateTimeOffset CreatedDate,
    User CretedBy,
    bool IsCompleted = false,
    bool IsDeleted = false)
{
    public Todo? Parent { get; init; }
}

record TodoTask(string Title, DateTimeOffset DueDate, User CreatedBy)
    : Todo(Guid.NewGuid(), Title, DateTimeOffset.UtcNow, CreatedBy);
```

You will keep improving the application as you go!

Just as you will in real-world applications.

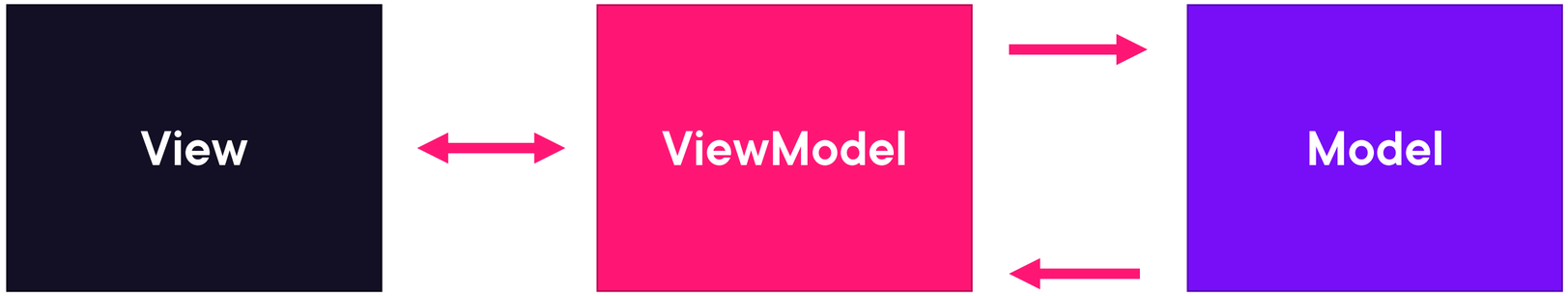
You **DO NOT** have to know WPF or UI programming to follow along!

What We Are Going to Add

- Business logic
- Repositories
- Domain models
- Data entities
- Database interaction
- Patterns & best practices

Model-View-ViewModel (MVVM)

“An architectural pattern in computer software that facilitates the separation of the development of the graphical user interface (GUI; the view)—be it via a markup language or GUI code—from the development of the business logic or back-end logic (the model) such that the view is not dependent upon any specific model platform.”



en.wikipedia.org/wiki/Model-view-viewmodel

Separating UI from Business Logic using MVVM

View
(BugView)

Connect to the ViewModel to interact with the Model

ViewModel
(BugViewModel)

Load, Create, Validate Bug

Model
(Bug)

Title, Description

ObservableObject

“The ObservableObject is a base class for objects that are observable by implementing the INotifyPropertyChanged and INotifyPropertyChanging interfaces.

It can be used as a starting point for all kinds of objects that need to support property change notifications.”

learn.microsoft.com/en-us/dotnet/communitytoolkit/mvvm/observableobject

You will use the C# language features you have learnt about.

To fill in the missing parts of the application!

Relying on the Delegate or Action

```
class MainViewModel
{
    public Action<string>? ShowAlert { get; set; }

    public void Import()
    {
        ShowAlert?.Invoke("This method will be available later!");
    }
}
```

Relying on the Delegate or Action

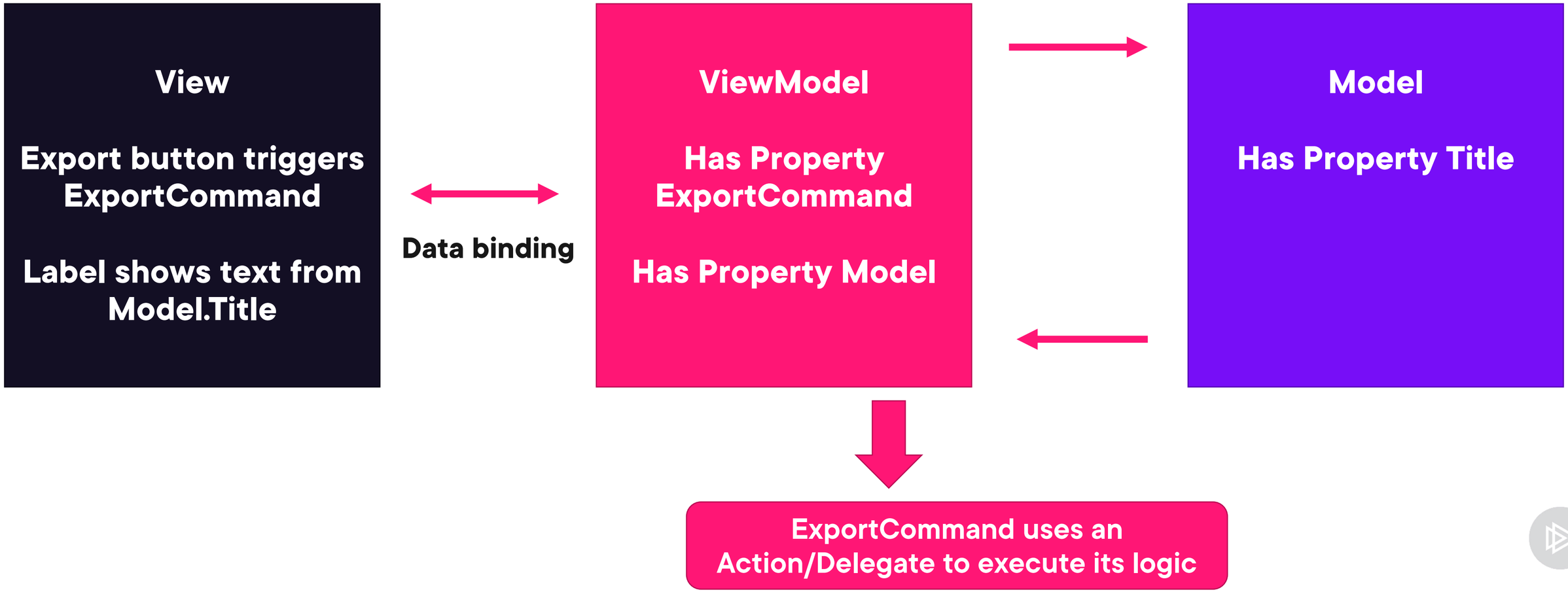
```
class MainViewModel
{
     public Action<string>? ShowAlert { get; set; }

     public void Import()
     {
          ShowAlert?.Invoke("This method will be available later!");
     }
}

class MainWindow
{
     public MainWindow(MainViewModel mainViewModel)
     {
          InitializeComponent();

          mainViewModel.ShowAlert = (message) => MessageBox.Show(message);
     }
}
```

Consuming Properties from the ViewModel in the View



Inject Implementations of Interfaces

```
class MainViewModel
{
    public MainViewModel(IRepository<TodoTask> todoRepository)
    {
    }
}
```

No need to know about the actual implementation!

Creating a ViewModel without a View

```
class MainViewModel
{
    public MainViewModel(IRepository<TodoTask> todoRepository)
    {
    }

    public void Import() {  }
}

var model = new MainViewModel(...); // Pass a fake IRepository?

model.Import(); // Test to see that it does not throw exceptions
```