

# Tutorial Table of Contents

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## **A Brief Note:**

This document provides a general outline for the tutorials that are provided with the Clarion Library. While it is by no means exact (or necessarily complete for that matter), the order in which these tutorials are presented herein represent an approximate ordering in which they should be viewed. As a general rule of thumb, by following our recommended order, the material presented within the tutorials should gradually move from easy to advanced.

## **Setting Up & Using the ACS (in Basics Tutorials)**

### **Walkthrough of the Simple Hello World Task**

- The using Clause**
- Declaring the SimpleHelloWorld Class**
- The Main Method**
- Initializing the World**
- Agent Initialization**
- Tweaking Parameters**

### **Running a Simulation (& Continued Walkthrough)**

- Initializing the Sensory Information**
- Perceiving and Acting**
- Processing Outcomes and Delivering Feedback**
- Killing an Agent**

## **Intermediate ACS Setup (in Intermediate Tutorials)**

### **Optimizing Task Performance via “Tuning” Parameters**

- Making Global Parameter Changes**
- Making Local Parameter Changes**

### **Setting Up the Working Memory**

- Manually Setting a Chunk in Working Memory**
- Using Action Chunks**

## Setting Up & Using the Goal Structure (in Basics Tutorials)

Setting Up the Goal Structure  
Manually Setting a Goal  
Using Action Chunks

## Intermediate MS and MCS Setup (in Intermediate Tutorials)

Setting Up and Using Drives and Meta-Cognitive Modules  
Initializing a Drive  
*The Drive Equation*  
Stimulating a Drive  
*Accessing Agent Meta Info*  
Correlating Drives and Meta-Cognitive Modules  
Meta-Cognitive Module Integration

## Basic Customization (in Customizations)

Customized Methods (Using Delegates)  
Specifying Delegates as Parameters during Initialization  
Creating Custom Rules  
*Using the SupportCalculator Delegate to Set Up an IRL Rule*  
*Initializing the IRL Rule*  
*Using the SupportCalculator Delegate to Set Up a Fixed Rule*  
A Note on the Generically Typed  
DimensionValuePair<DType, VType> Class  
*Initializing the Fixed Rule*  
Generic Equations

## Useful Features (in Features & Plugins)

Viewing an Agent's "Internals"

Logging (using Trace)

The Implicit Component Initializer

Pre-Training

Auto-Encoding

Distributed Dimension-Value Pairs

Populating the Input and Output Layers of an Implicit Component

Timing

Response Time

"Real-time" Mode

Asynchronous Operation

## Setting Up & Using the NACS (in Advanced Tutorials)

Setting Up & Performing Reasoning

A Walk-through of the "Simple Reasoner" Task

*Distributed Dimension-Value Pairs*

*Adding Knowledge to the GKS*

*Initializing Associative Memory Networks*

*Initializing Associative Rules*

*Performing Reasoning*

Setting Up & Using Episodic Memory

Creating Episodes

Initializing Associative Episodic Memory Networks

Generating New Knowledge and Associative Rules

Performing "Offline" Learning

## Advanced ACS Setup (in Advanced Tutorials)

### Interacting with the NACS

- Making Reasoning Requests
- Specifying Alternative Dimensions
- Filtering Input/Conclusions
- Retrieving Chunks from the GKS
- Interacting with Episodic Memory
  - Retrieving Episodes*
  - “Offline” Learning*

### Generative Actions

- An Example: Using Generative Actions to Change Local Parameters

## Using Plugins (in Features & Plugins)

### The Serialization Plugin

- Serializing (or Saving) Various Aspects of a Simulating Environment
- De-serializing (or Loading) Various Aspects of a Simulating Environment

### Interacting with Front-Ends

- Remote Simulating Environments
  - Communicating via XML*
  - Communicating via JSON*
- The Keyboard and Mouse Plugins
  - Using the “Built-In” Plugin Actions*

## Advanced Customization (in Customizations)

### Getting Started

- ACS Structure
- NACS Structure
- MS Structure
- MCS Structure
- Interfaces and Templates

### How to Implement a Custom Component

- Requirements for Implementing a Custom Component
- Implementing a “Factory”
- Implementing a “Parameters” class
  - Local (per instance) Parameters*
  - Global (**static**) Parameters*
    - Factor # 1
    - Factor # 2
    - Factor # 3
    - Factor # 4
    - Factor # 5
    - Factor # 6
    - Factor # 7

### Committing and Retracting

- Using the InitializeOnCommit Property*

### How to Implement a Custom (Secondary) Drive

- Implementing the Nested “Factory” Class
- Implementing the Nested “Parameters” Class

### Serializing a Custom Component (or Drive)

- Specifying the System.Runtime.Serialization Resource*
- The DataContract Attribute*
- The DataMember Attribute*
- Pre/Post Serialization and Deserialization Attributes*
- Serializing the Global (**static**) Parameters*