Interoperating with Dynamic Languages

LEVERAGING FEATURES OF OTHER LANGUAGES



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Overview



Why dynamic interop?

Getting started with IronPython

Getting scripting input from the user

Executing Python statements

Interacting with Python objects

Passing custom dynamic objects to

Python



Why Dynamic Interop?

Language Features Libraries and Scripts

Scripting

Not existing in C#
Chained comparison
operators
1 < age < 50
More elegantly solve
the problem

Existing libraries
Scripts
No .NET version exists
Already written in
company

Add user scripting to application

E.g. user entering business rules as expressions





Getting Started with IronPython

IronPython NuGet package

Execute simple expression in Python

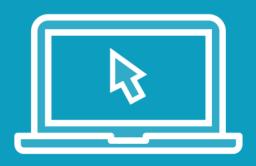
ScriptEngine engine = Python.CreateEngine();

Execute(simpleExpression)

Result as dynamic

Typed result





Getting Scripting
Input from the
User

Evaluate customer age with Python expression

Expression entered at runtime by user

ScriptScope

SetVariable("a", customerAge);

SourceCodeKind.Expression



Allowing users to enter and execute arbitrary script/code may introduce security, data corruption, and other risks.





Executing Python Statements

Execute Python statement and get result

Statement entered at runtime by user

ScriptScope scope = engine.CreateScope();

SourceCodeKind.SingleStatement

scope.GetVariable("result");





Interacting with Python Objects

Create Python tuple object

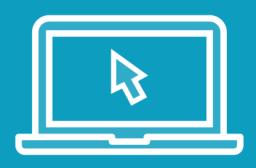
"customer = ('Sarah', 42 , 200)"

SourceCodeKind.SingleStatement
scope.GetVariable("customer")

Access tuple properties

pythonTuple[0]





Passing Custom Dynamic Objects to Python

```
new HtmlElement("img")
scope.SetVariable("image", image);
Create SetImageAttributes.py
image.src = "car.png";
image.alt = "a blue car";
Set "Copy to output directory"
CreateScriptSourceFromFile("SetImageAttributes.py")
source.Execute(scope);
Attributes added in Python code available in C#
```



Summary



Why dynamic interop?

Getting started with IronPython

IronPython NuGet package

Python.CreateEngine()

SourceCodeKind.Expression

SourceCodeKind.SingleStatement

Python tuple

engine.CreateScriptSourceFromFile()

Pass HtmlElement to Python script

