

Chapter 1: There's a Big Ball of Mud on Your Plate of Spaghetti



Program

main(args)

NginxLogEntry

ServerIPAddress
RequestDateTime
Verb
Route
Response Code
RequestingAgent
SizeInBytes

<<Enumeration>>

HttpVerbs

GET
POST
DELETE
PUT

SQLServerStorage

StoreLogLine(logLine)

Report

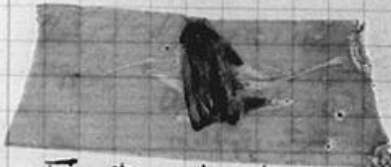
GenerateReport(filePath)

9/9

0800 Antan started
1000 " stopped - antan ✓
1300 (032) MP-MC 1.982647000 { 1.2700 9.037847025
2.130476415 9.037846995 correct
(033) PRO 2 2.130476415 4.615925059(-2)
correct 2.130676415
Relays 6-2 in 033 failed special speed test
in relay 11.00 test.

Relays changed
1100 Started Cosine Tape (Sine check)
1525 Started Multi-Adder Test.

1545



Relay #70 Panel F
(moth) in relay.

First actual case of bug being found.
1630 Antan started.
1700 closed down.

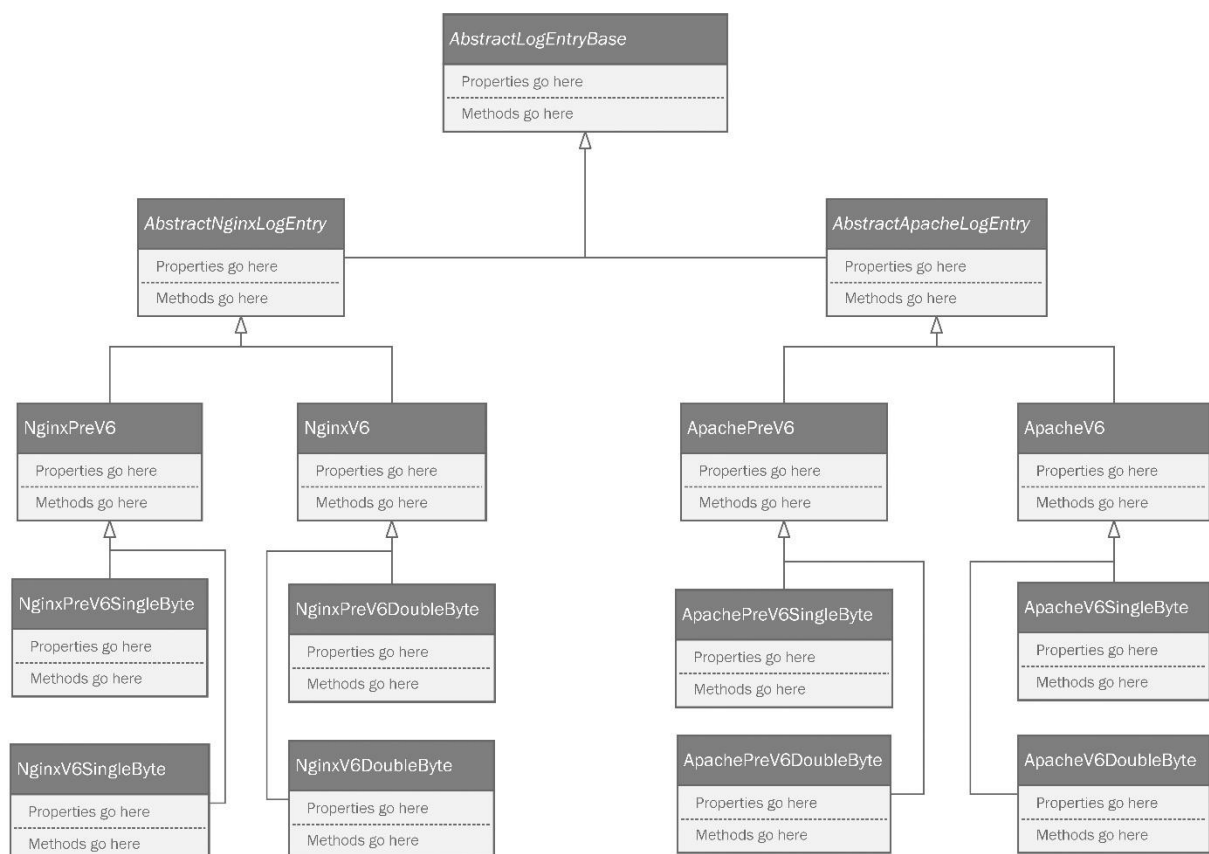
Chapter 2: Prepping For Practical Real-World Applications of Patterns in C#

Presentation Layer

Business Rules Layer

Persistence Layer

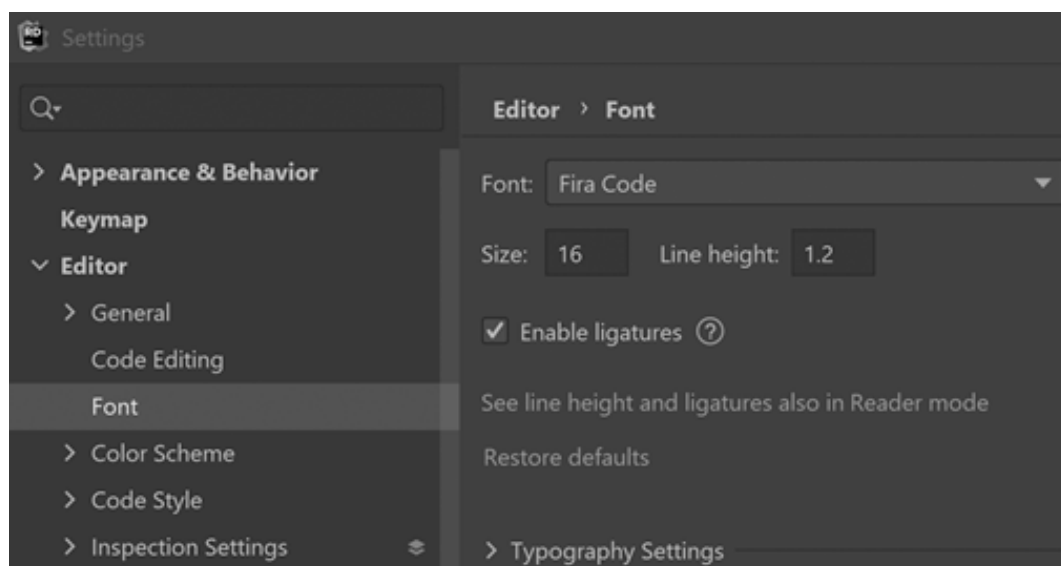
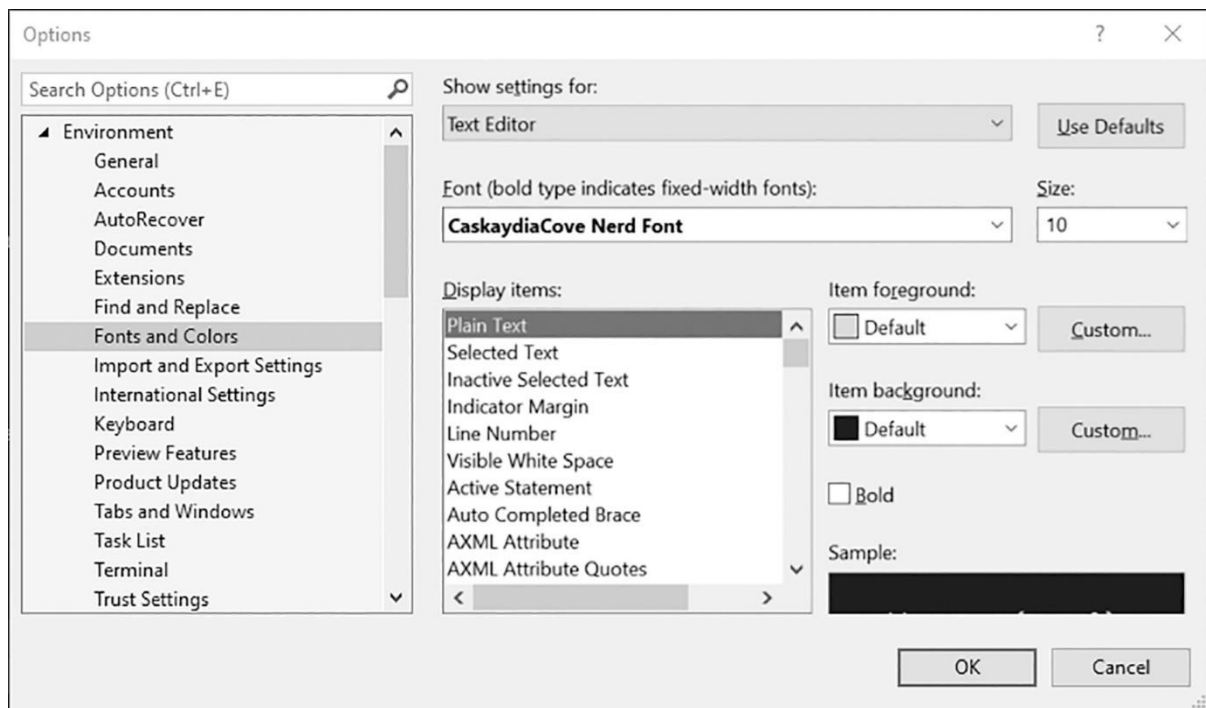
Database Layer

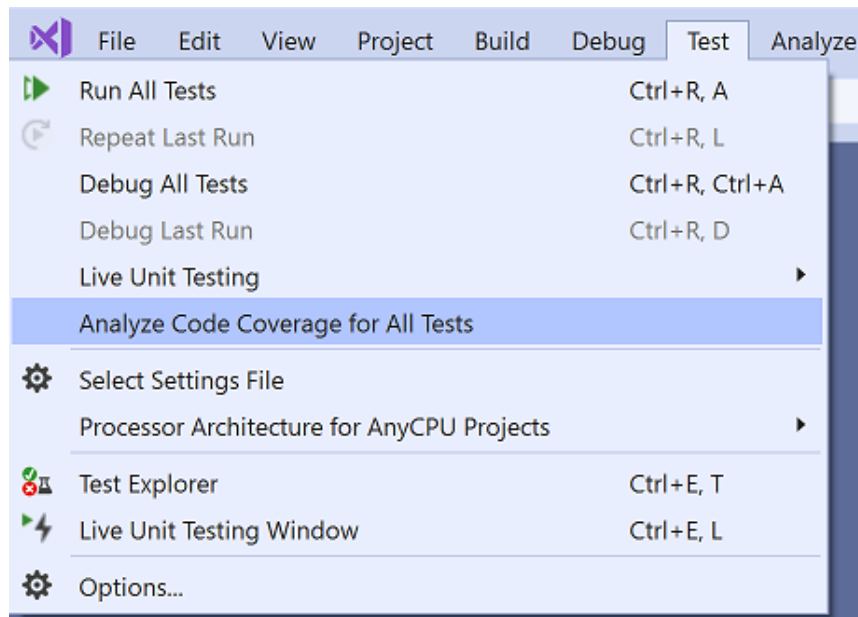


```
// See https://aka.ms/new-console-template for more information

using System;

Console.WriteLine("Hello, World!");
var firstNumber = 6;
if (firstNumber ≠ 5)
{
    Console.WriteLine("It's not 5");
}
```

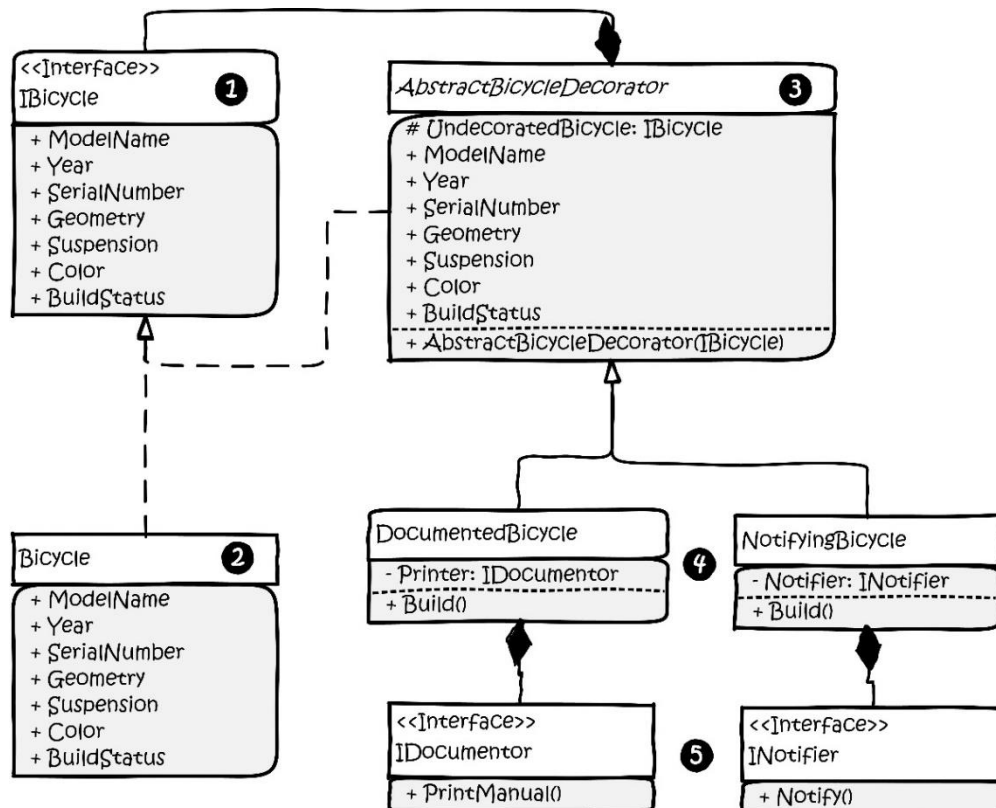
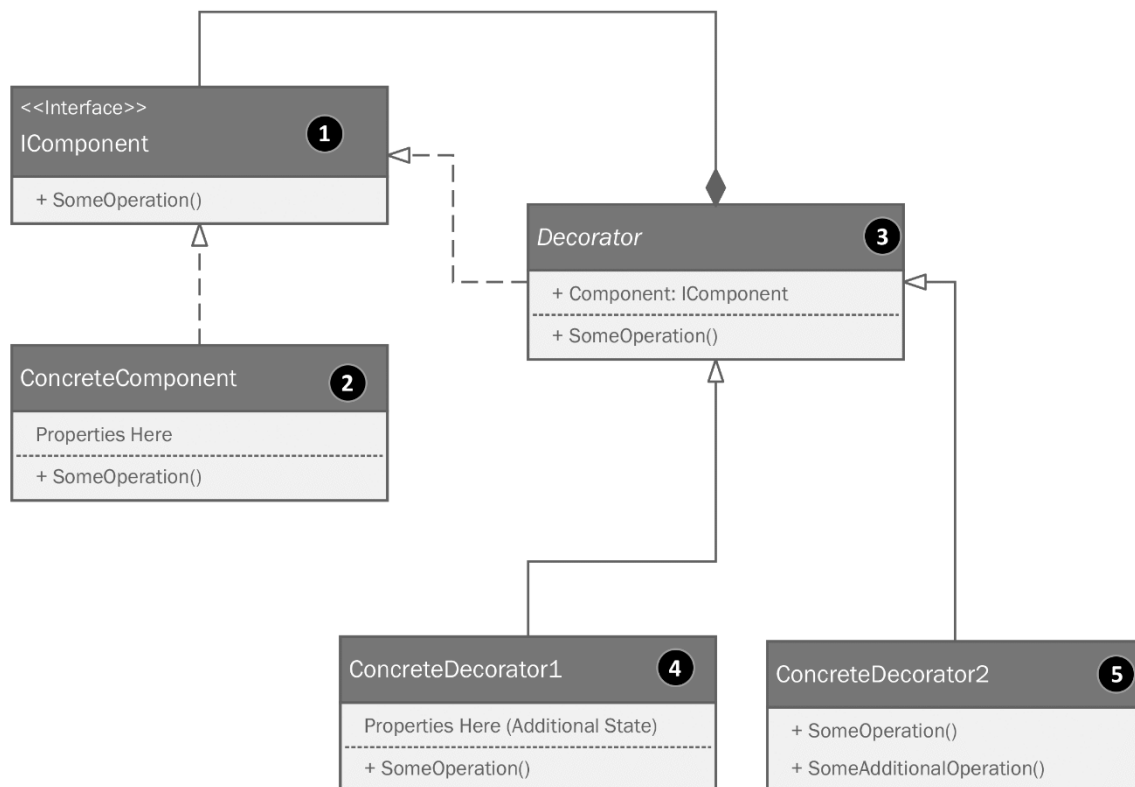




Chapter 3: Getting Creative with Creation Patterns

No images...

Chapter 4: Fortify Your Code With Structural Patterns

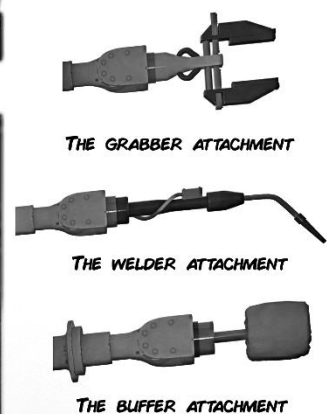


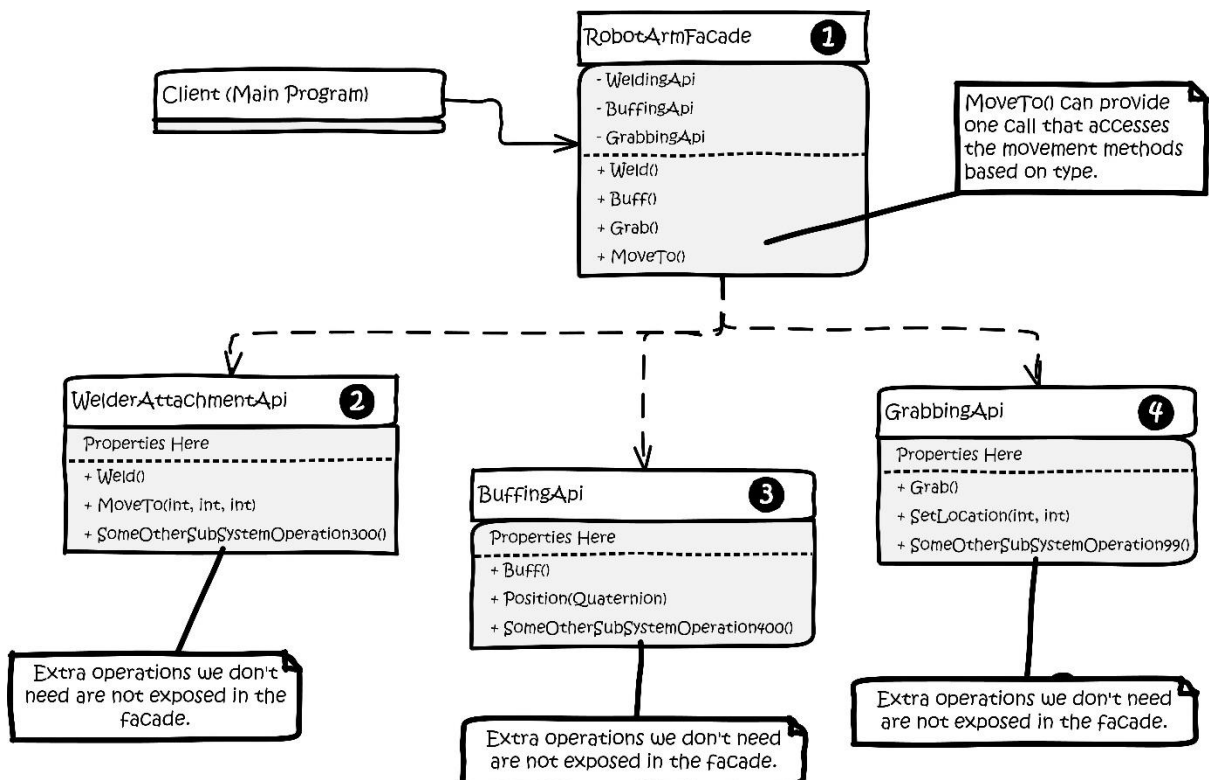
```

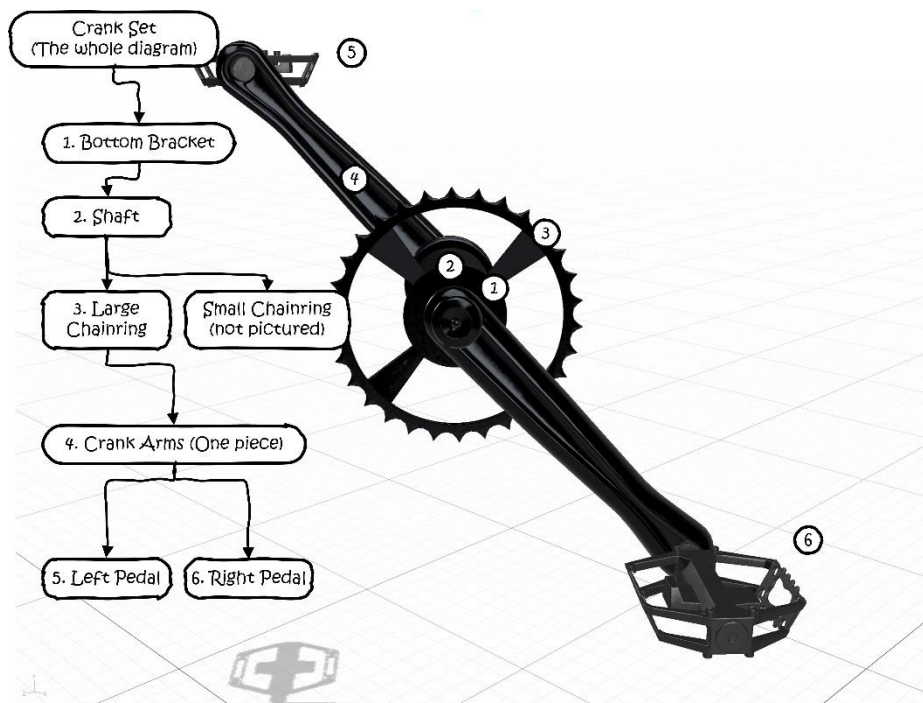
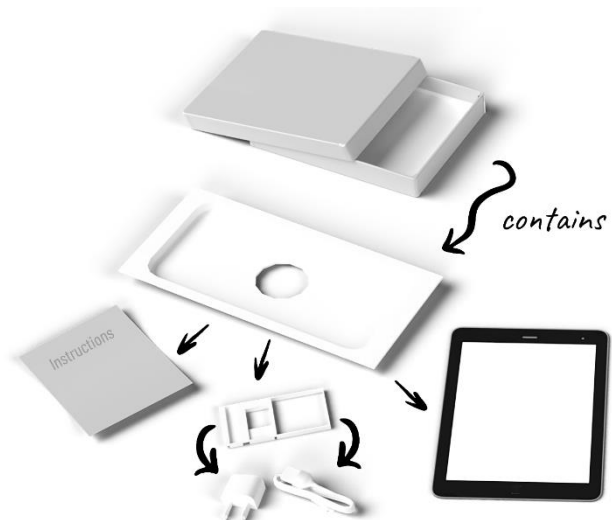
Run: C:\Users\Bruce\AppData\Local\JetBrains\Toolbox\apps\Rider\ch-0\221.5591.20\plugins\dpa\DotFiles\JetBrains.DPA.Runner.exe --handle=6164 --backend-pid=253
80 --detach-event-name=dpa.detach.6164 C:/Users/Bruce/Projects/Real-World-Implementation-of-C-Design-Patterns/chapter-4/DecoratorExample/bin/Debug/net6.
0/DecoratorExample.exe
Manufacturing a Upright frame...
Status: FrameManufactured
Painting the frame Blue
Status: Painted
2022 Hillcrest Bicycle serial number 0bb1f53d-3b8a-4216-adf4-ea1a7e65e4a0 manufacturing complete!
Status: Complete
The manual is printing!
++++
Manufacturing a Upright frame...
Status: FrameManufactured
Painting the frame Blue
Status: Painted
2022 Hillcrest Bicycle serial number 0bb1f53d-3b8a-4216-adf4-ea1a7e65e4a0 manufacturing complete!
Status: Complete
The materials inventory control system has been notified regarding the manufacture of this bicycle.
++++
Manufacturing a Upright frame...
Status: FrameManufactured
Painting the frame Blue
Status: Painted
2022 Hillcrest Bicycle serial number 0bb1f53d-3b8a-4216-adf4-ea1a7e65e4a0 manufacturing complete!
Status: Complete
The manual is printing!
The materials inventory control system has been notified regarding the manufacture of this bicycle.

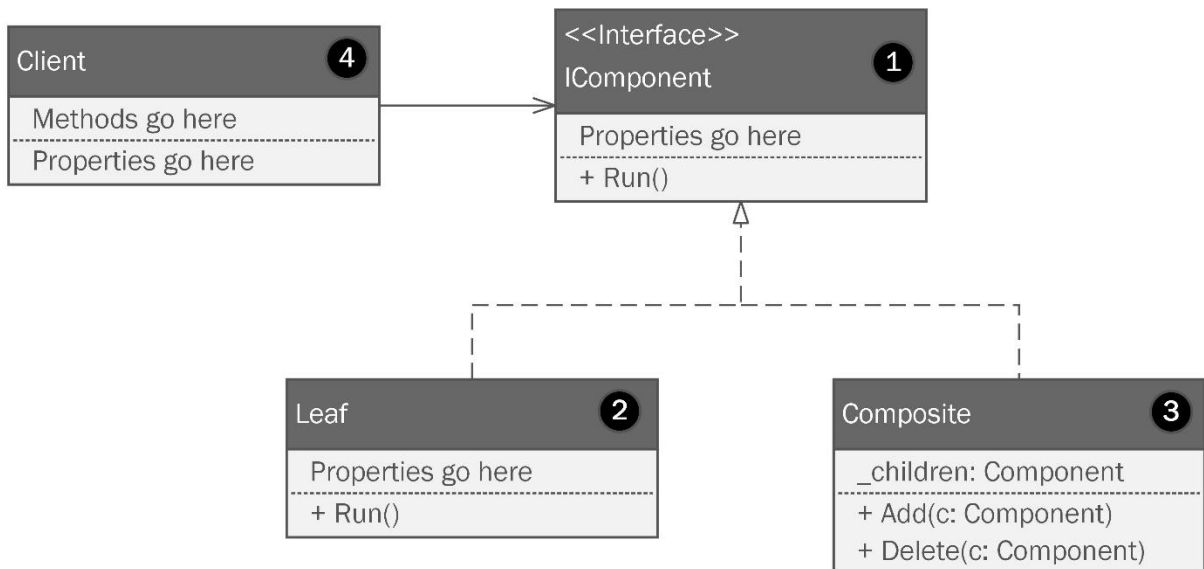
Process finished with exit code 0.

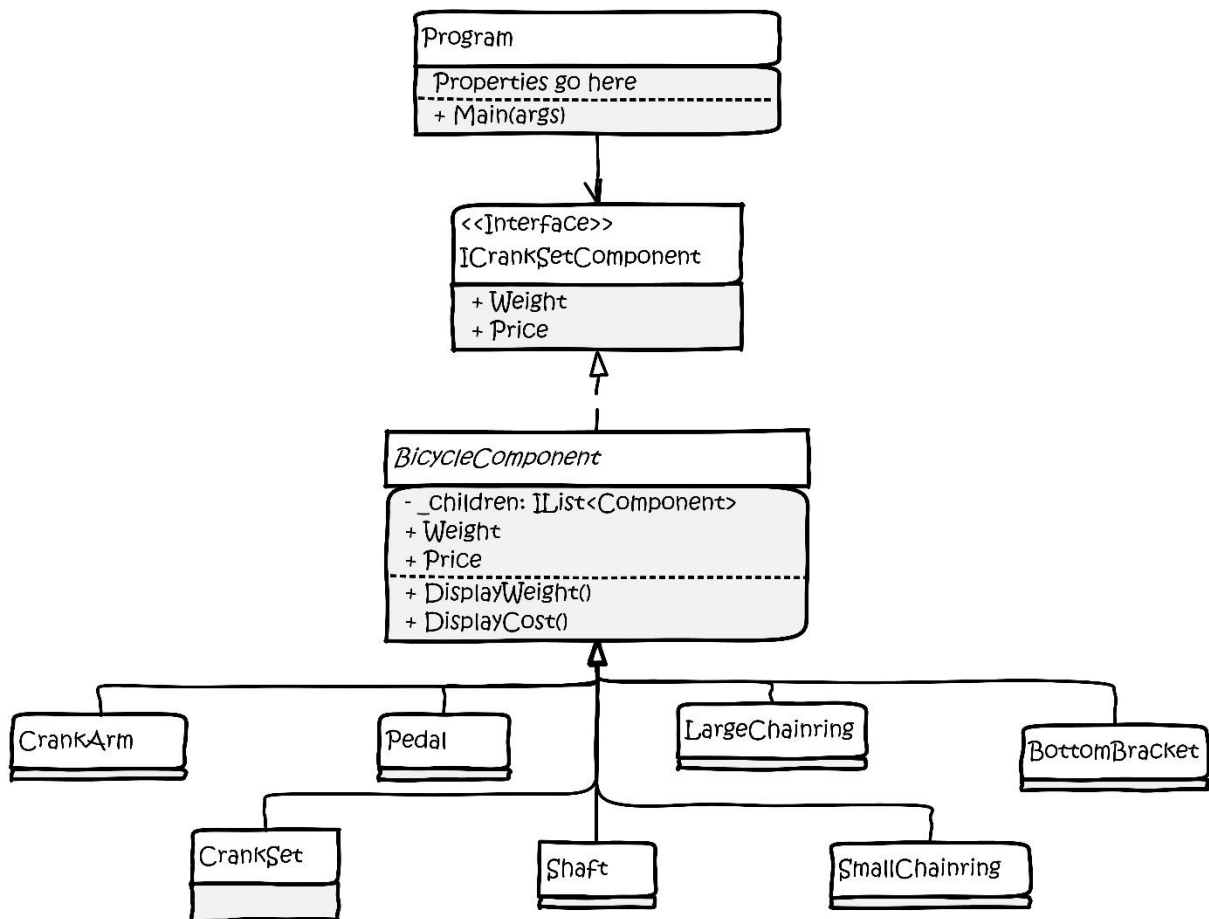
```





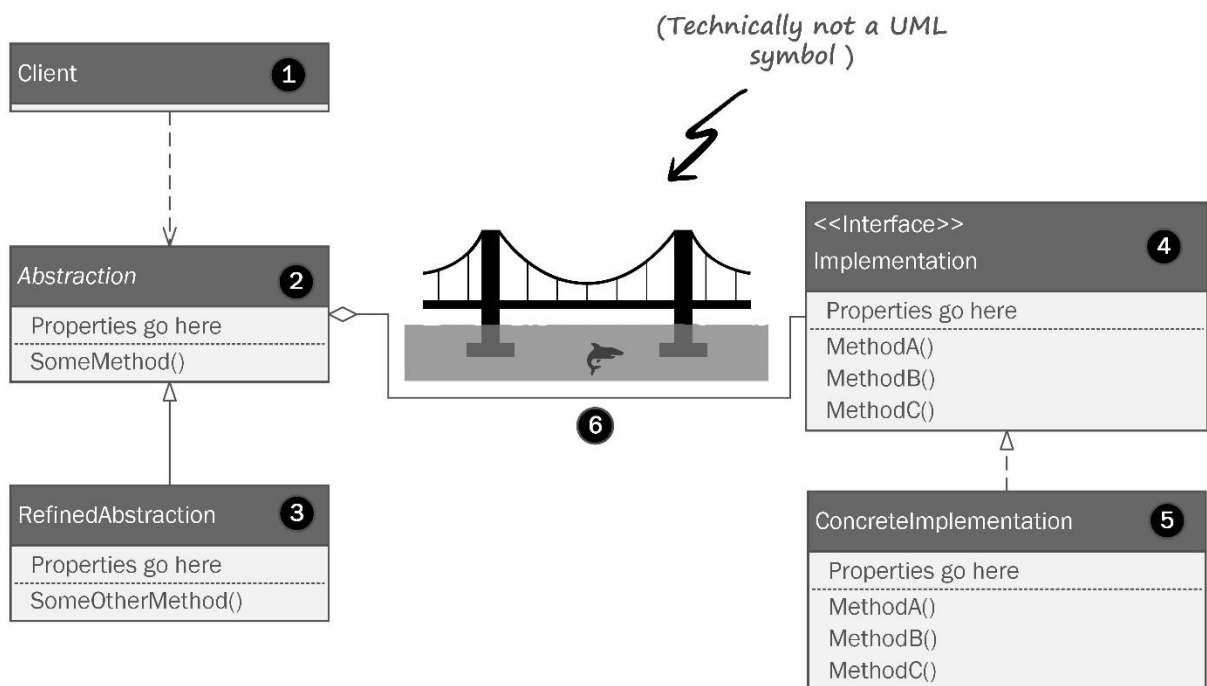
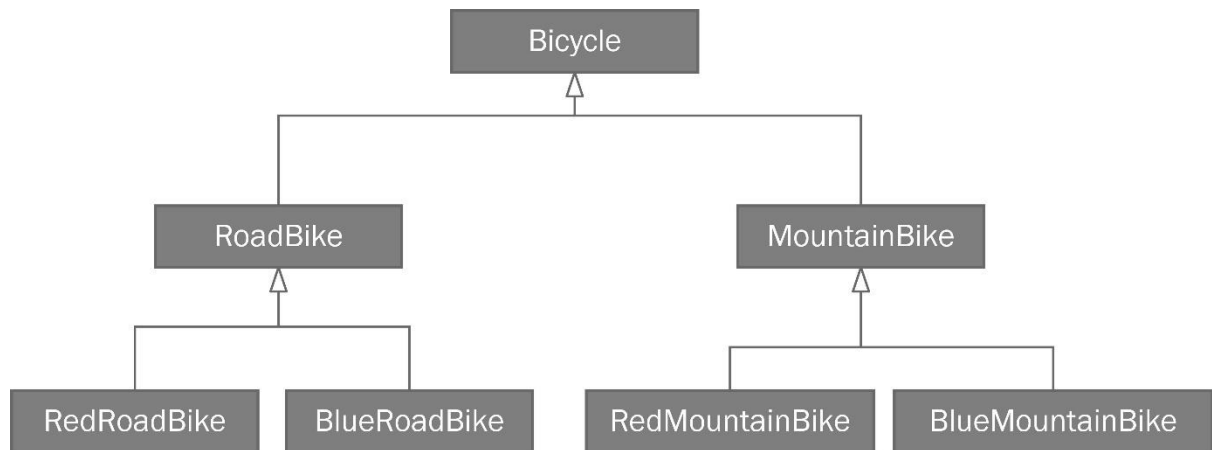


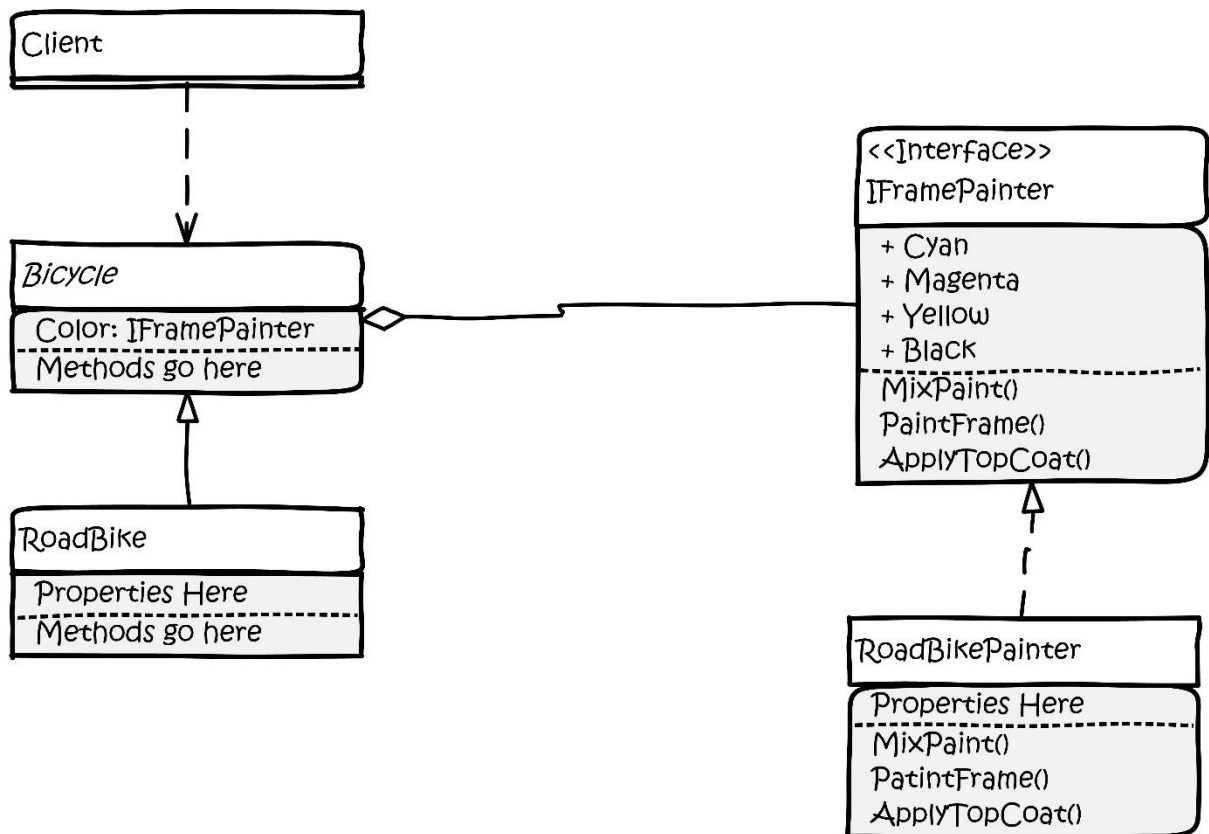




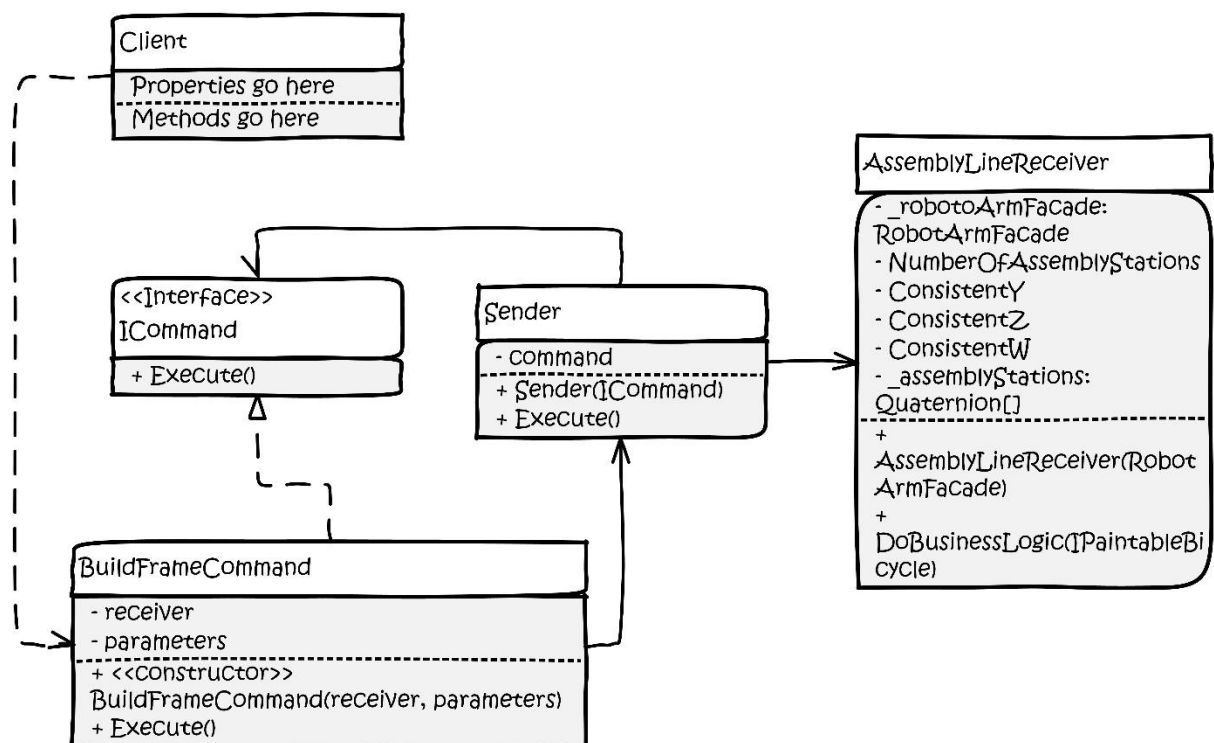
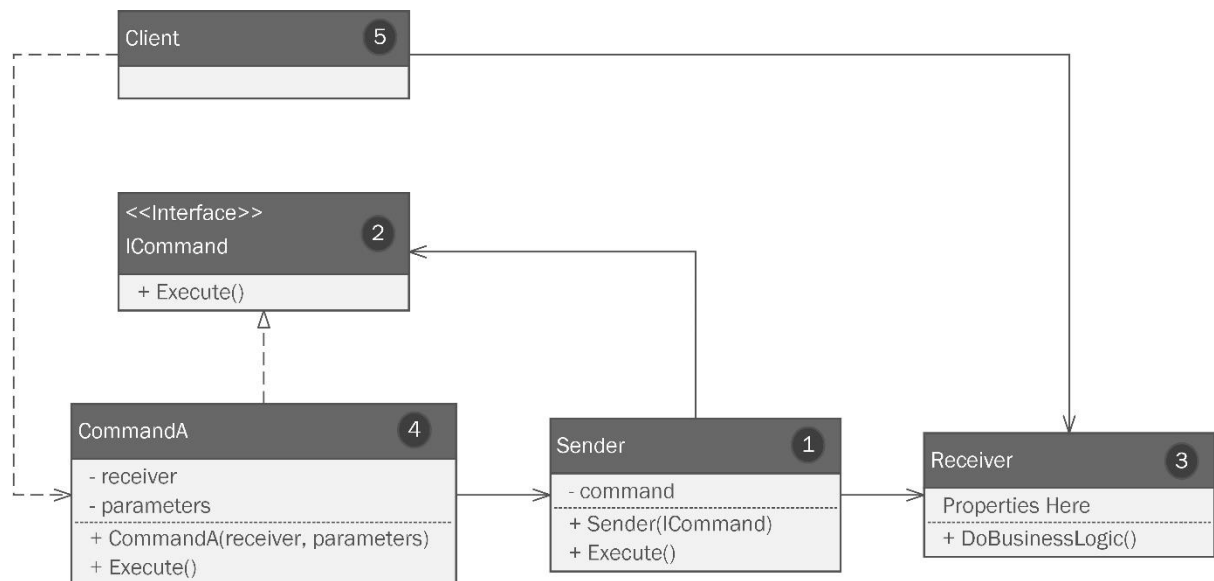
```

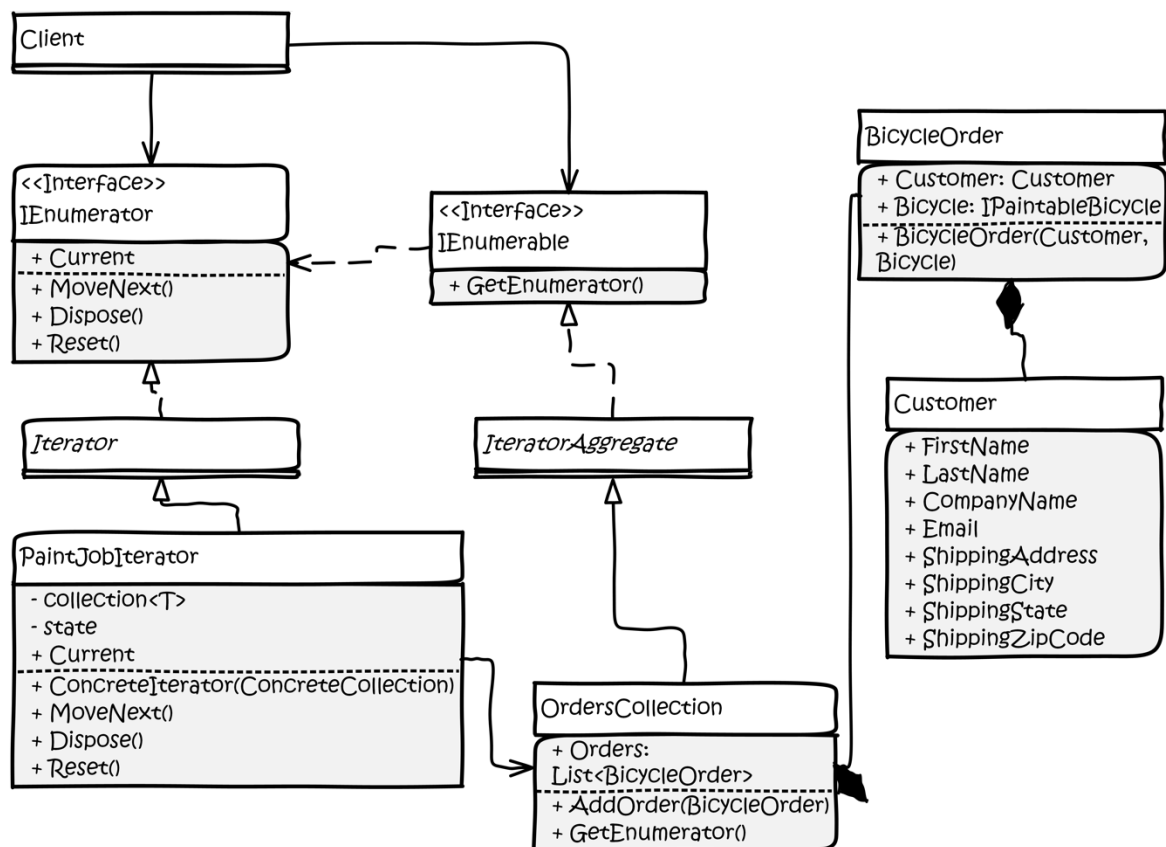
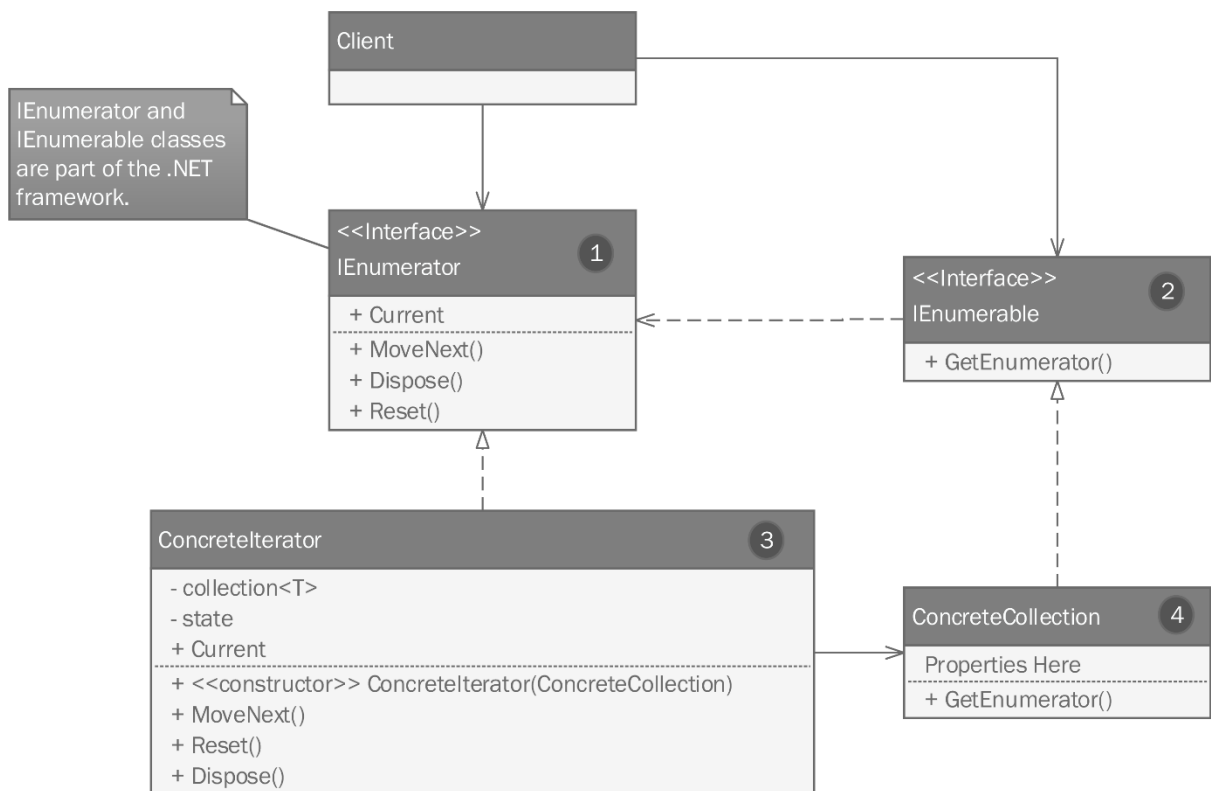
Run: C:\Users\Bruce\AppData\Local\JetBrains\Toolbox\apps\Rider\ch-0\221.5591.20\plugins\dpa\DotFiles\
JetBrains.DPA.Runner.exe --handle=5444 --backend-pid=25380 --detach-event-name=dpa.detach.5444 C
:/Users/Bruce/Projects/Real-World-Implementation-of-C-Design-Patterns/chapter-4/CompositeExample
/bin/Debug/net6.0/CompositeExample.exe
Composite Example
----- Weights -----
BottomBracket weighs 284.834
Shaft weighs 82.03
LargeChainRing weighs 57.0983
SmallChainRing weighs 52.57
CrankArm weighs 432.93
Pedal weighs 234.14
Pedal weighs 234.14
----- Cost -----
BottomBracket costs $11.51 USD
Shaft costs $19.55 USD
LargeChainRing costs $13.53 USD
SmallChainRing costs $11.33 USD
CrankArm costs $34.32 USD
Pedal costs $11.32 USD
Pedal costs $11.32 USD
  
```



Chapter 5: Wrangling Problem Code by Applying Behavioral Patterns



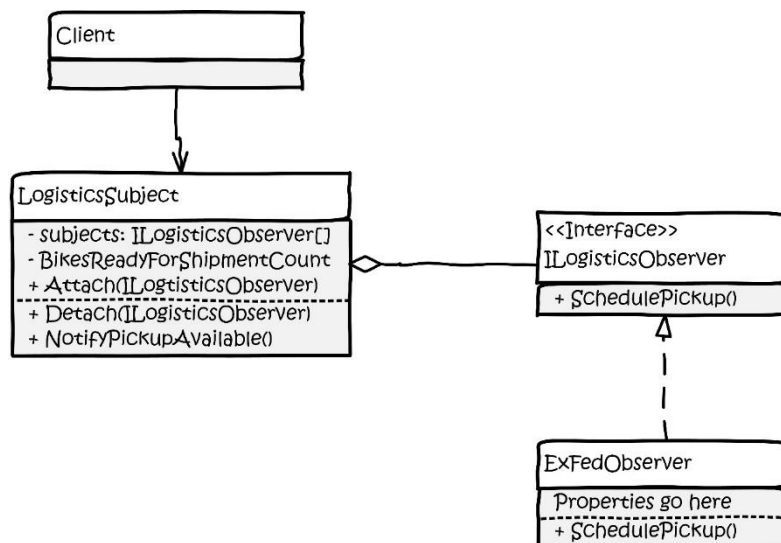
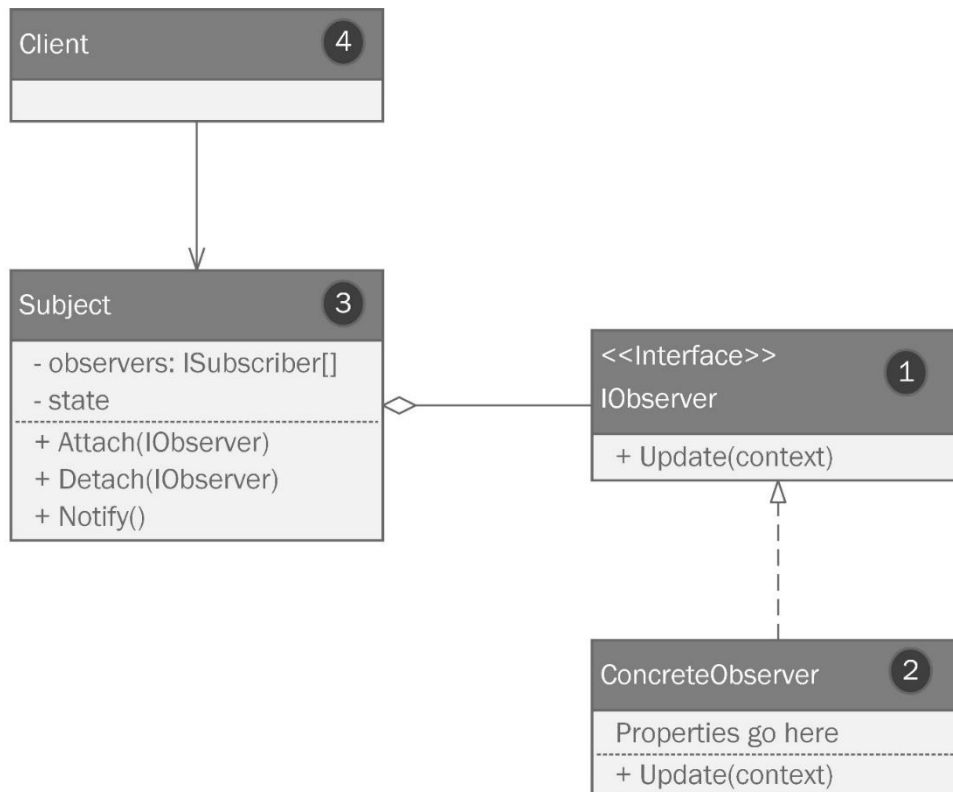


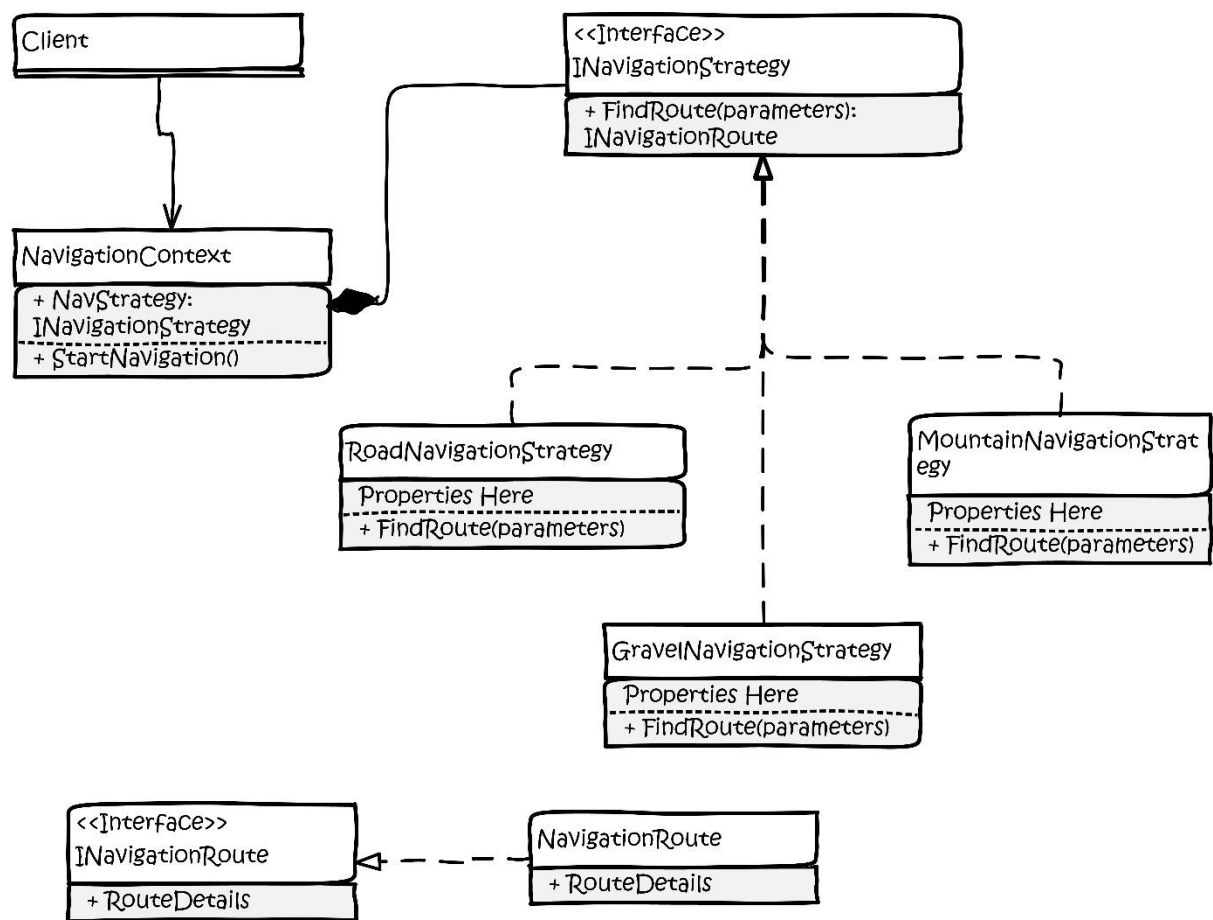
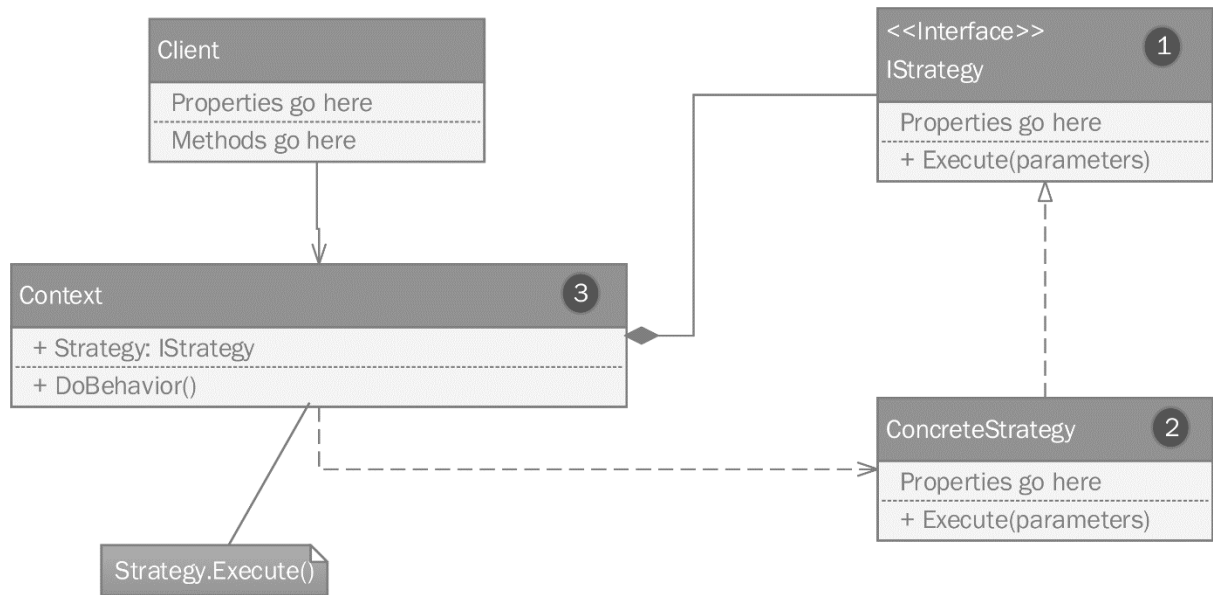
```

Run: 
C:\Users\Bruce\AppData\Local\JetBrains\Toolbox\apps\Rider\ch-0\221.5787.36\plugins\dp\DotFiles\JetBrains.DPA.Runner.exe
entation-of-C-Design-Patterns\chapter-5\IteratorExample\bin\Debug\net6.0\IteratorExample.exe
Texas Turquoise
Alpine White
Red River Shootout
Amarillo Peacock
Amarillo Peacock
Process finished with exit code 0.

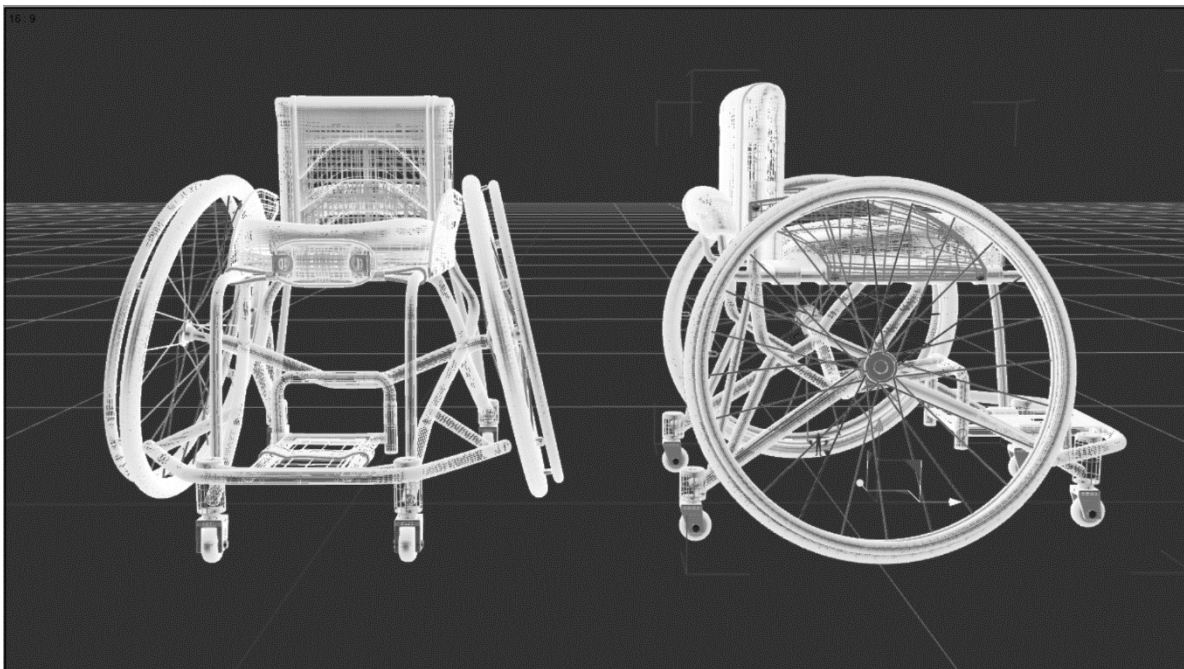
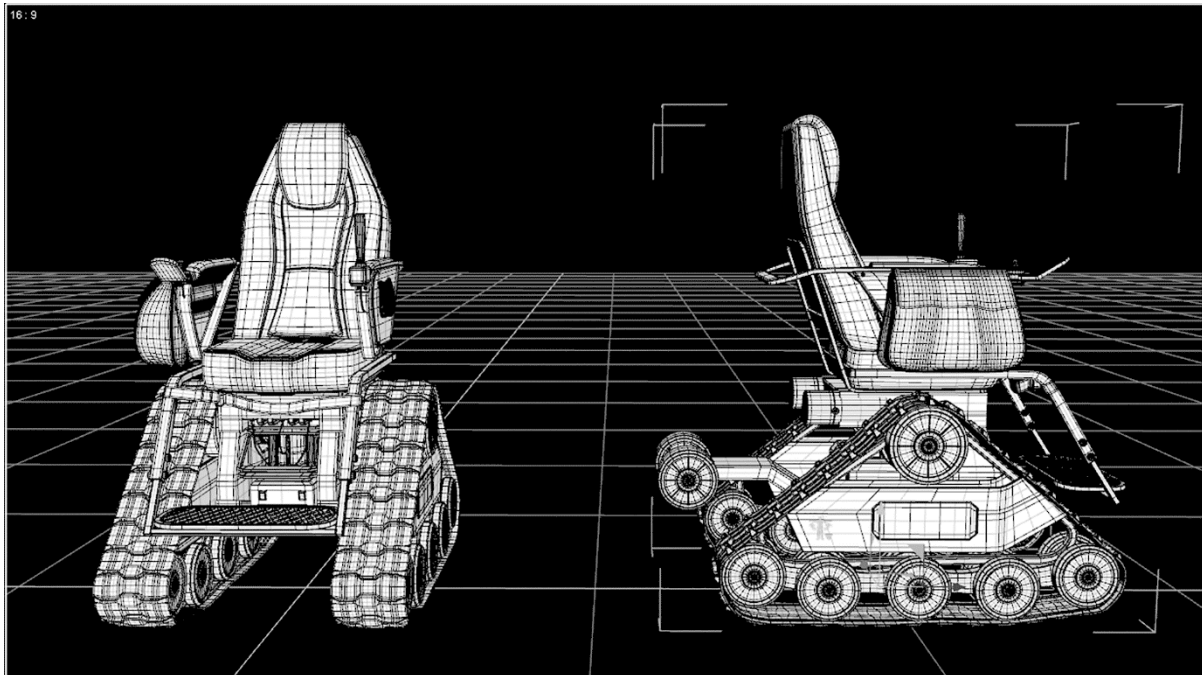
```

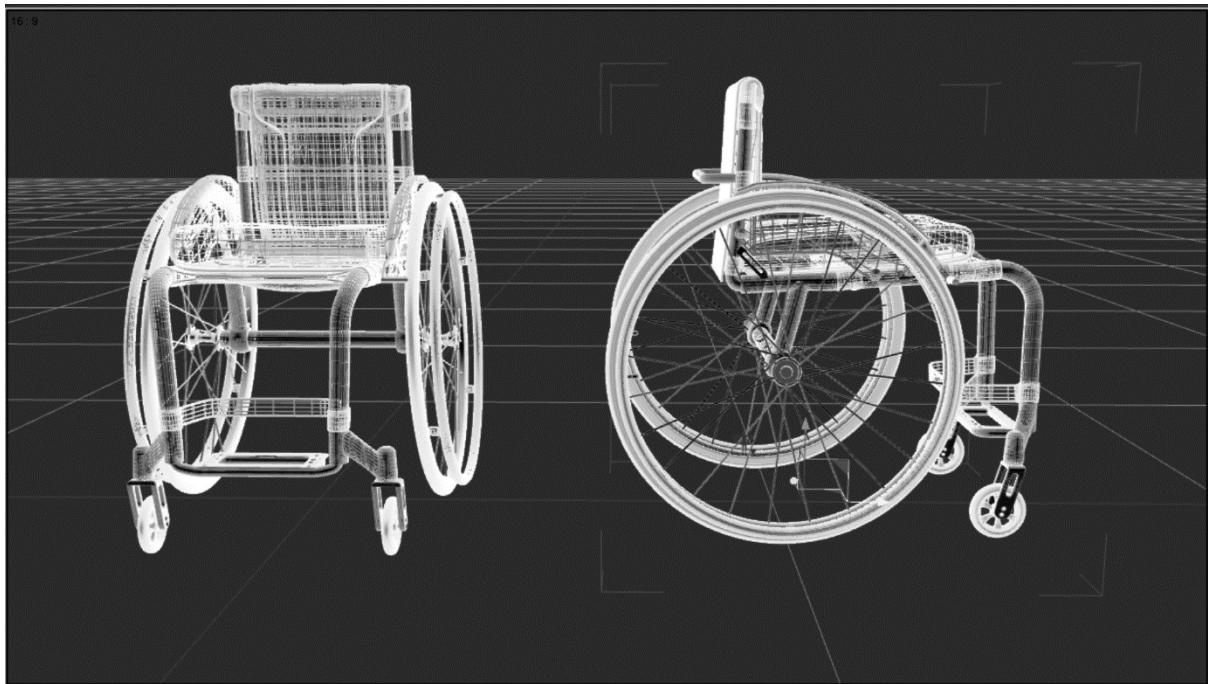
Build succeeded with warnings at 4:0





Chapter 6: Step Away from the IDE! Designing with Patterns Before You Code





Wheelchair

- + ModelName
- + Year
- + SerialNumber
- + Frame
- + Seat
- + Wheels []

Wheelchair

- + Seat
- + Frame
- + SerialNumber
- + Year
- + ModelName



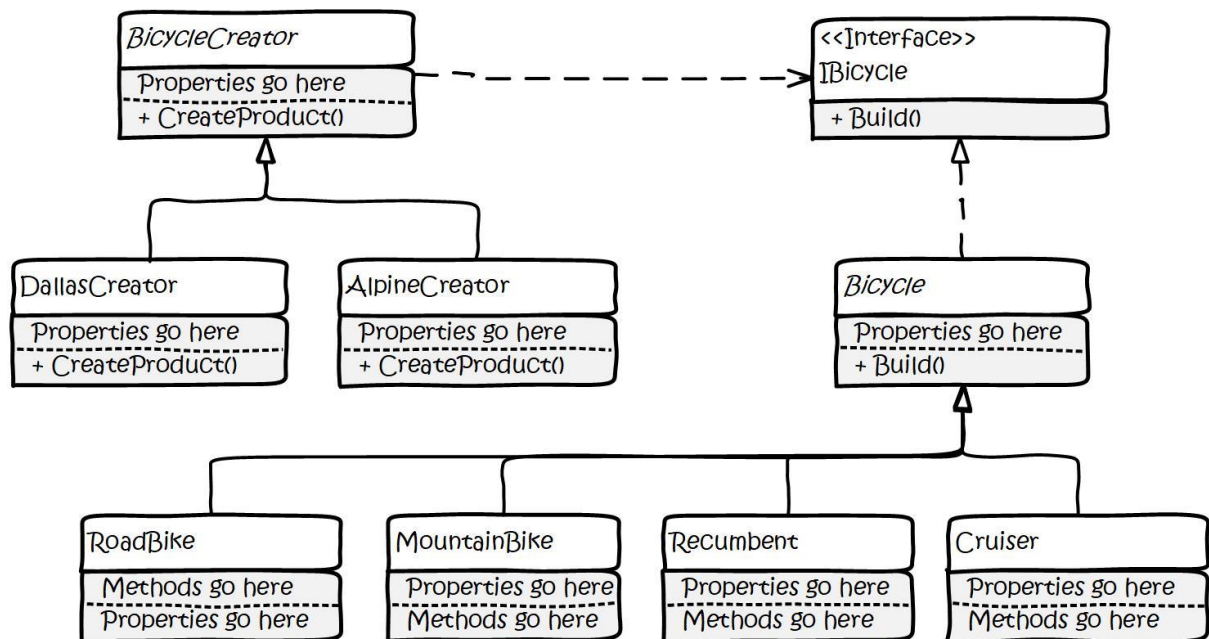
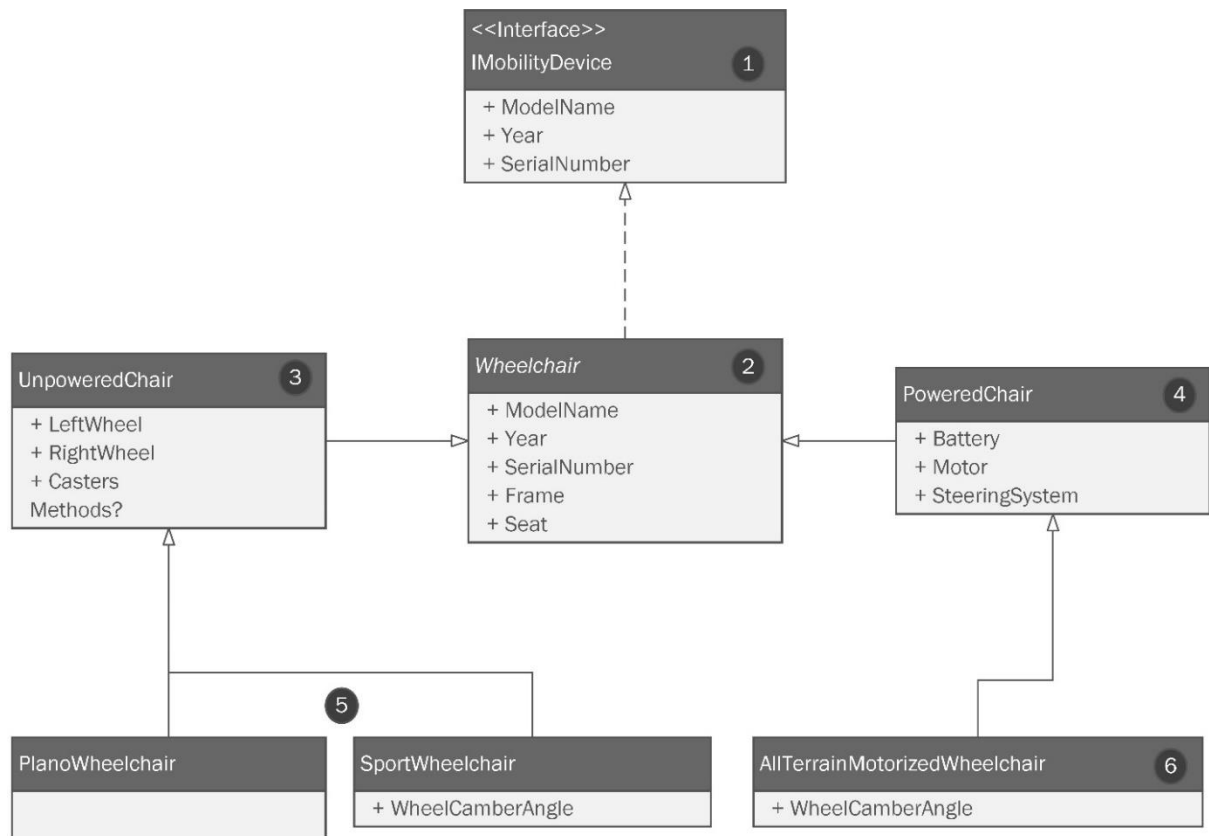
UnpoweredChair

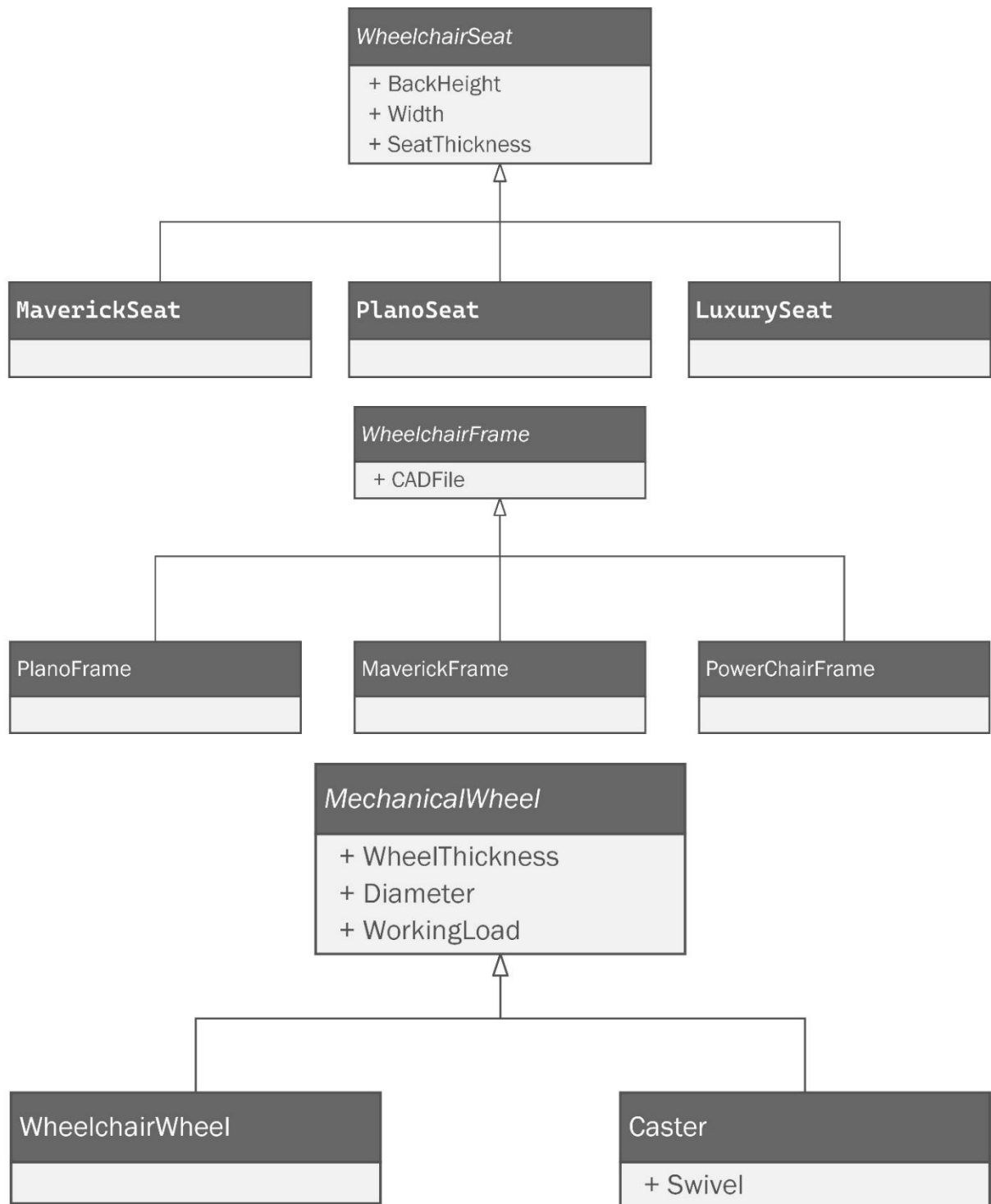
- + LeftWheel
- + RightWheel
- + Casters

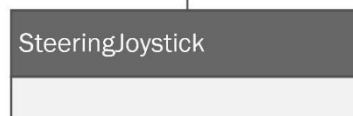
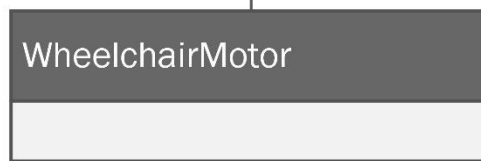
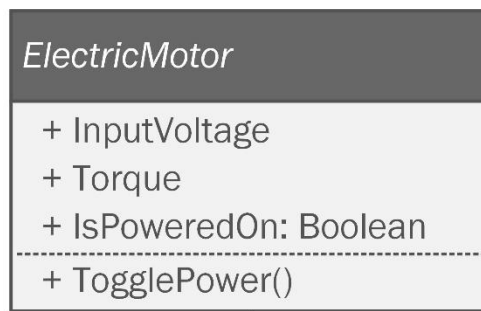
Methods?

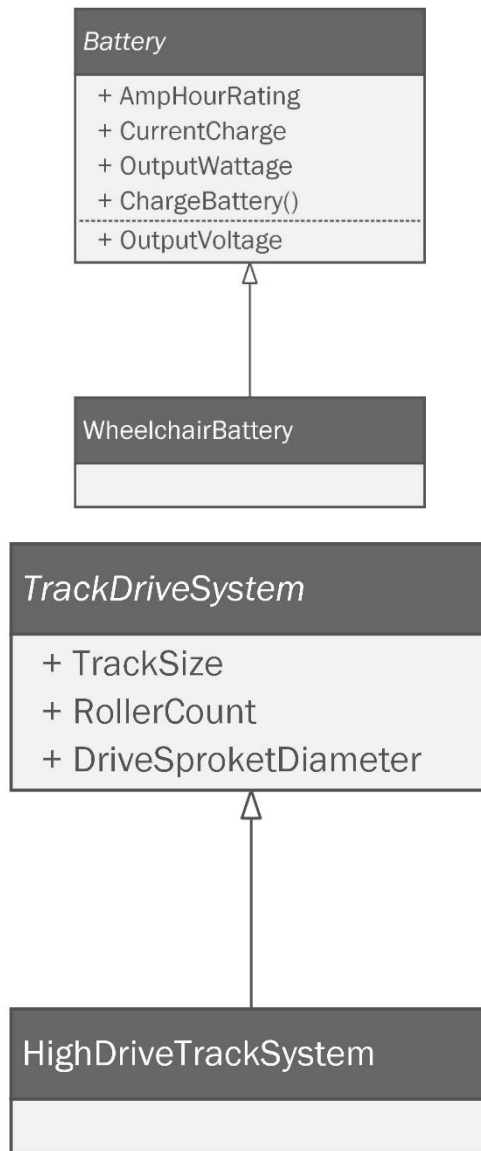
PoweredChair

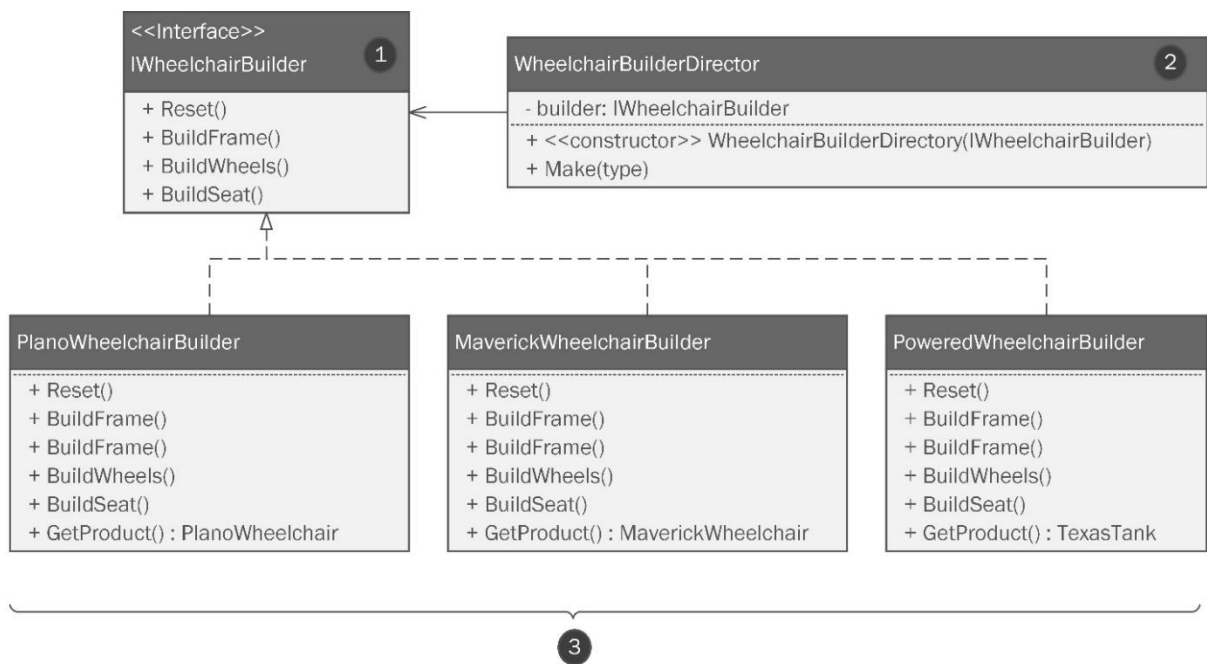
- + Battery
- + Motor
- + SteeringSystem

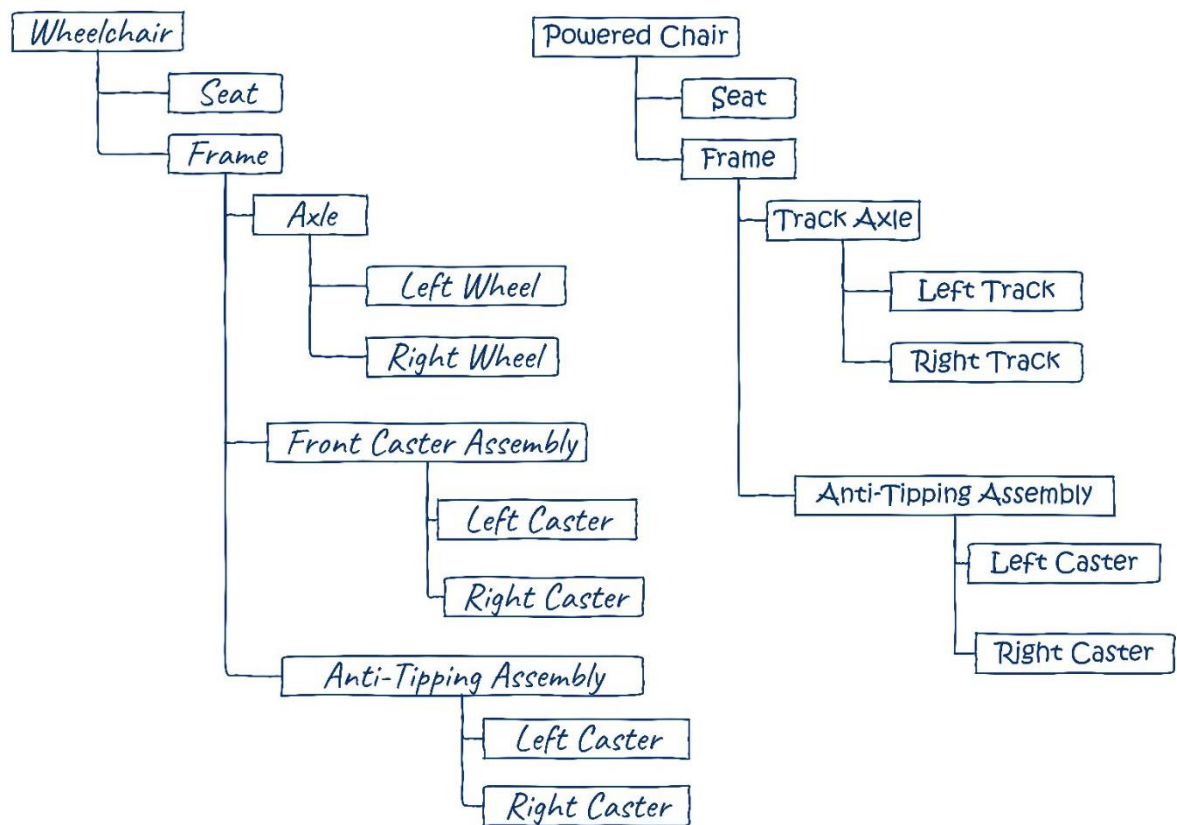
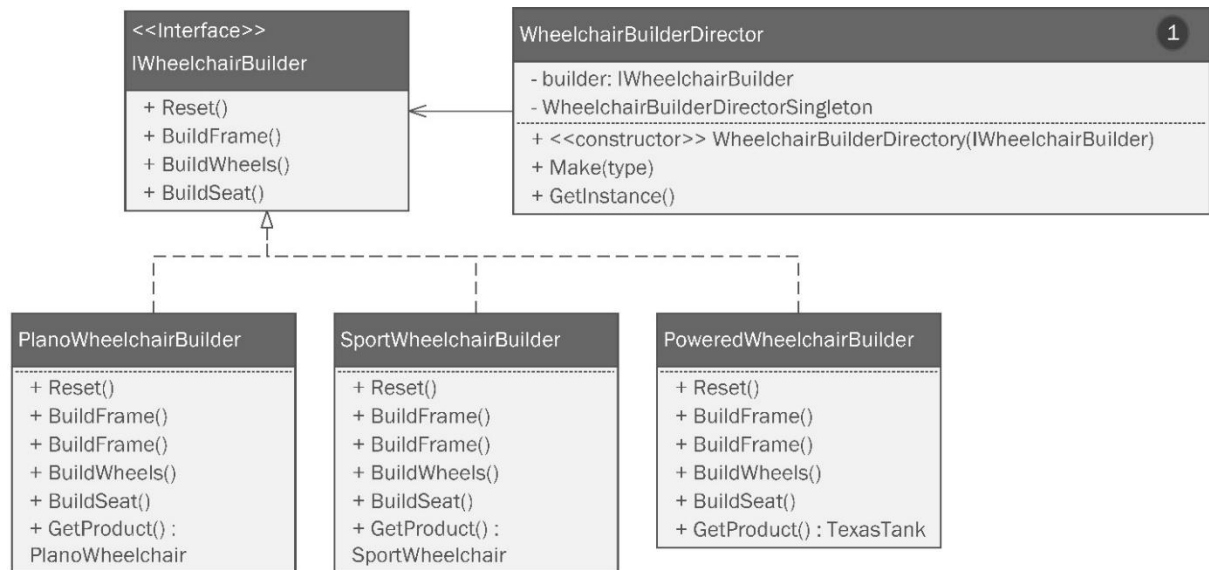


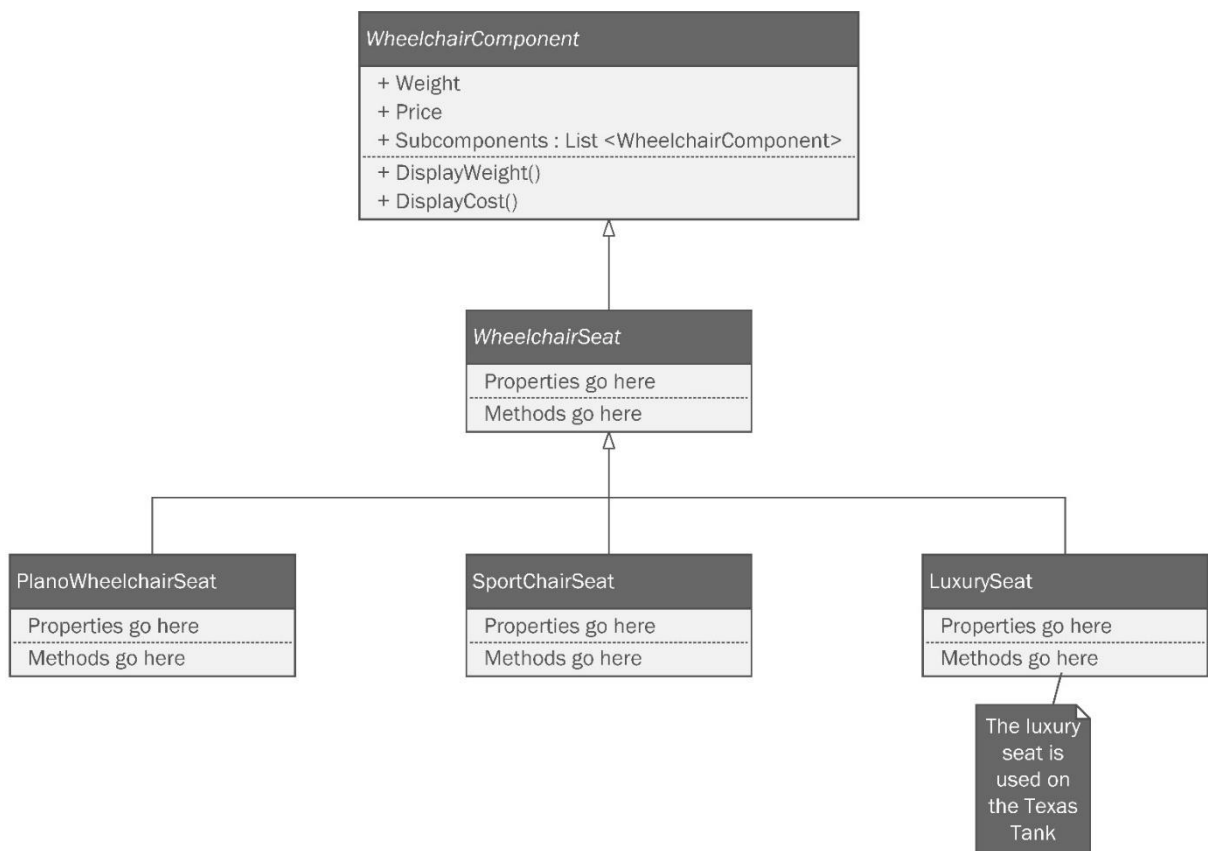
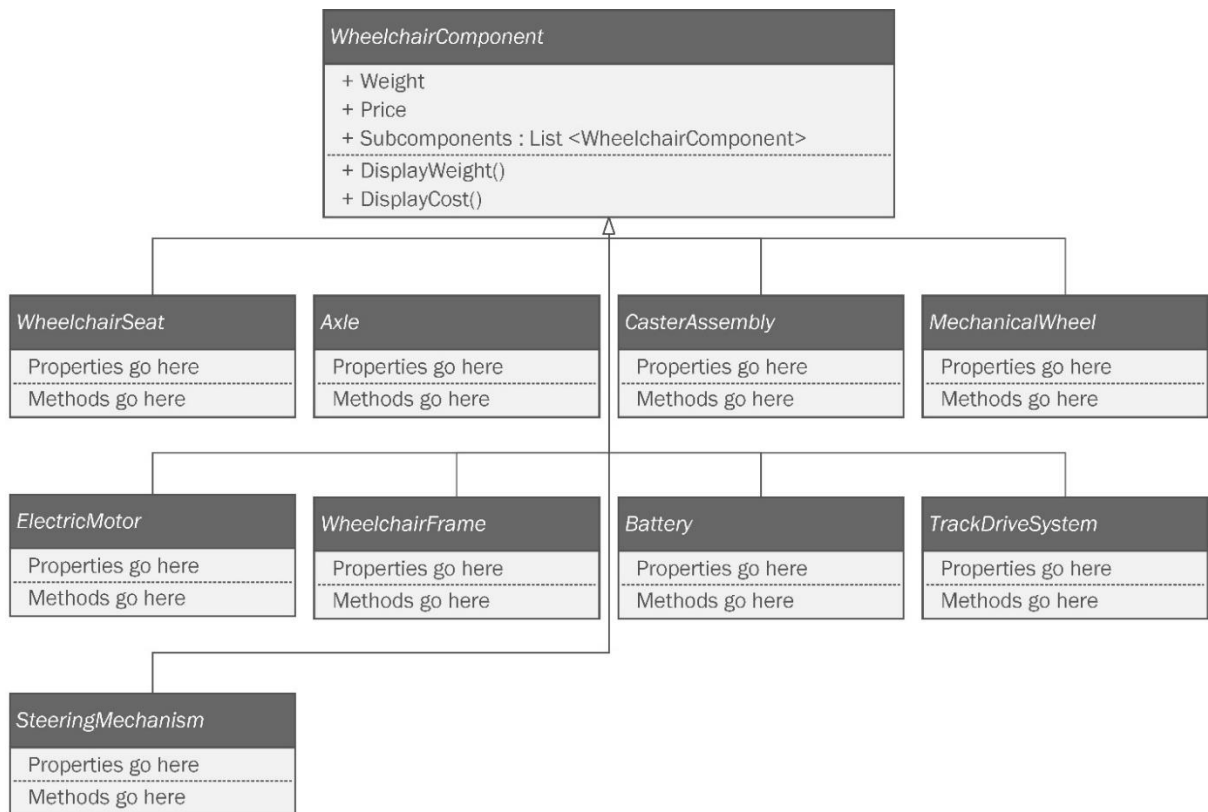


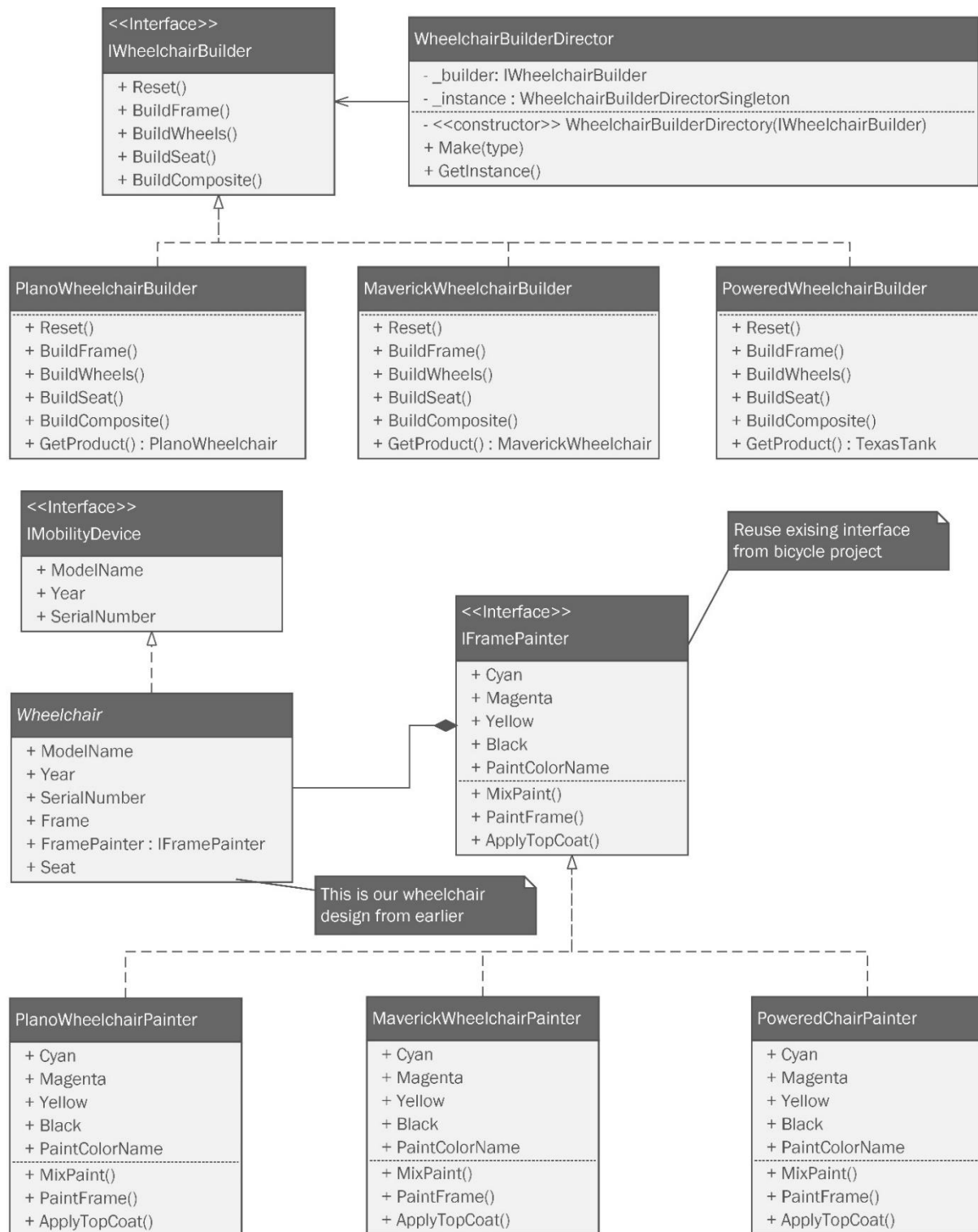


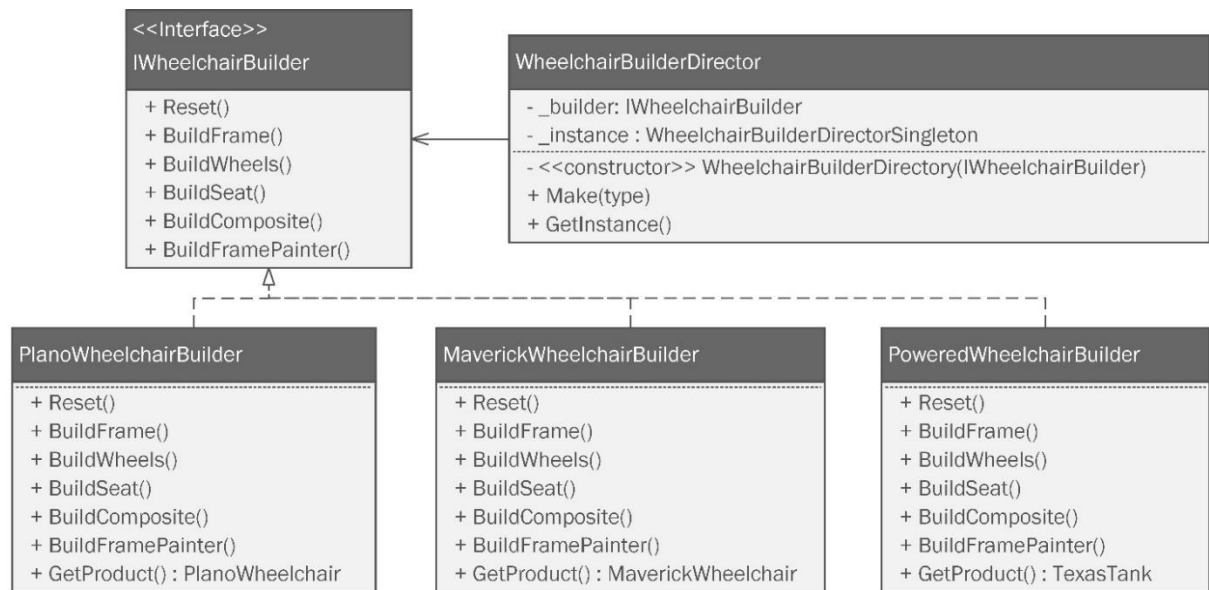




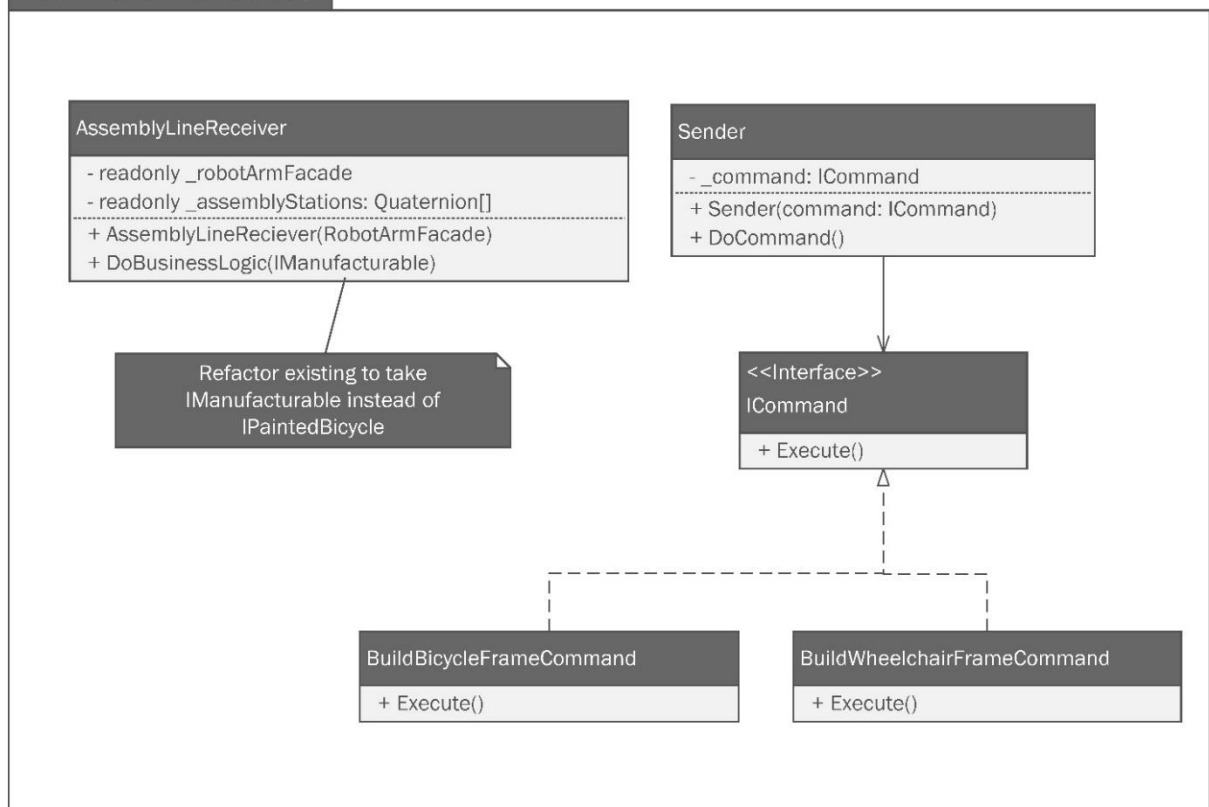


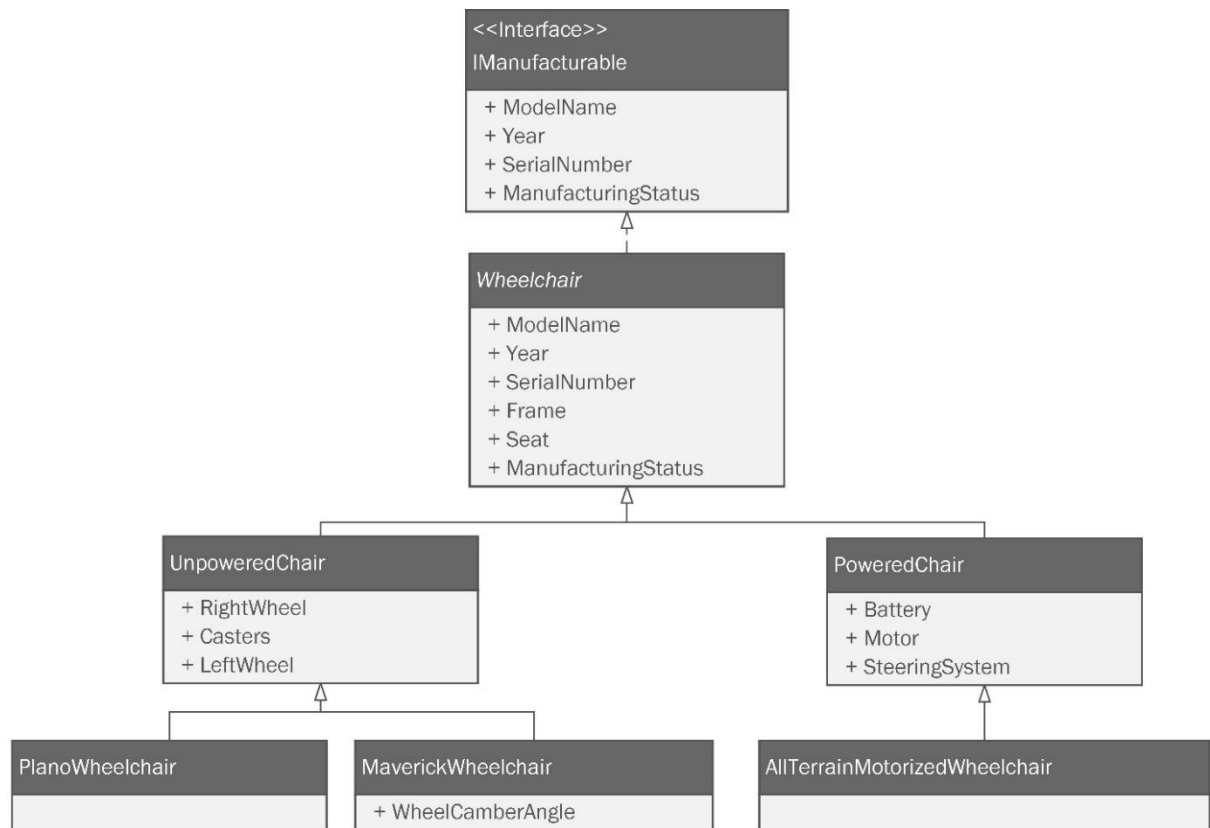




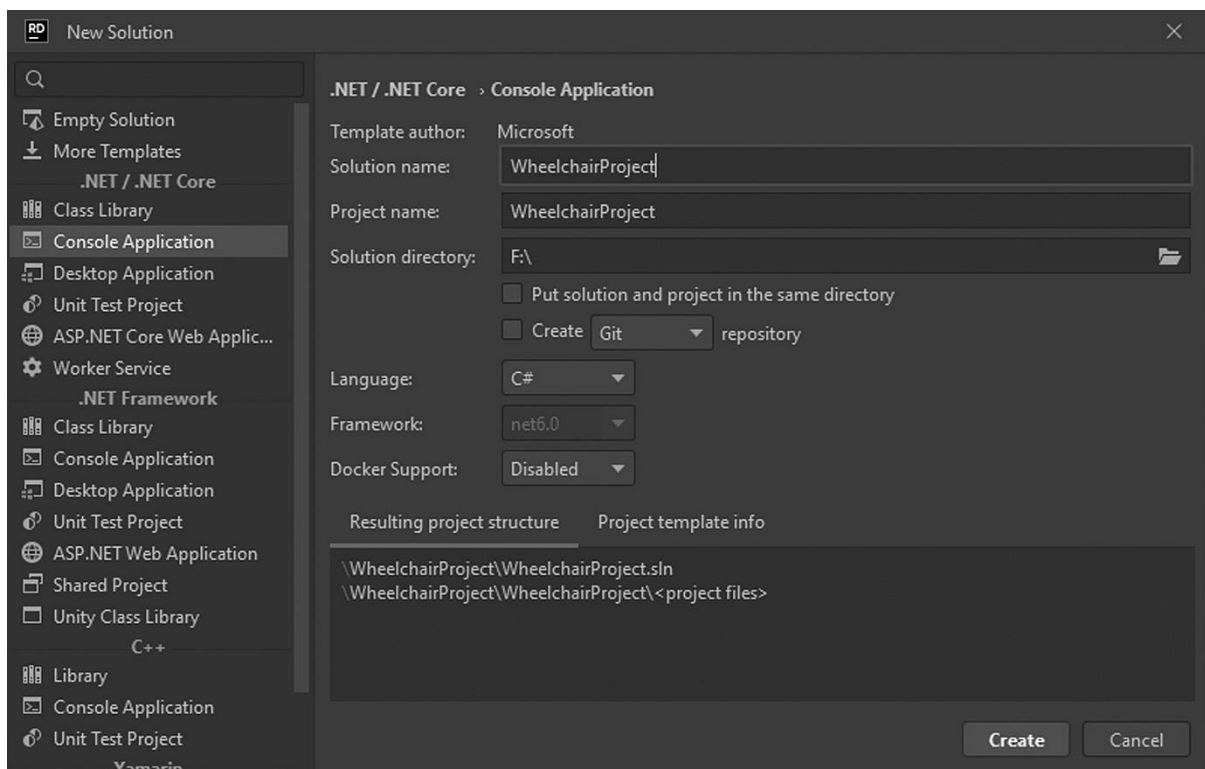
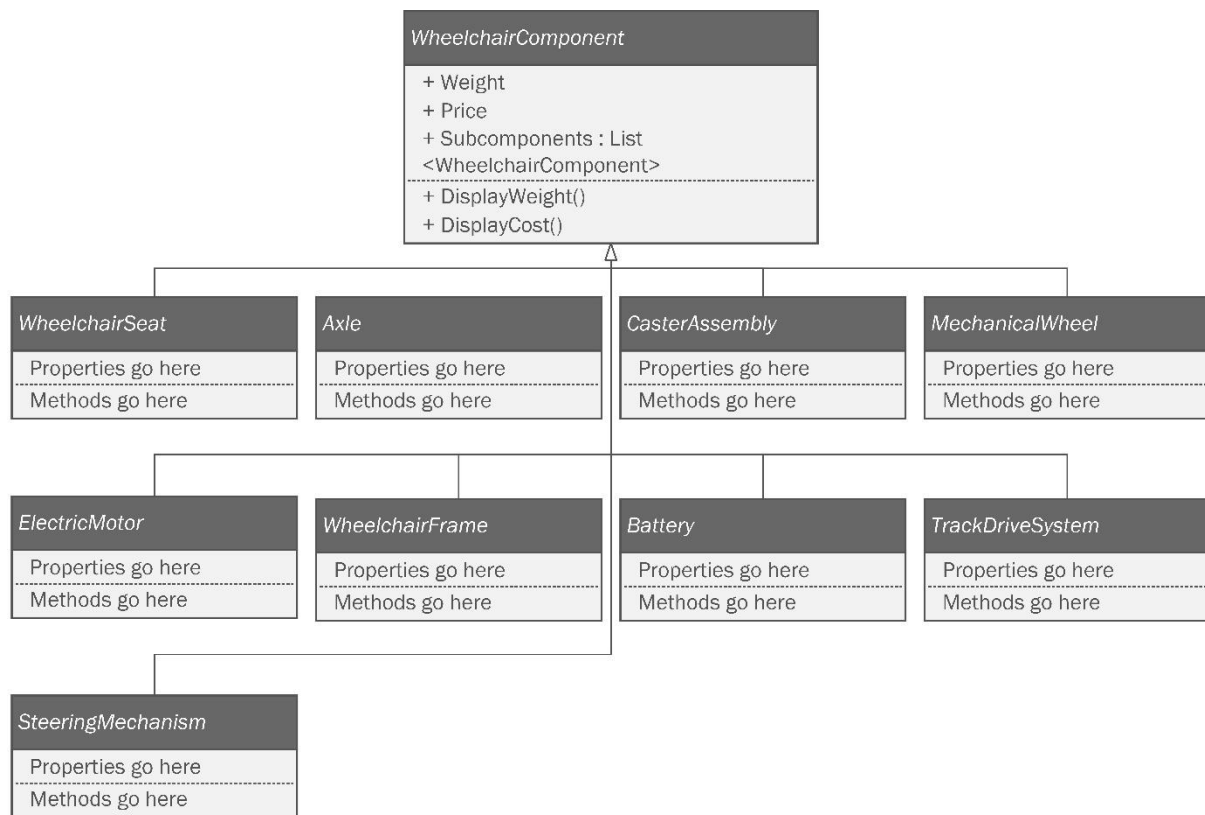


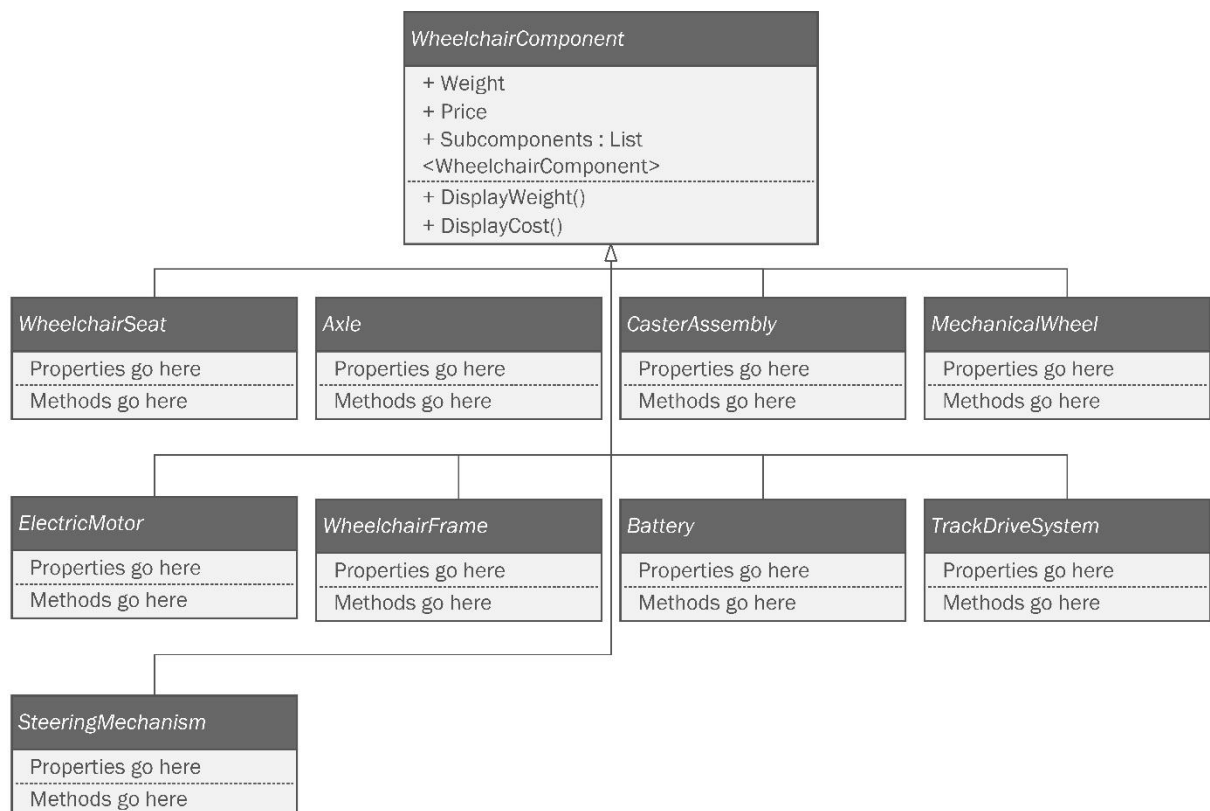
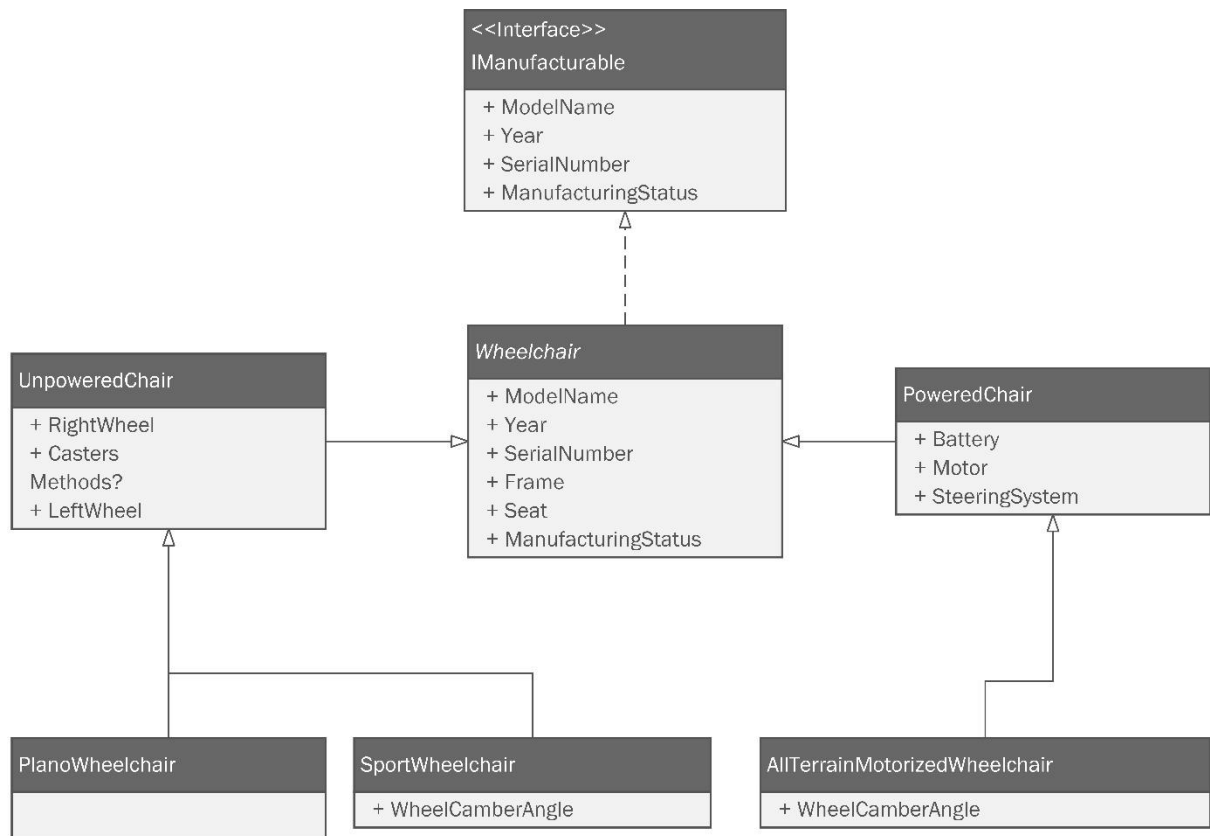
BumbleBikes.Manufacturing

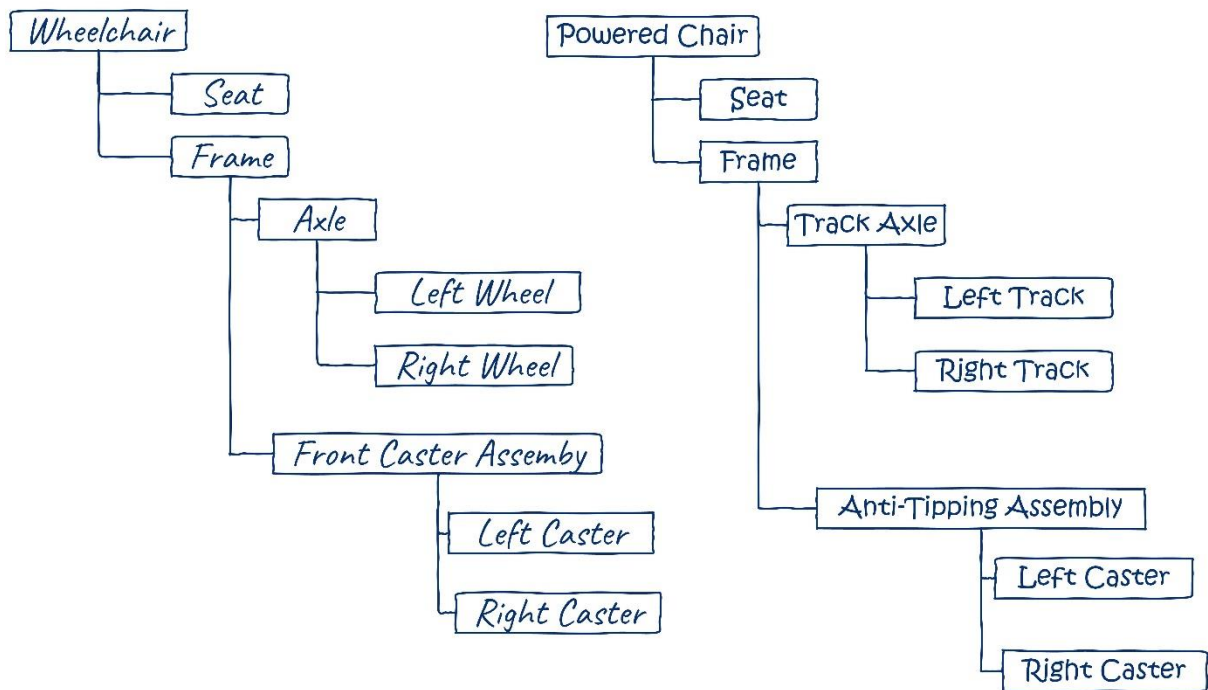




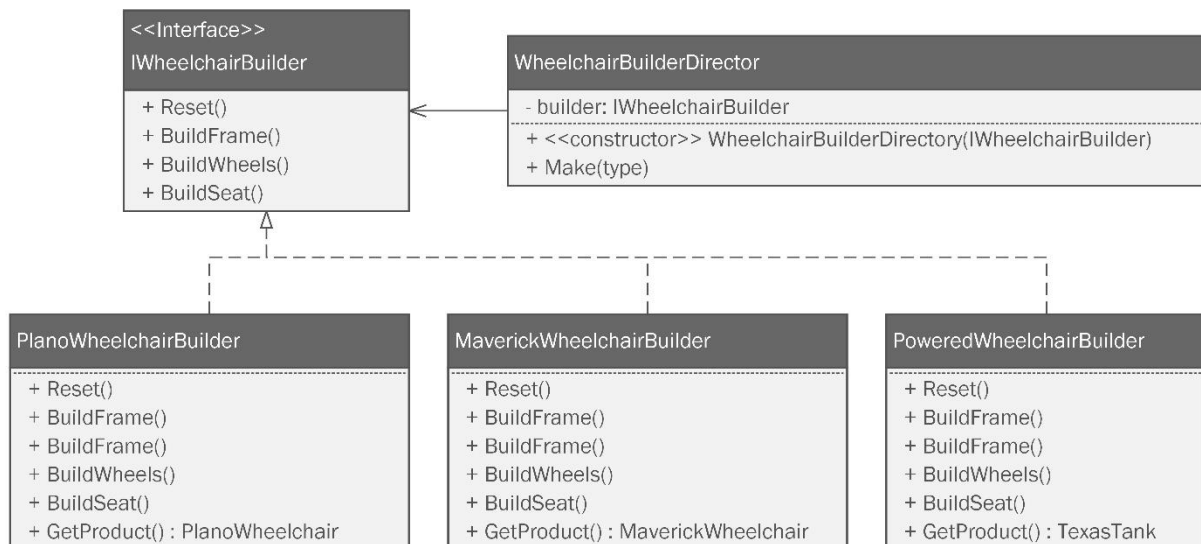
Chapter 7: Nothing Left but the Typing: Implementing the Wheelchair Project













```
▼ C# WheelchairProject
  > Dependencies
  ▼ WheelchairComponents
    C# Axle.cs
    C# CasterAssembly.cs
    C# MechanicalWheel.cs
    C# WheelchairComponent.cs
    C# WheelchairFrame.cs
    C# WheelchairSeat.cs
    C# IManufacturable.cs
    C# Program.cs
    C# UnpoweredChair.cs
    C# Wheelchair.cs
    C# WheelchairComponent.cs
```

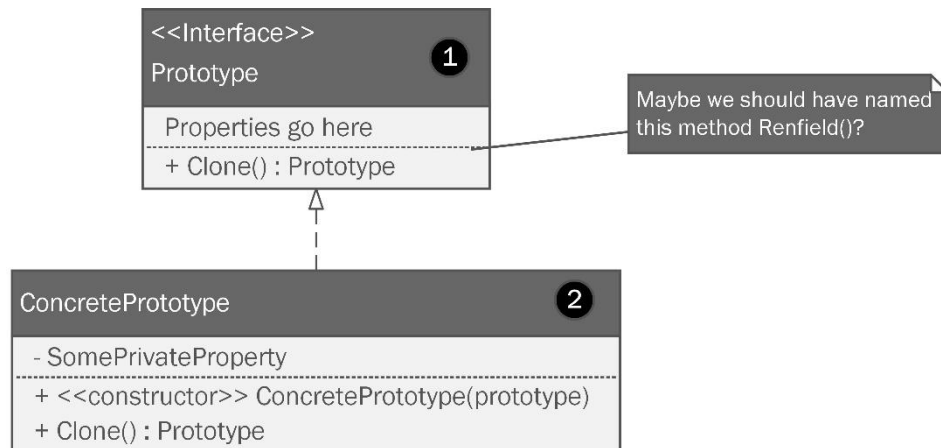


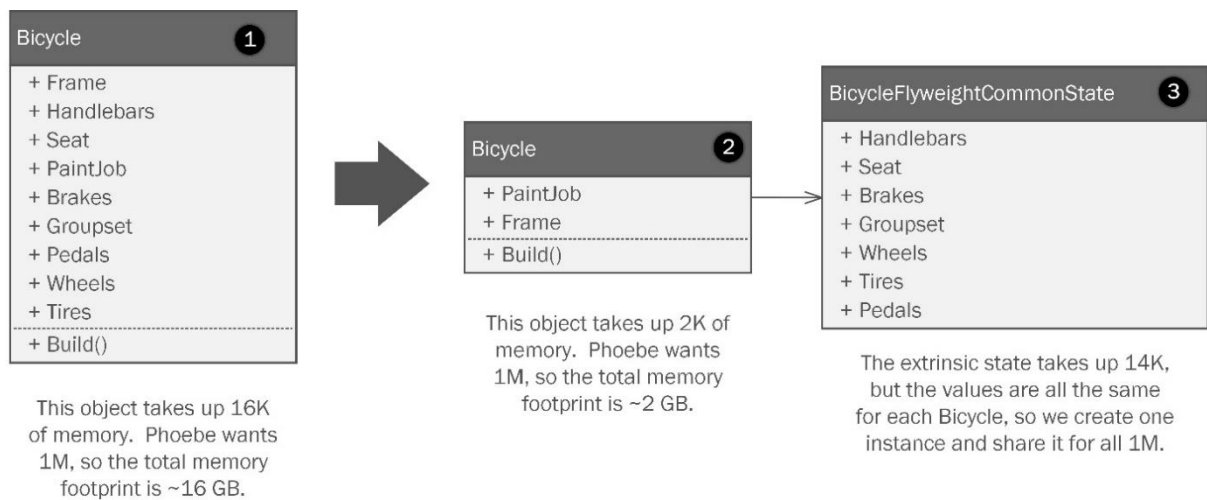
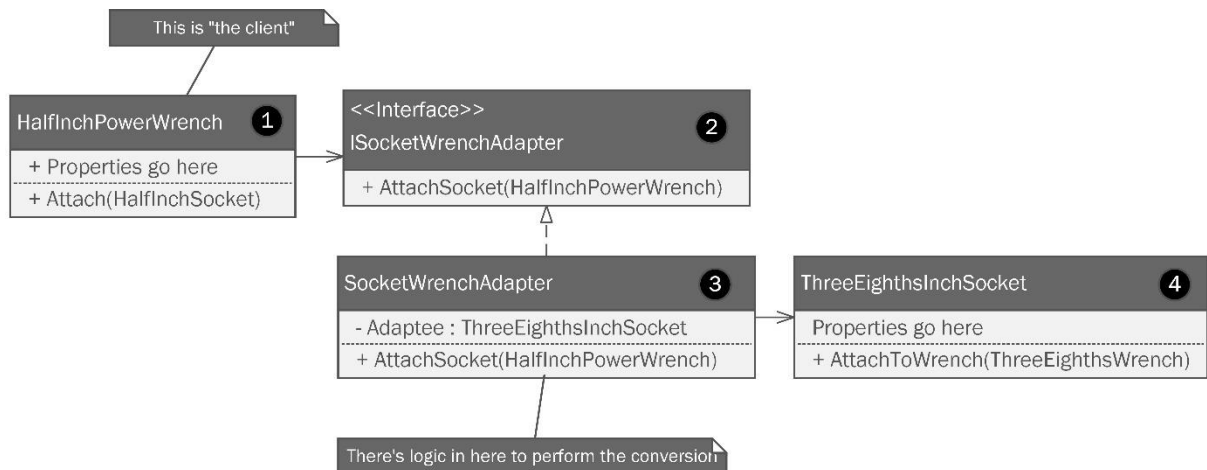
```

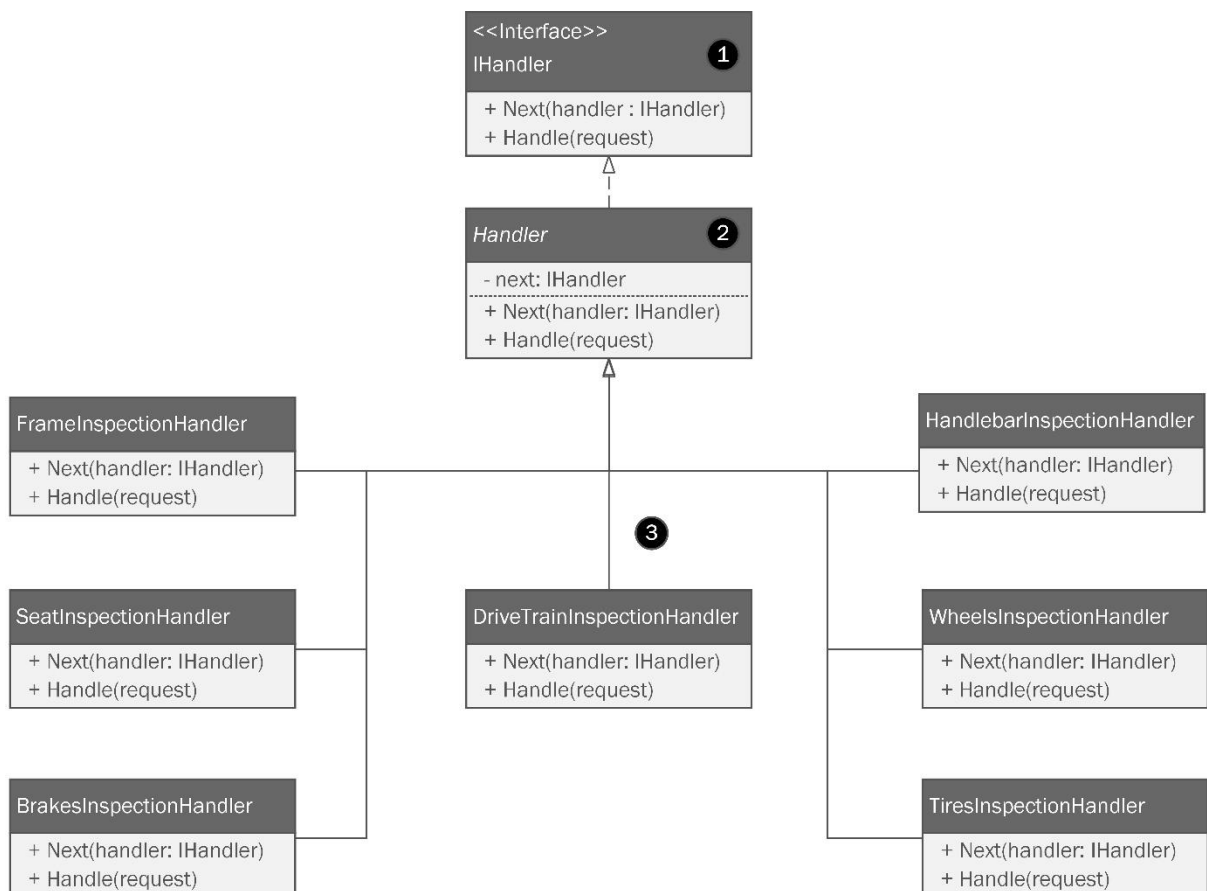
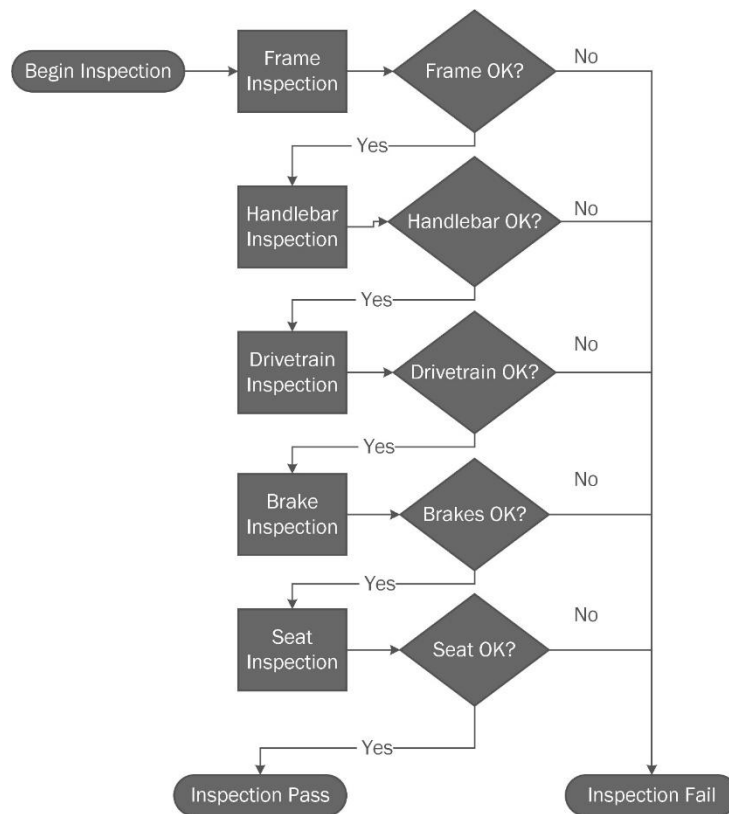
11
12 public class PlanoWheelchairBuilder : IWheelchairBuilder
13     Implement missing members
14     Delegate implementation of 'IWheelchairBuilder' to new field
15     Create derived type
16     To internal
17     Default constructor
18     Create another part of the type
19     To record
20     Add <inheritdoc />
21     Class 'PlanoWheelchairBuilder' implements interface (click to navigate)
22     Type Hierarchy
23     Navigate To... Ctrl+Alt+Shift+N
24     Refactor This... Ctrl+Shift+R
25     Inspect This... Ctrl+Alt+Shift+A
26     Generate Code... Alt+Insert
    _wheelchair = new PlanoWheelchair();
  
```

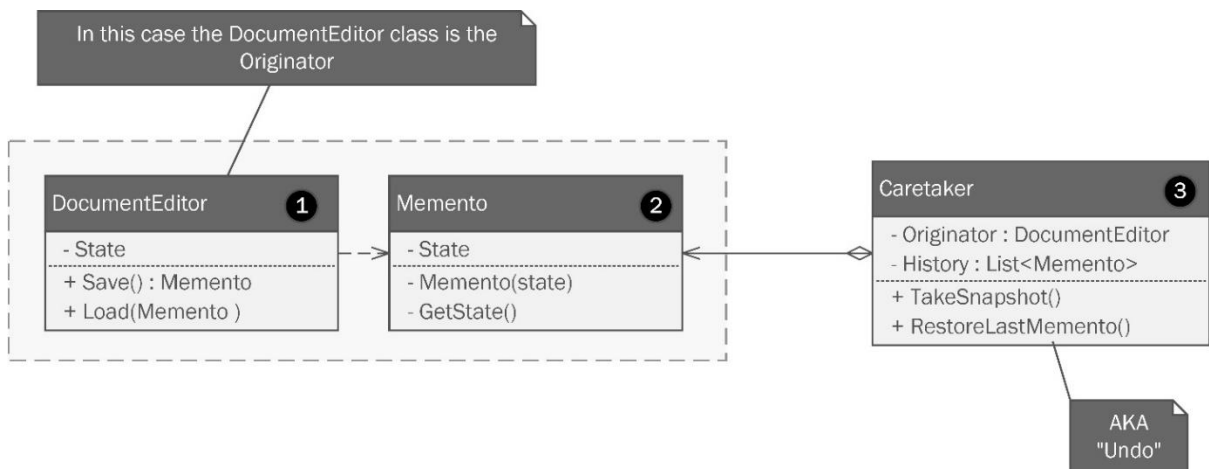
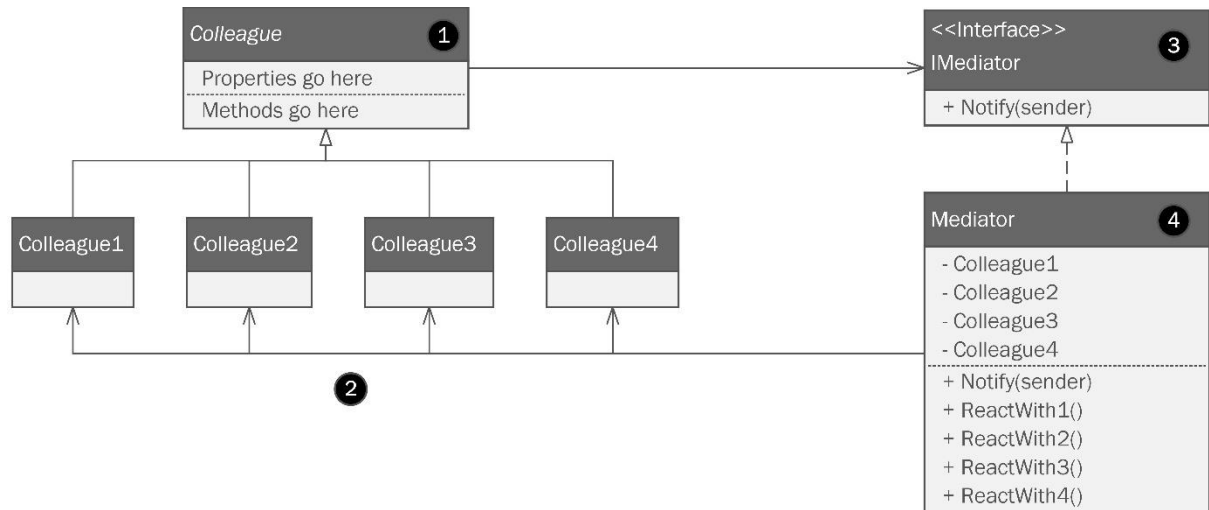
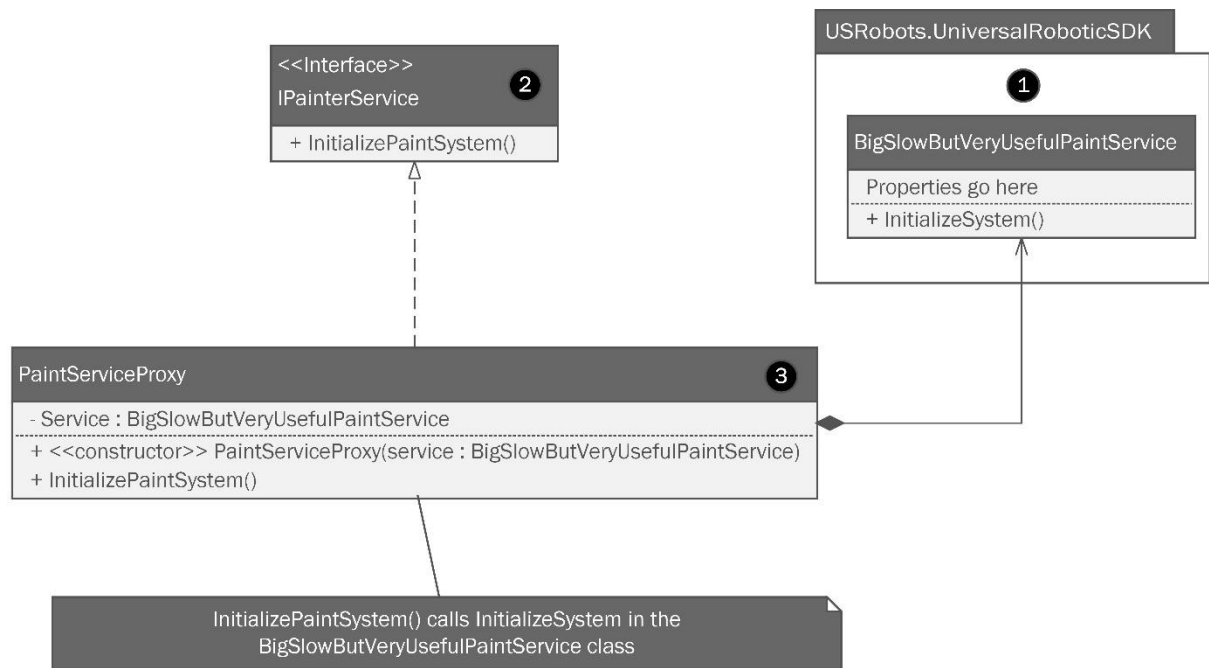
- ▼  WheelchairComponents
 - ▼  Axles
 - C# Axle.cs
 - C# StandardAxle.cs
 - ▼  Casters
 - C# CasterAssembly.cs
 - C# PlanoCasterAssembly.cs
 - ▼  Frames
 - C# PlanoWheelchairFrame.cs
 - C# WheelchairFrame.cs
 - ▼  Seats
 - C# PlanoSeat.cs
 - C# WheelchairSeat.cs
 - ▼  Wheels
 - C# CasterWheel.cs
 - C# MechanicalWheel.cs
 - C# StandardWheel.cs
 - C# WheelchairComponent.cs

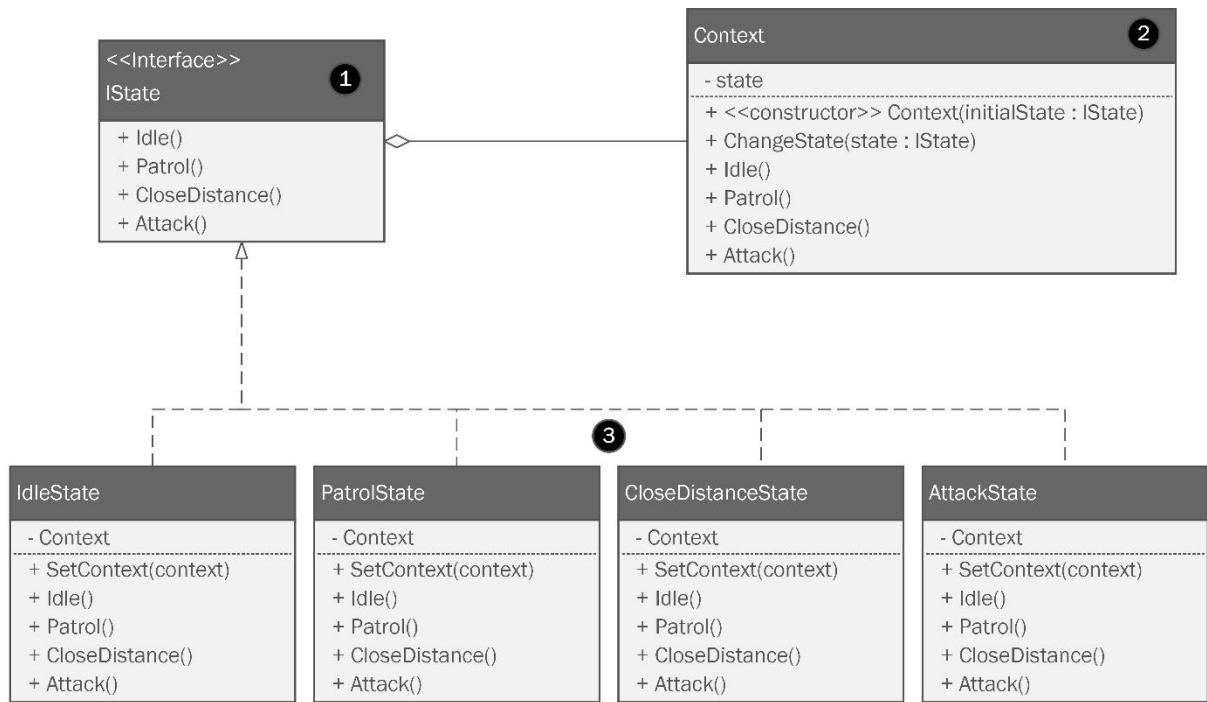
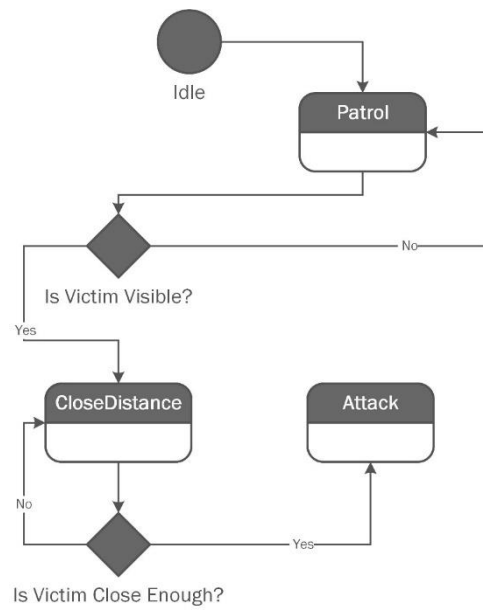
Chapter 8: Now You Know Some Patterns. What Next?

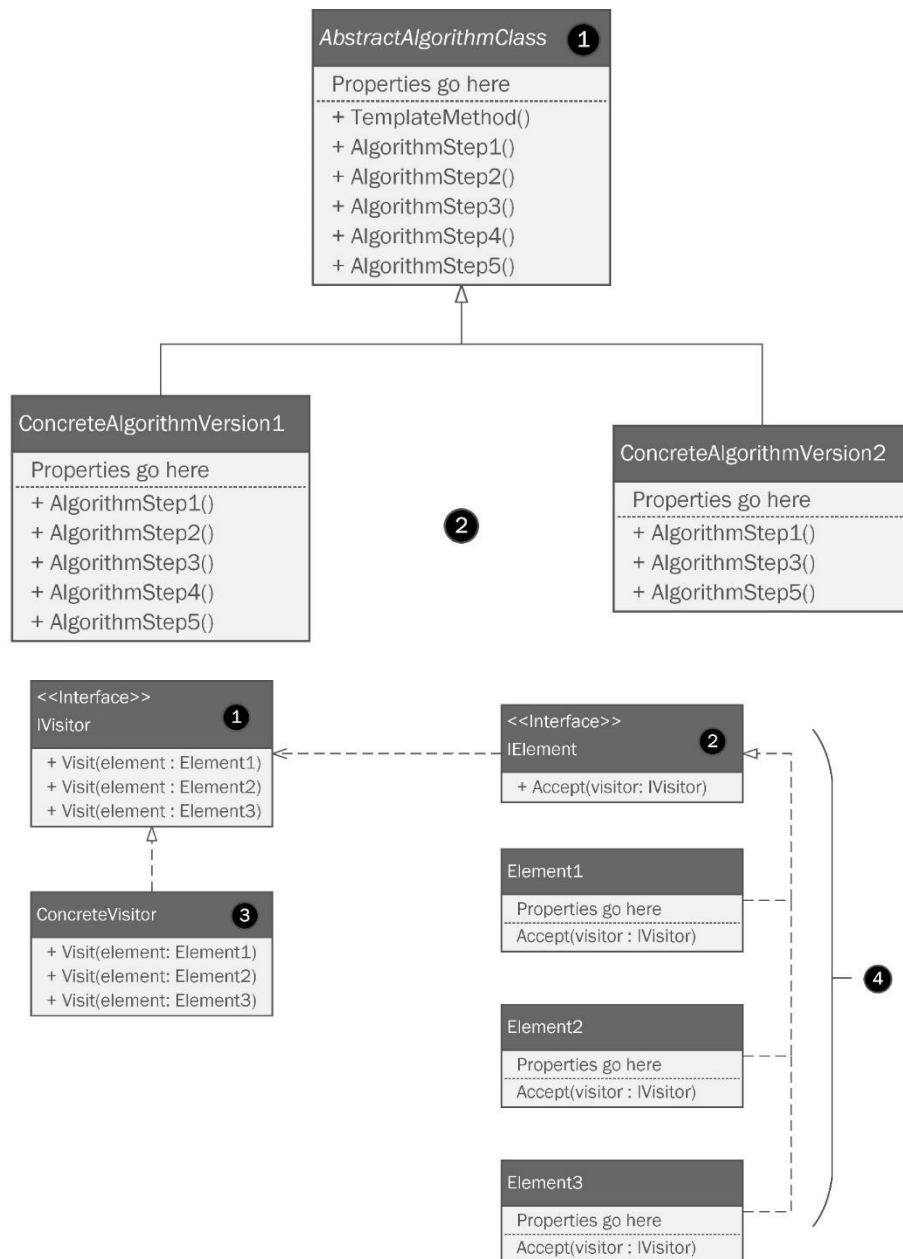




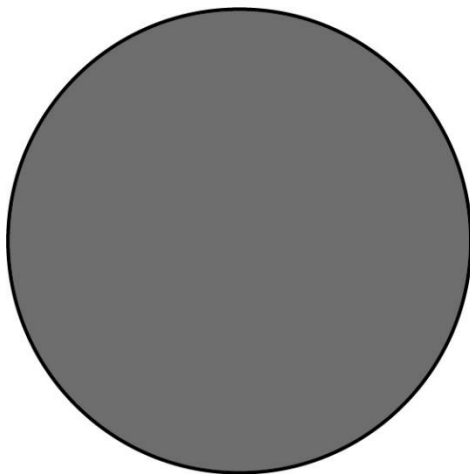








Appendix 1: A Brief Review of OOP Principles in C#



Properties:

Center: 7, 2

Radius: 200px

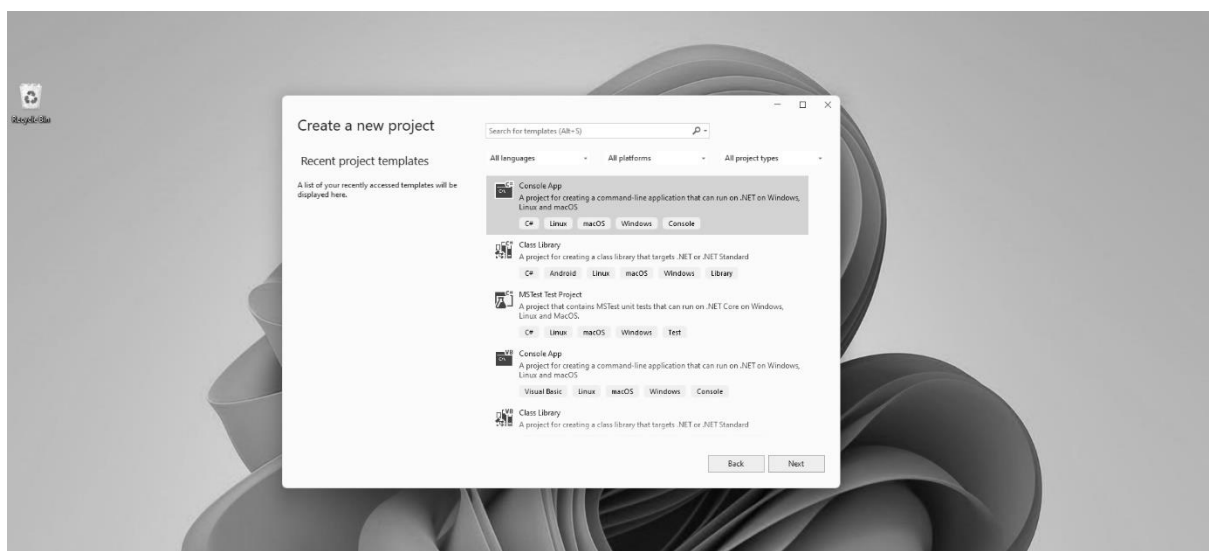
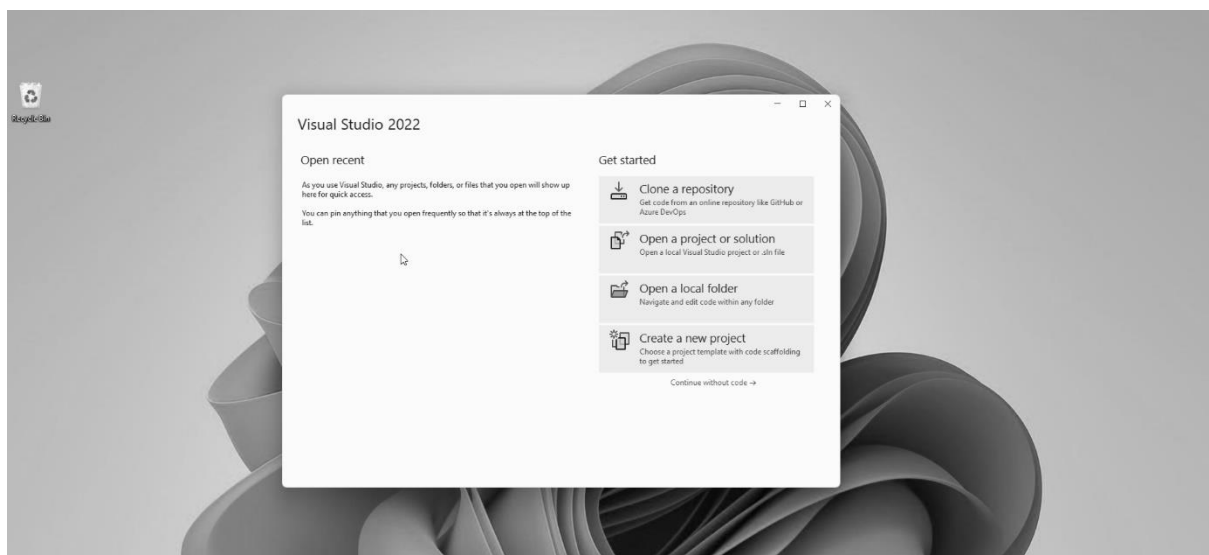
LineWidth: 1px

Line Color: #000000

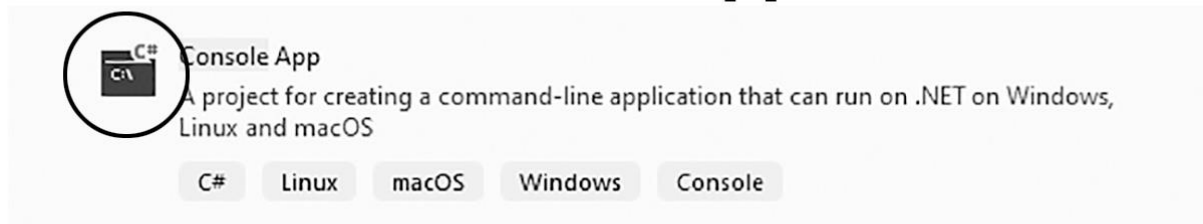
FillColor: #231F20



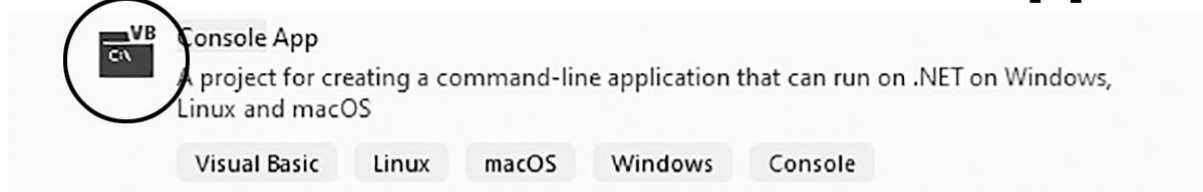
Caller's Location	public	protected internal	protected	internal	private protected	private
Inside the class	✓	✓	✓	✓	✓	✓
Subclass (same assembly)	✓	✓	✓	✓	✓	⊗
Different Class (same assembly)	✓	✓	⊗	✓	⊗	⊗
Subclass (different assembly)	✓	✓	✓	⊗	⊗	⊗
Different Class (different assembly)	⊗	⊗	⊗	⊗	⊗	⊗



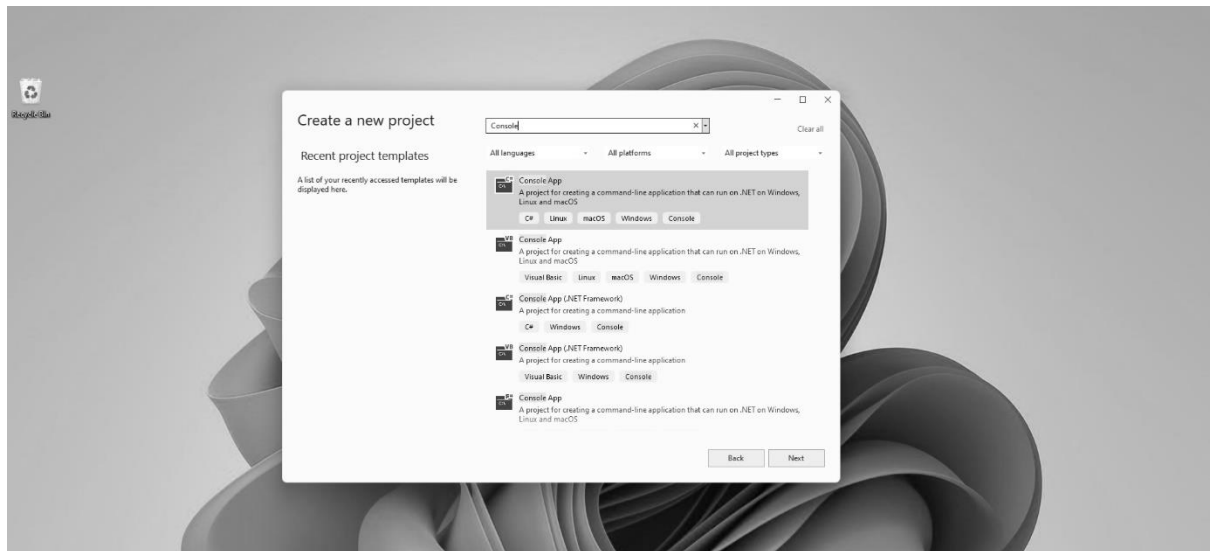
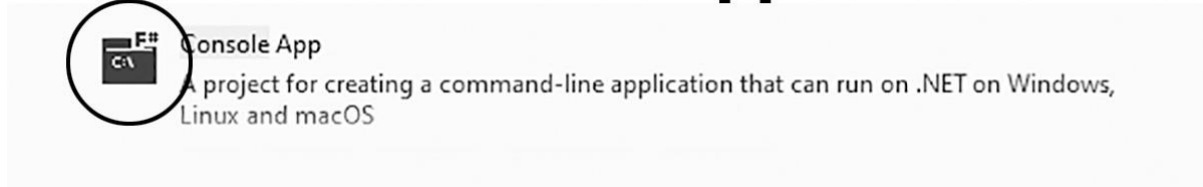
This is a C# console app

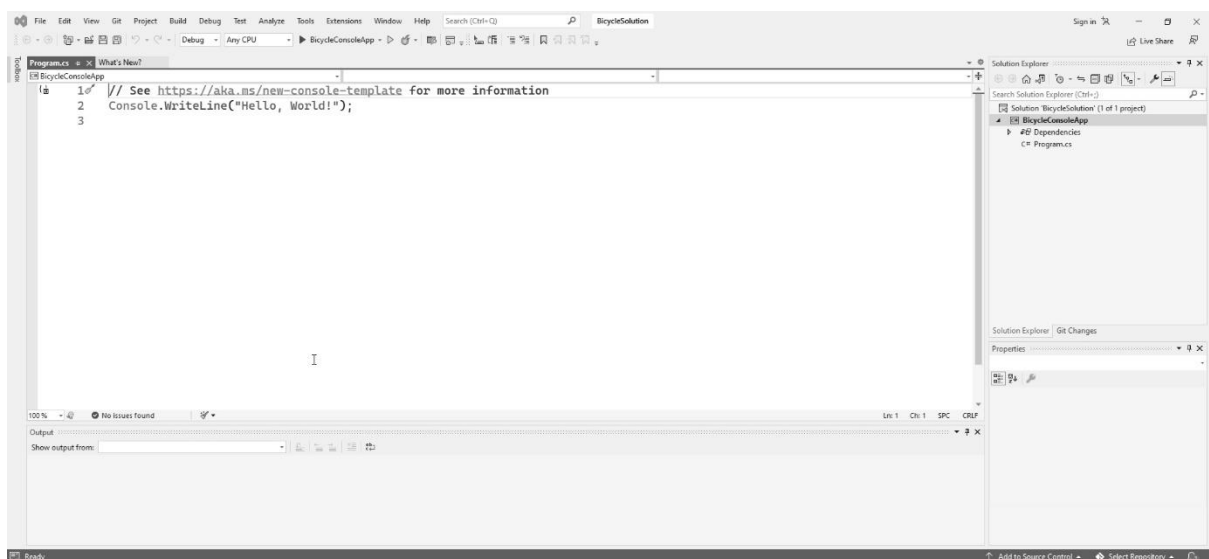
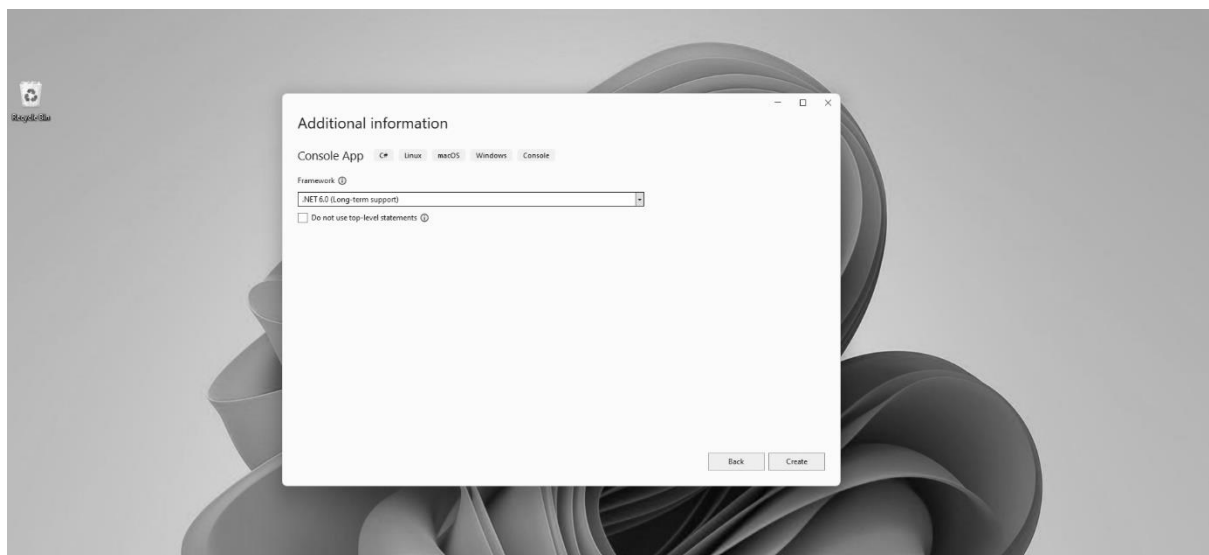
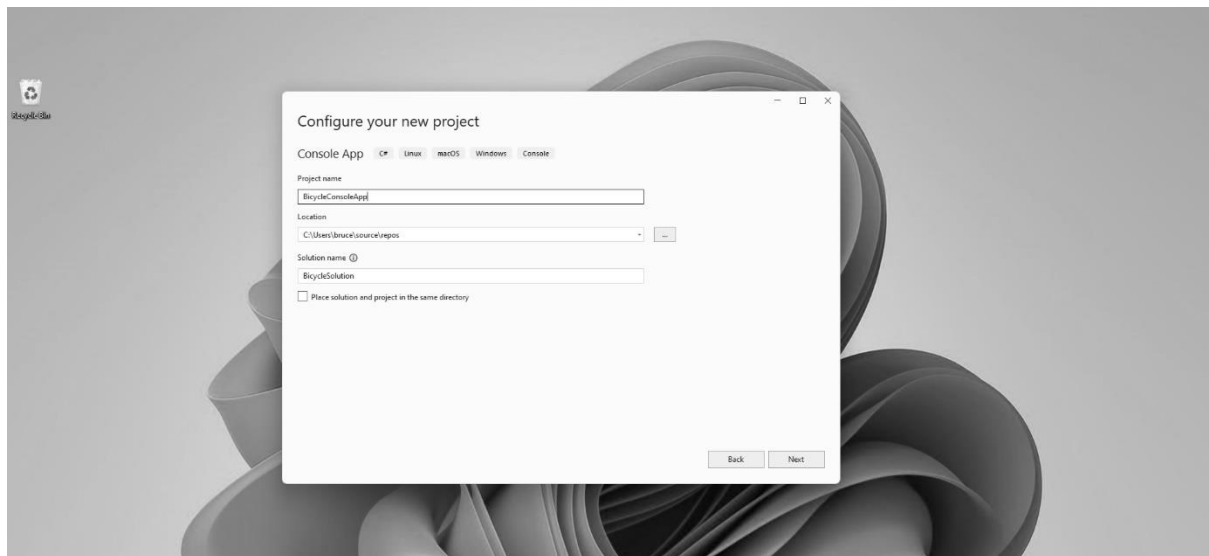


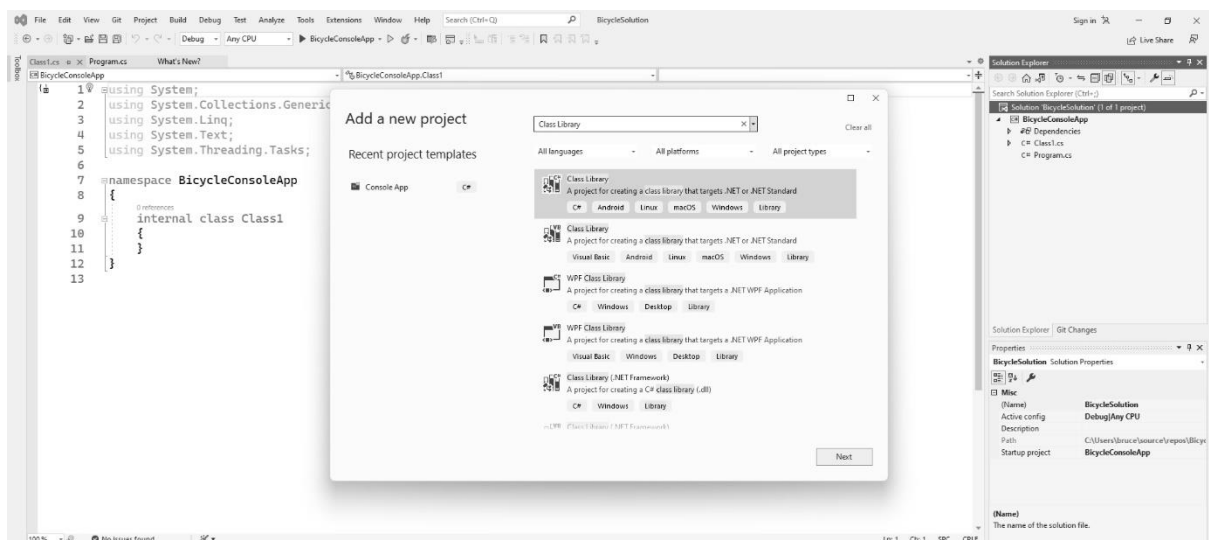
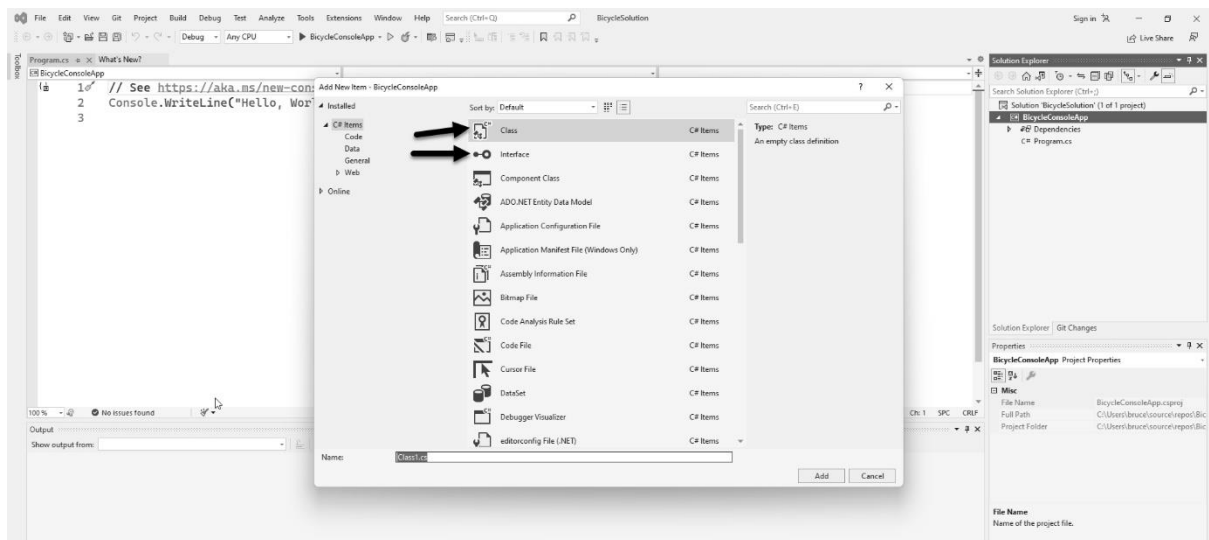
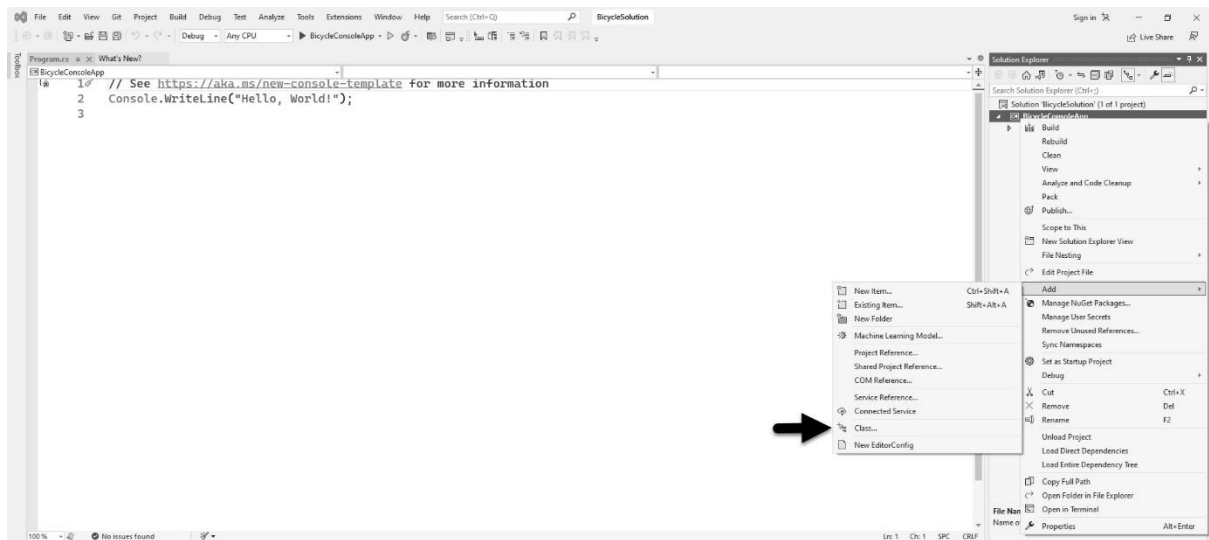
This is a Visual Basic console app

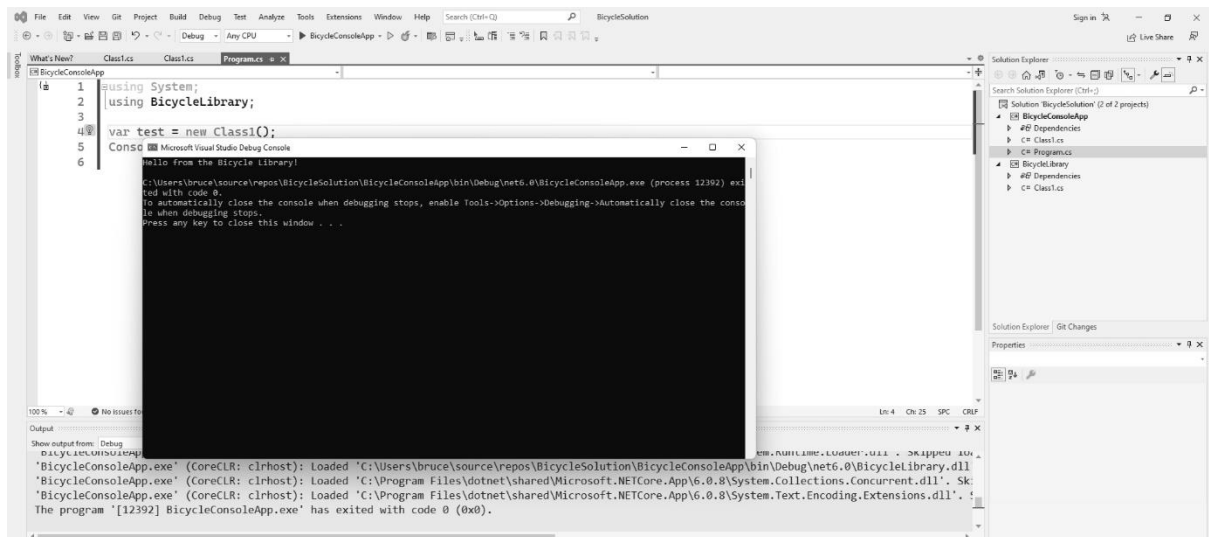
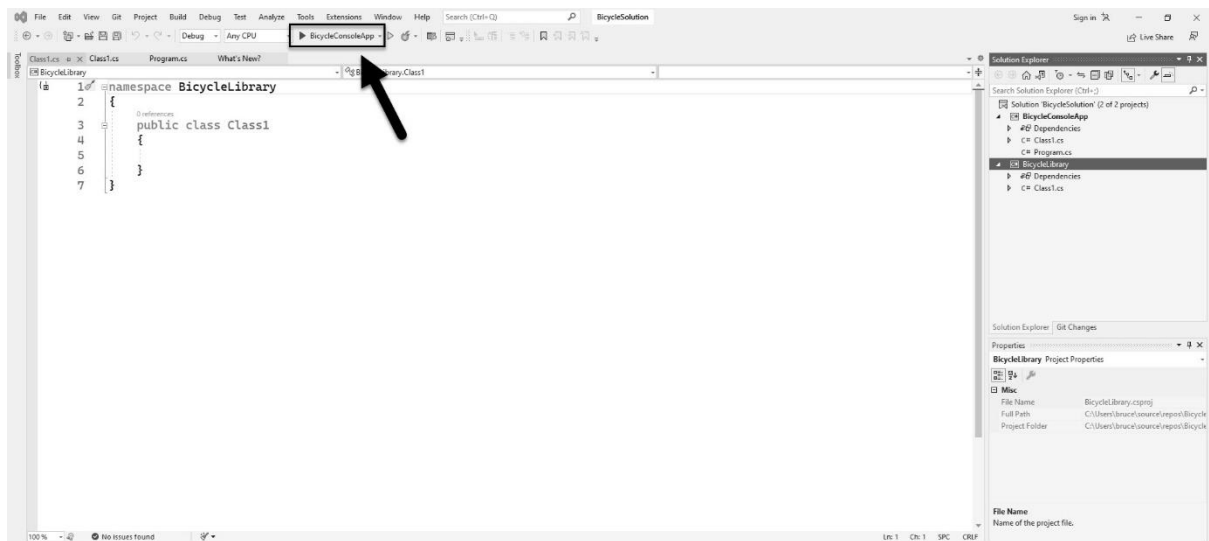
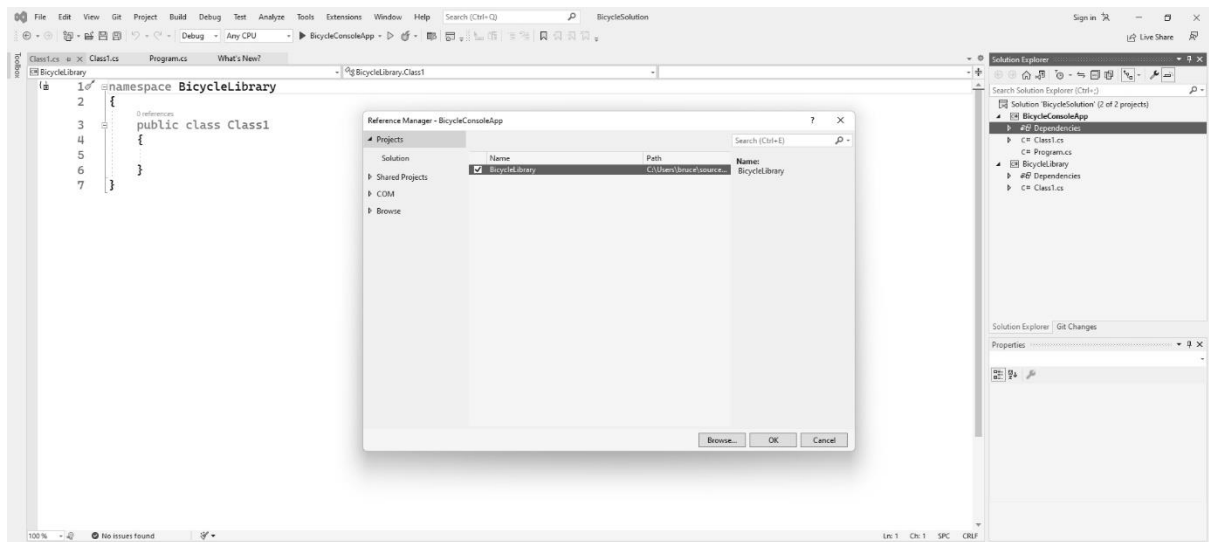


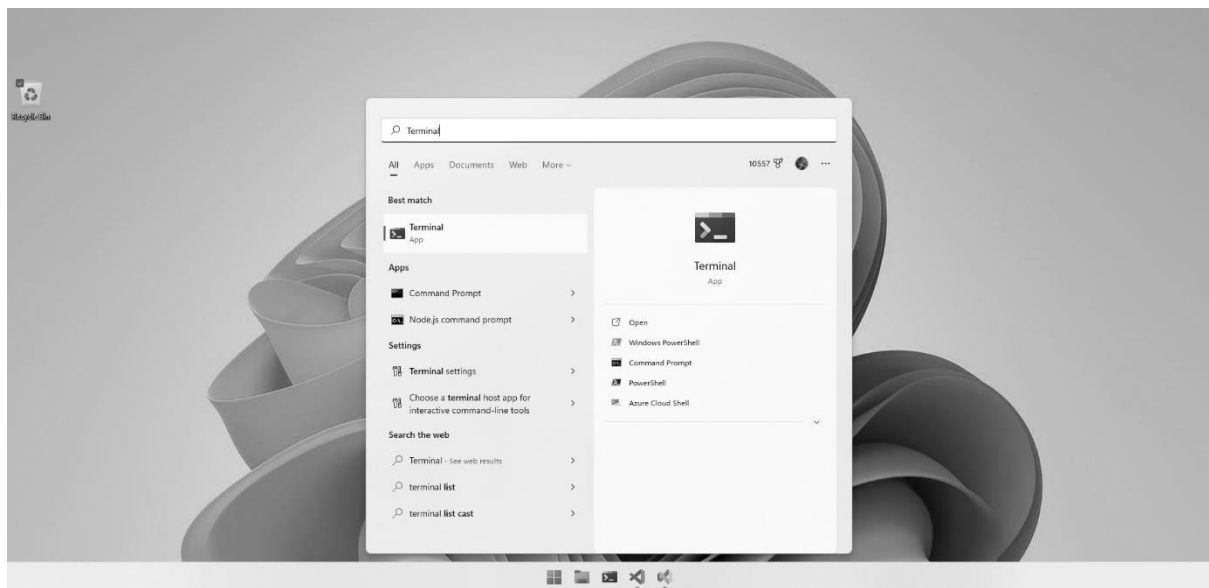
This is a F# console app











```
PowerShell 7.2.6
Copyright (c) Microsoft Corporation.

https://aka.ms/powershell
Type 'help' to get help.

PS C:\Users\bruce> dotnet new sln -o BicycleSolution
The template "Solution File" was created successfully.

PS C:\Users\bruce> cd .\BicycleSolution\
PS C:\Users\bruce\BicycleSolution> dir

    Directory: C:\Users\bruce\BicycleSolution

Mode                LastWriteTime         Length Name
----                -
-a---             9/3/2022  1:01 PM          442 BicycleSolution.sln

PS C:\Users\bruce\BicycleSolution> |
```

```
PowerShell
Copyright (c) Microsoft Corporation.

https://aka.ms/powershell
Type 'help' to get help.

PS C:\Users\bruce> dotnet new sln -o BicycleSolution
The template "Solution File" was created successfully.

PS C:\Users\bruce> cd .\BicycleSolution\
PS C:\Users\bruce\BicycleSolution> dir

    Directory: C:\Users\bruce\BicycleSolution

Mode                LastWriteTime         Length Name
----                -
-a---             9/3/2022  1:01 PM           442 BicycleSolution.sln

PS C:\Users\bruce\BicycleSolution> dotnet new console -o BicycleConsoleApp
The template "Console App" was created successfully.

Processing post-creation actions...
Running 'dotnet restore' on C:\Users\bruce\BicycleSolution\BicycleConsoleApp\BicycleConsoleApp.csproj...
  Determining projects to restore...
  Restored C:\Users\bruce\BicycleSolution\BicycleConsoleApp\BicycleConsoleApp.csproj (in 110 ms).
Restore succeeded.

PS C:\Users\bruce\BicycleSolution>
```

```
PowerShell
https://aka.ms/powershell
Type 'help' to get help.

PS C:\Users\bruce> dotnet new sln -o BicycleSolution
The template "Solution File" was created successfully.

PS C:\Users\bruce> cd .\BicycleSolution\
PS C:\Users\bruce\BicycleSolution> dir

    Directory: C:\Users\bruce\BicycleSolution

Mode                LastWriteTime         Length Name
----                -
-a---             9/3/2022  1:01 PM           442 BicycleSolution.sln

PS C:\Users\bruce\BicycleSolution> dotnet new console -o BicycleConsoleApp
The template "Console App" was created successfully.

Processing post-creation actions...
Running 'dotnet restore' on C:\Users\bruce\BicycleSolution\BicycleConsoleApp\BicycleConsoleApp.csproj...
  Determining projects to restore...
  Restored C:\Users\bruce\BicycleSolution\BicycleConsoleApp\BicycleConsoleApp.csproj (in 110 ms).
Restore succeeded.

PS C:\Users\bruce\BicycleSolution> dotnet sln add .\BicycleConsoleApp\BicycleConsoleApp.csproj
Project 'BicycleConsoleApp\BicycleConsoleApp.csproj' added to the solution.
PS C:\Users\bruce\BicycleSolution>
```

```
PowerShell
    Determining projects to restore...
    Restored C:\Users\bruce\BicycleSolution\BicycleConsoleApp\BicycleConsoleApp.csproj (in 110 ms).
Restore succeeded.

PS C:\Users\bruce\BicycleSolution> dotnet sln add .\BicycleConsoleApp\BicycleConsoleApp.csproj
Project 'BicycleConsoleApp\BicycleConsoleApp.csproj' added to the solution.
PS C:\Users\bruce\BicycleSolution> dotnet new classlib -o BicycleLibrary
The template "Class Library" was created successfully.

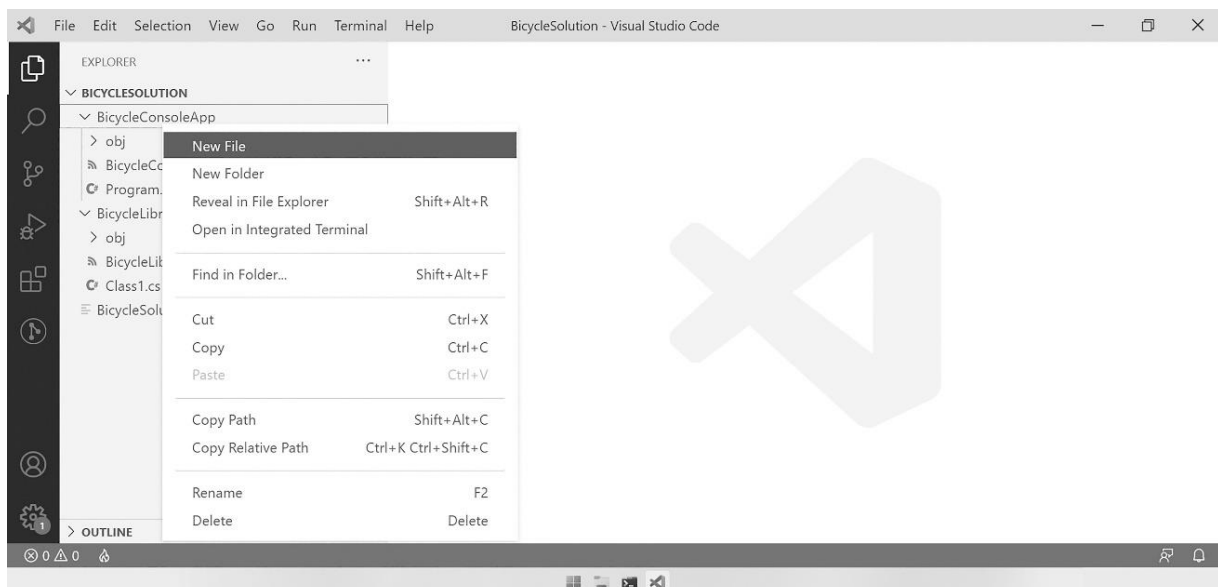
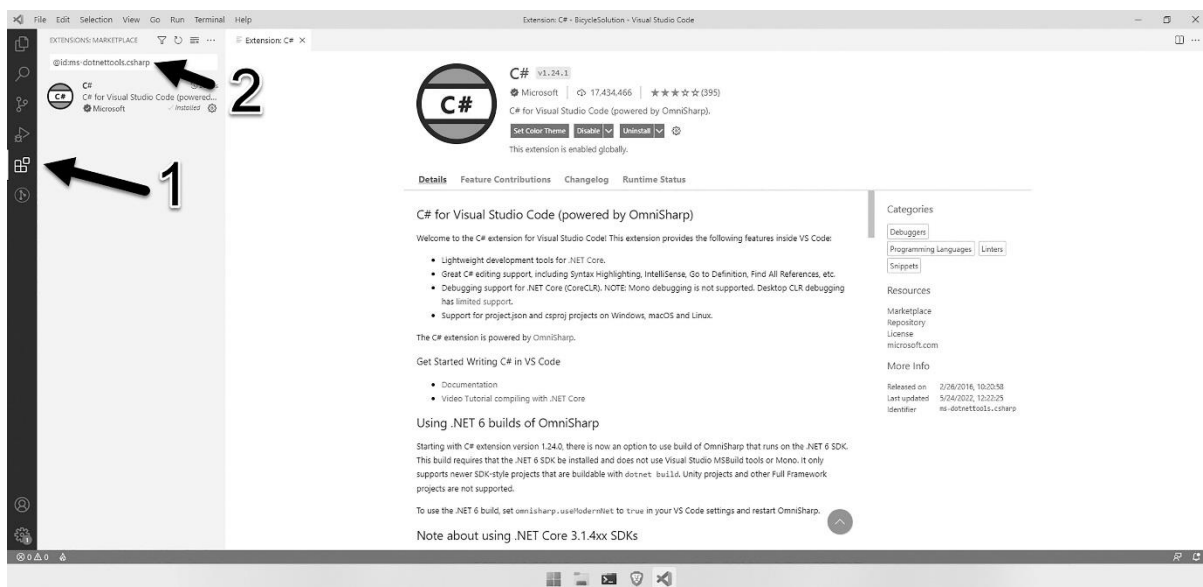
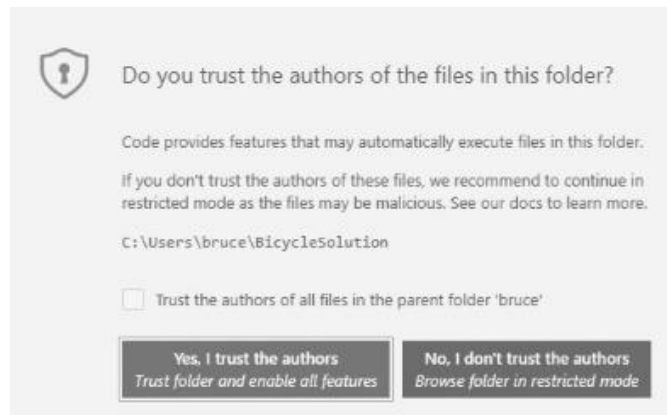
Processing post-creation actions...
Running 'dotnet restore' on C:\Users\bruce\BicycleSolution\BicycleLibrary\BicycleLibrary.csproj...
  Determining projects to restore...
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Restore succeeded.

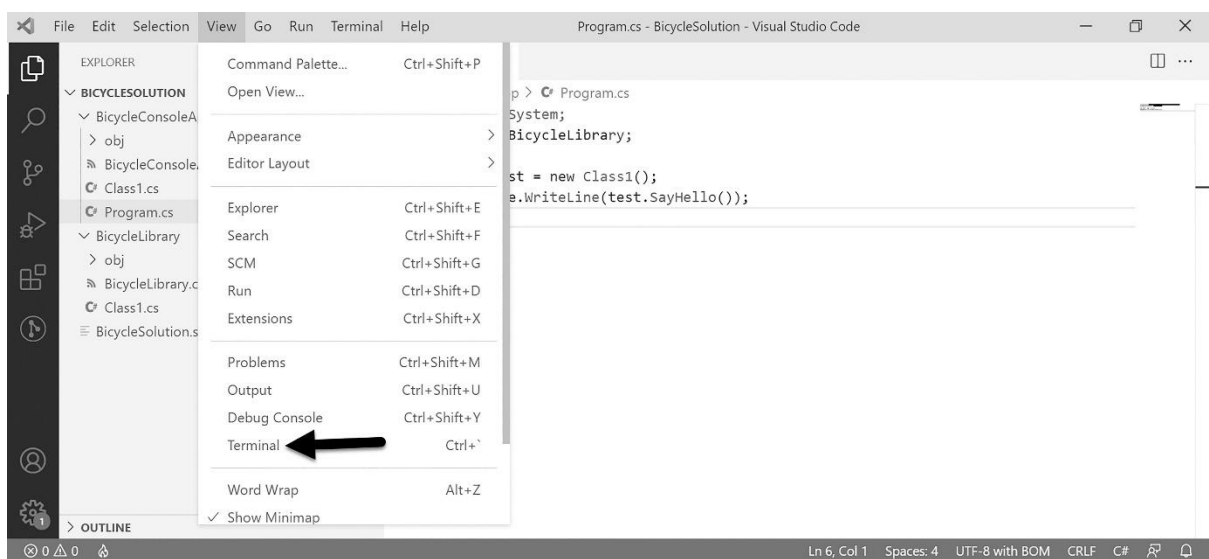
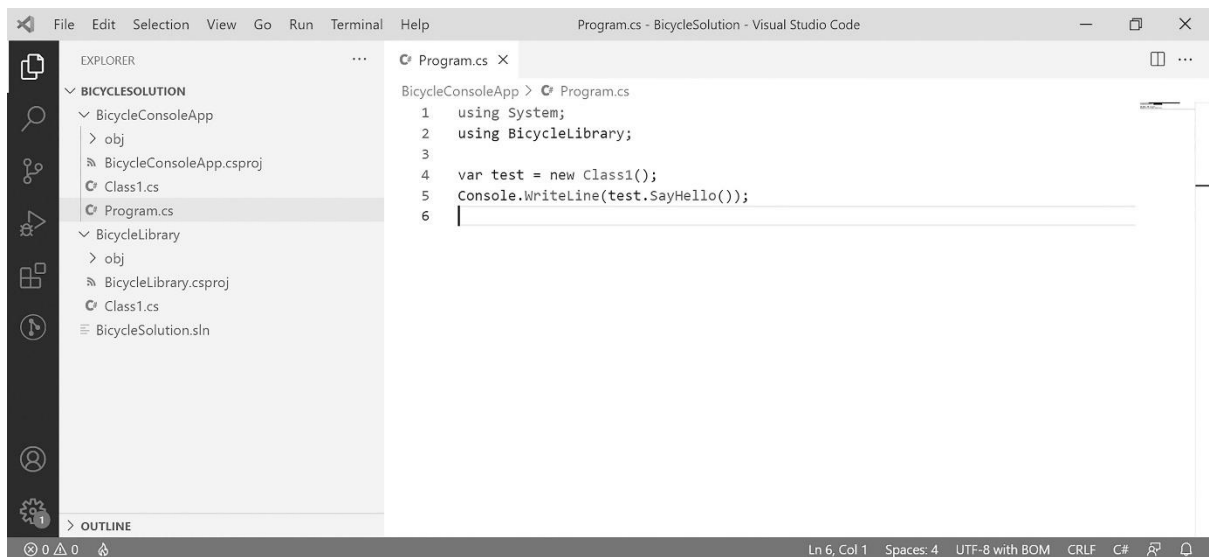
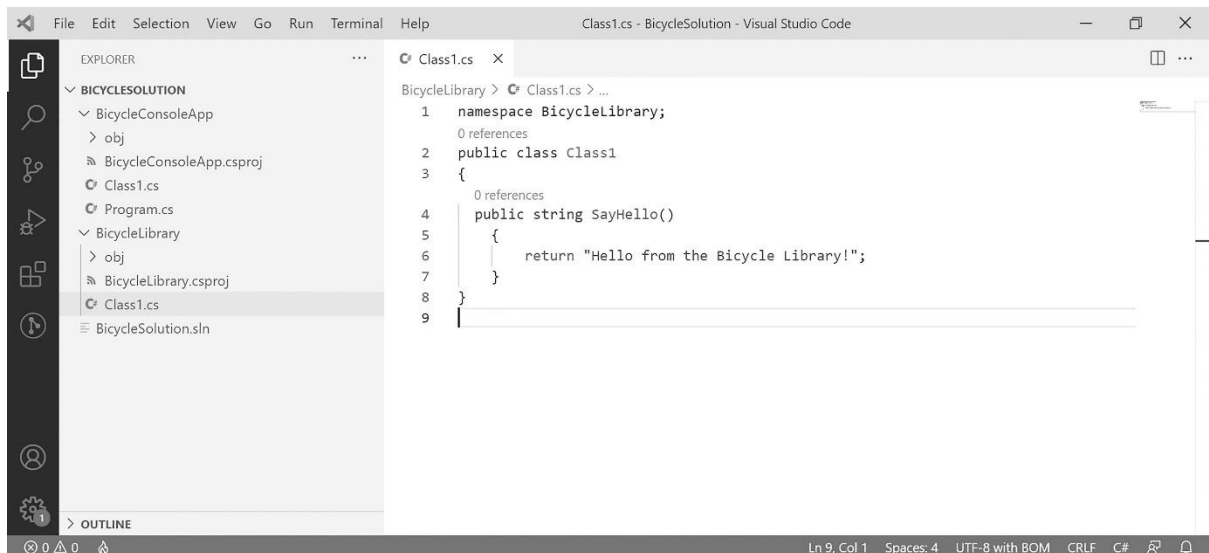
PS C:\Users\bruce\BicycleSolution> dir

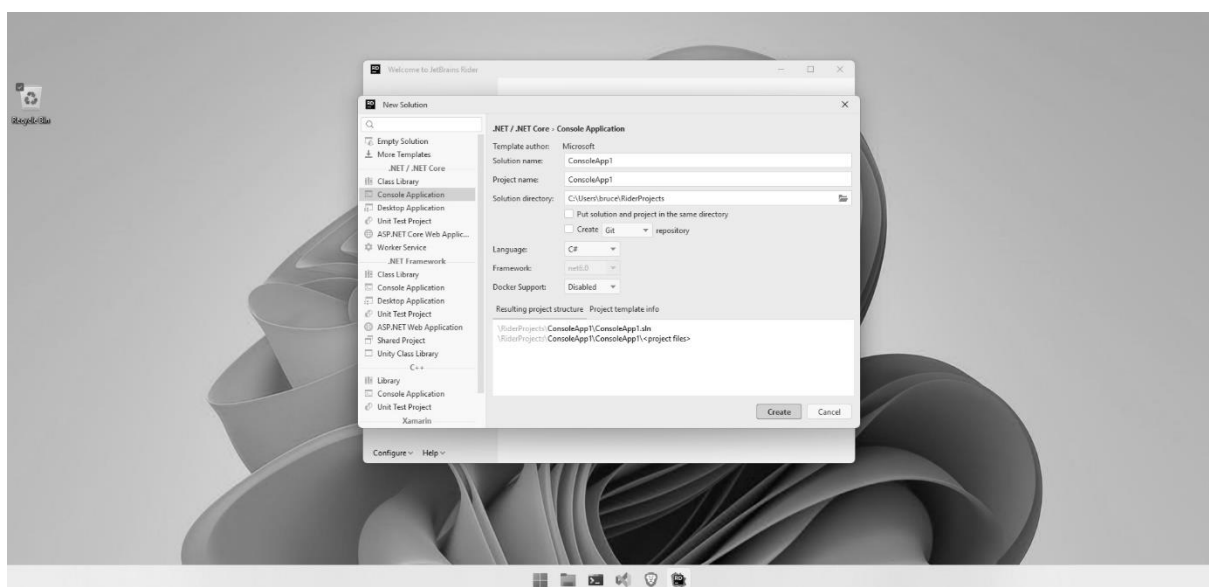
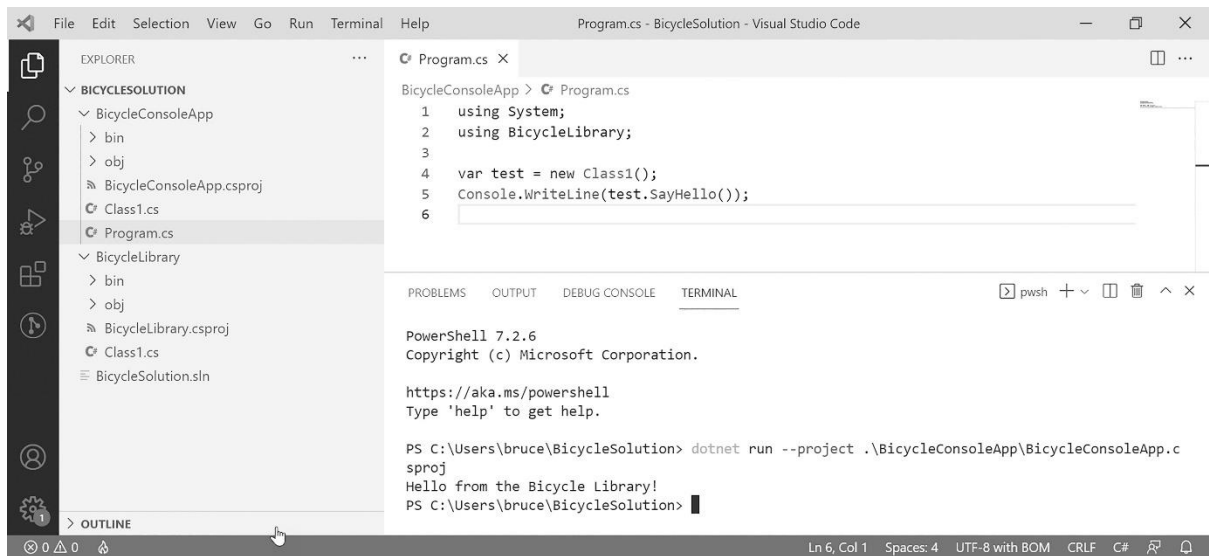
    Directory: C:\Users\bruce\BicycleSolution

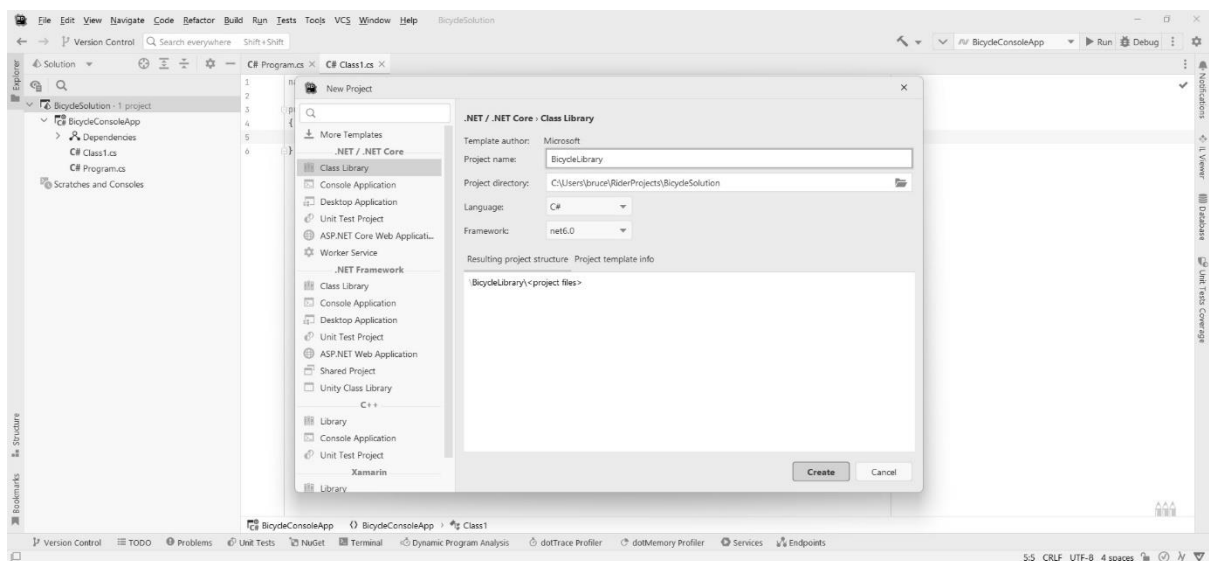
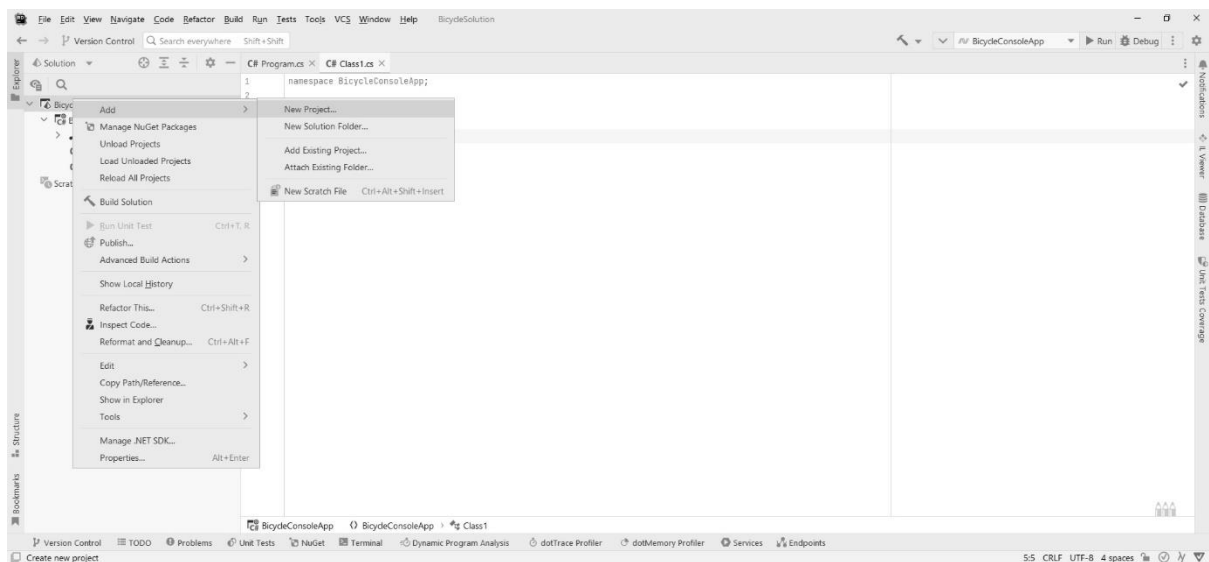
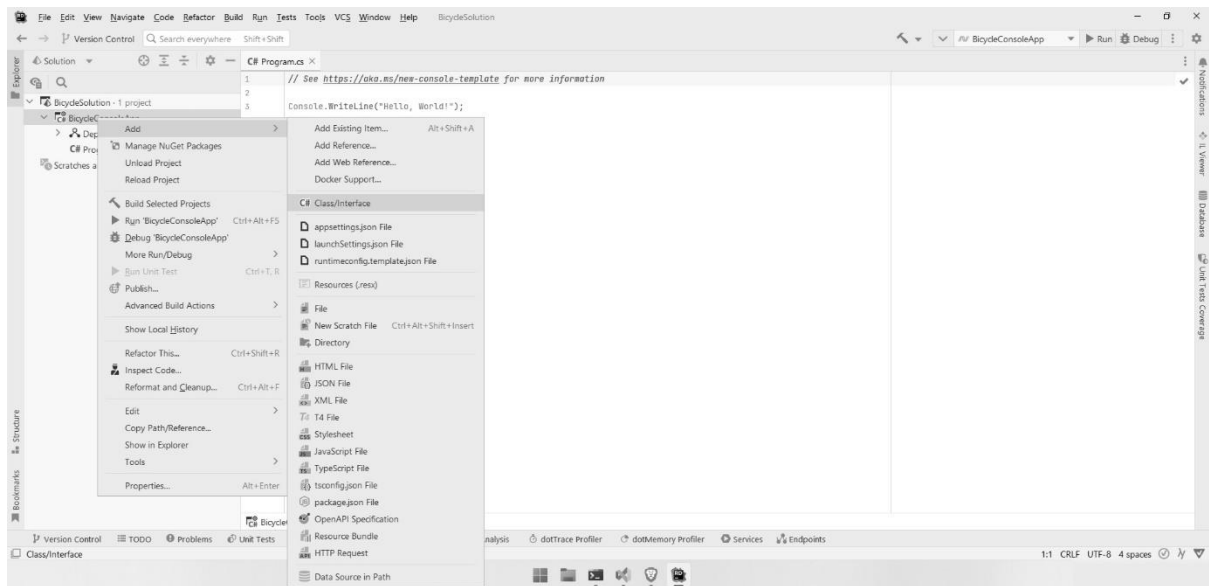
Mode                LastWriteTime         Length Name
----                -
d----             9/3/2022  1:02 PM           BicycleConsoleApp
d----             9/3/2022  1:04 PM           BicycleLibrary
-a---             9/3/2022  1:04 PM          1028 BicycleSolution.sln

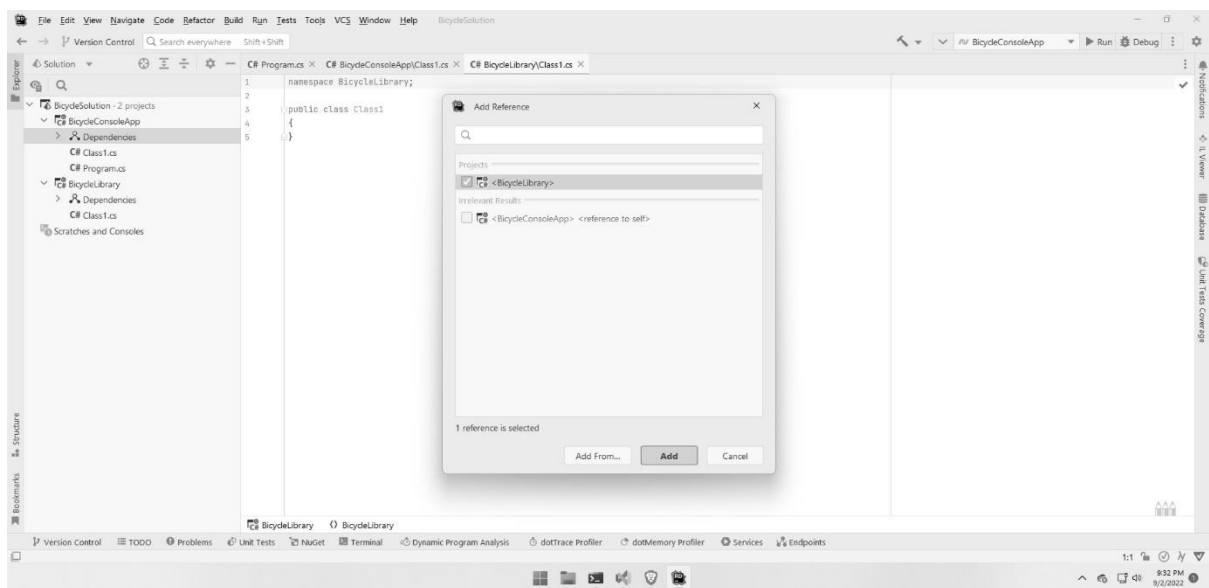
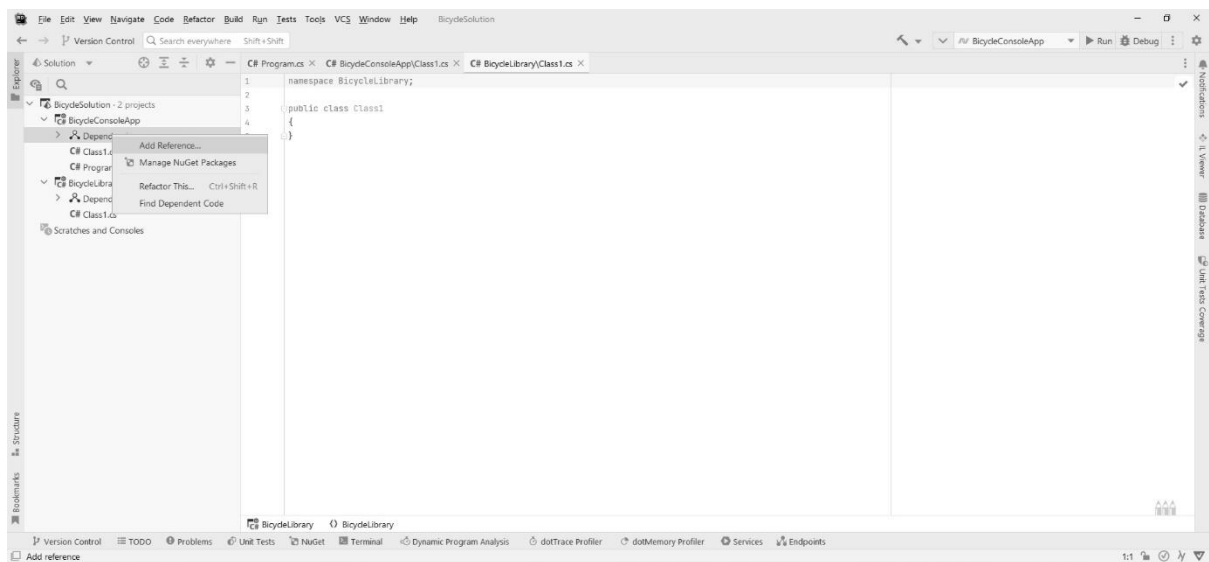
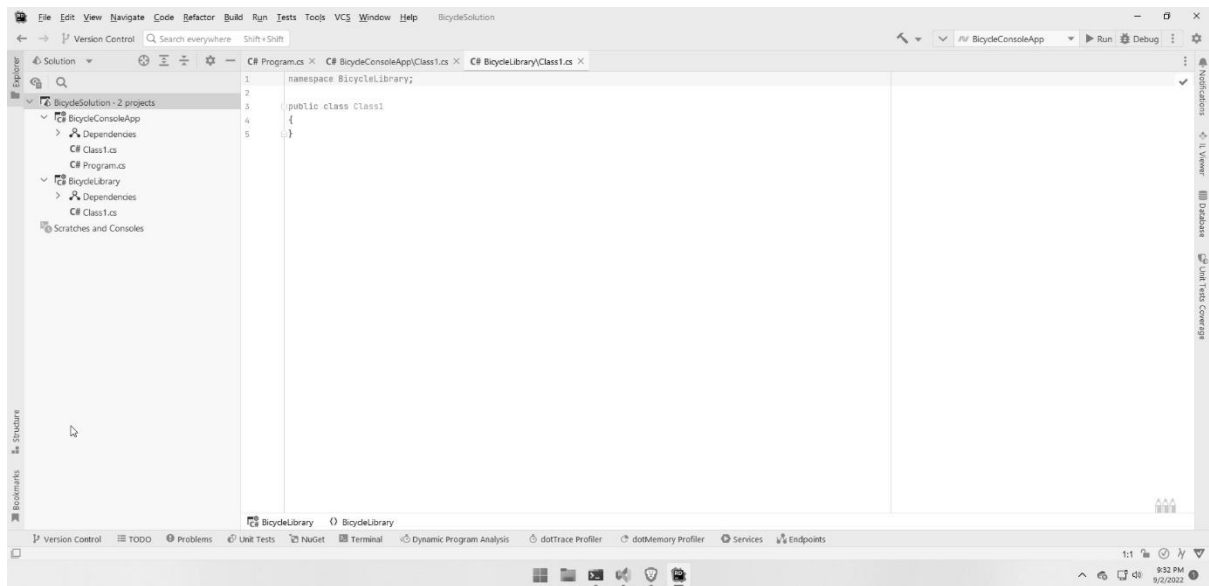
PS C:\Users\bruce\BicycleSolution>
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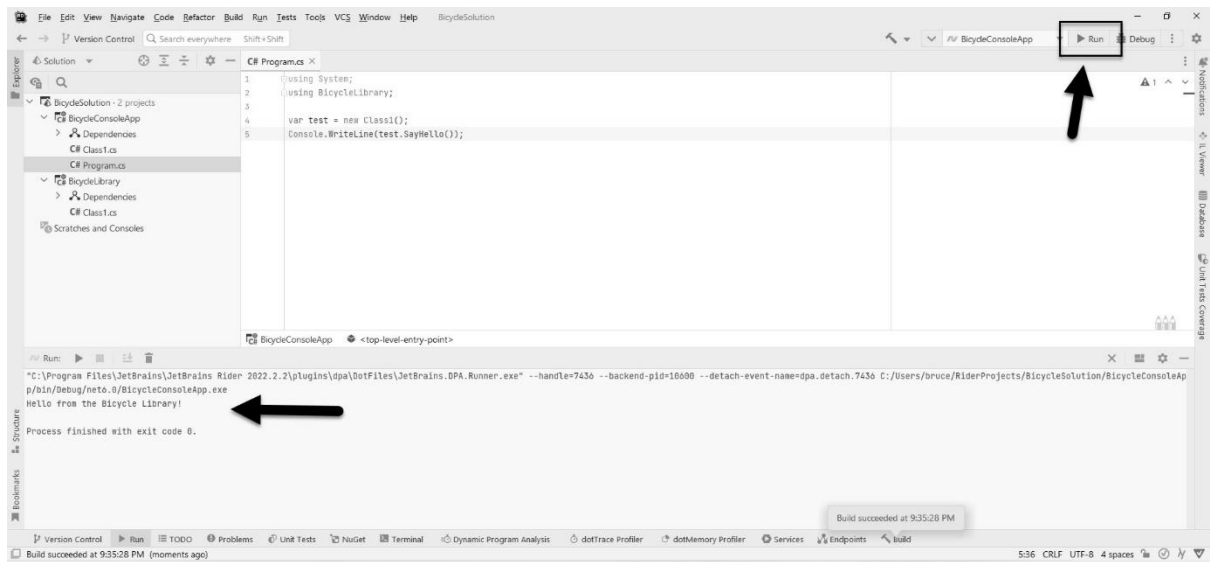




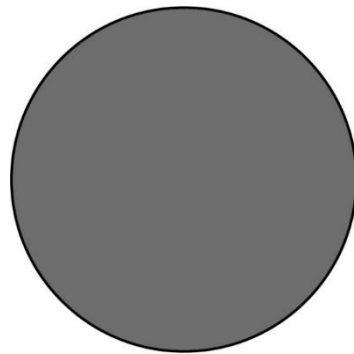








Appendix 2: A Primer on the Unified Modeling Language (UML)



Properties:

Center: 7, 2

Radius: 200px

LineWidth: 1px

Line Color: #000000

FillColor: #231F20

Circle
+ Center + Radius + LineWidth + LineColor + FillColor
+ Draw() + Resize()

Access Modifiers
+ This is public - This is private # This is protected

Shape
+ LineWidth + LineColor + FillColor
+ Draw() + Resize()

Circle
+ Center + Radius

