Scripting Languages And Environments
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Scripting Languages

• **Purpose**
  – Application Customisation, Combination and Extension

• **Requirements**
  – Flexible structure
  – Simple syntax
  – Suitable environment

• **Services**
  – External interface description
  – Interface extension, Glue behaviour
  – Creating new interfaces and objects
Project Components

• Gimble
  – A scripting language

• BlackBox
  – Shows Gimble language syntax and structure

• DOSRun
  – Shows stand-alone Gimble programs
  – Demonstrates use of external interfaces

• GraphTool
  – Draws a graph of a Gimble function
  – Demonstrates external use of Gimble objects

• Wabe
  – An environment for application extension

• Excel Demo
  – Shows contemporary scripting capabilities
BlackBox

- Shows Gimble language syntax and structure
- Implements an Input/Output box in Gimble, gives it an input, then measures the output.
DOS Run

• Shows stand-alone Gimble programs
• Demonstrates use of external interfaces
GraphTool

- Draws a graph of a Gimble function
- Demonstrates external use of Gimble objects
The Wabe

• A sample graphical environment for application extension

• Provides native application graphical view, plus object-oriented system view

• Consistant Hierarchy of
  – Object Members (properties, attributes, functions)
  – Code Statements
  – Statement Elements

• Simple traffic simulation demonstration implemented
Excel

• Shows current scripting capabilities
  – Macro recording
  – Interface and object descriptions

• Shows current missing functionality
  – No overlap between native and code structures, and the interfaces used to edit them
  – No user access to inheritance and information-hiding at run-time
  – Problems when scaled
Project Limitations

• Language implementation is incomplete
  – Single inheritance only
  – Many potential optimisations not made
    » Indexing instead of linear searches
    » Packed flags etc.
  – Automatic object construction/destruction/conversion not implemented

• No use made of OLE

• Underdeveloped Development Environment
  – System browser does not unfold gracefully
  – Few external visual editing tools provided
Possible Extensions

• **Improvement of Gimble Scripting Language**
  - Full OLE Automation Controller
  - Full Object-Oriented features
    » Multiple Inheritance
    » Automatic object construction, destruction, conversion
    » More complete Information Hiding Features
  - Implementation of optimisations mentioned in Limitations

• **Improvement of Wabe Scripting Environment**
  - Graceful unfolding system view
  - OLE Automation aware
  - More complete object browser