
ORACLE®

Oracle Intelligent Bots Advanced Training

Composite Bag Entities

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Topic Agenda

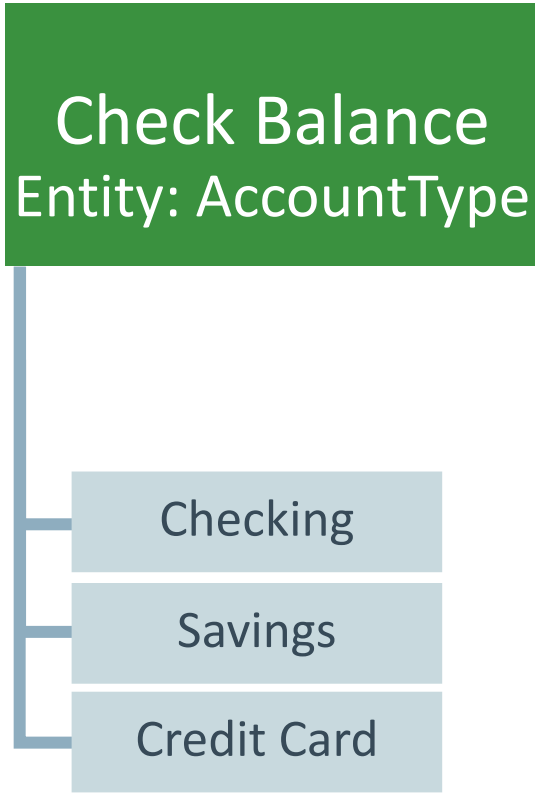
1. About Entities
2. Entity Slotting
3. Introduction to Composite Bag Entities
4. Example: Creating an Composite Bag Entity
5. Comparison With Other Entities

Composite Bag Entities

About Entities

Entity

- Variable/parameter for intent
- Important word in an input
- Adds relevance to intent
- Possibly maps to domain object



"How much money do I have in my checking account?"

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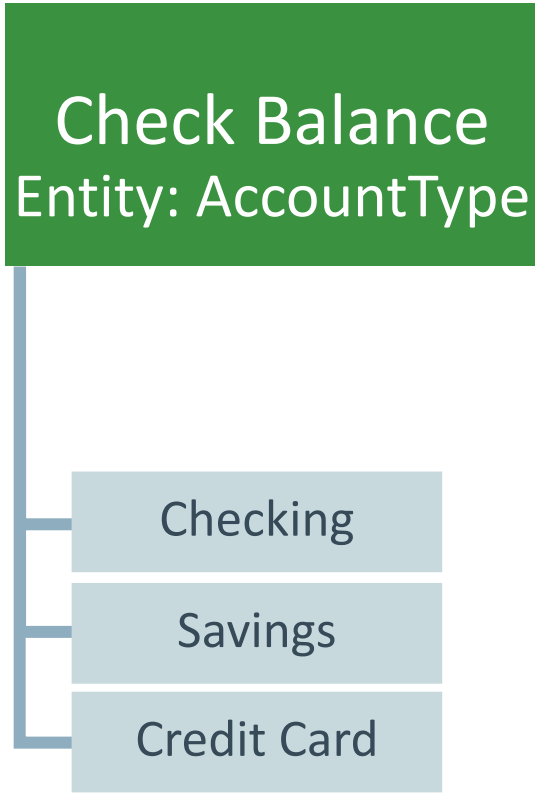

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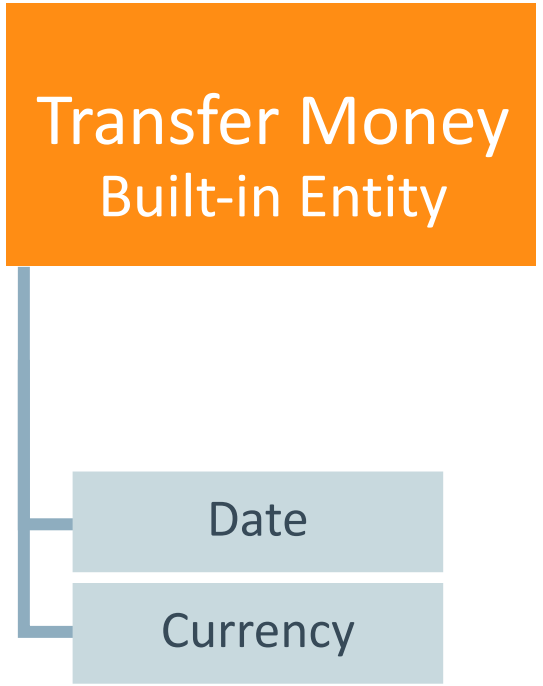
- Built-in/standard entities



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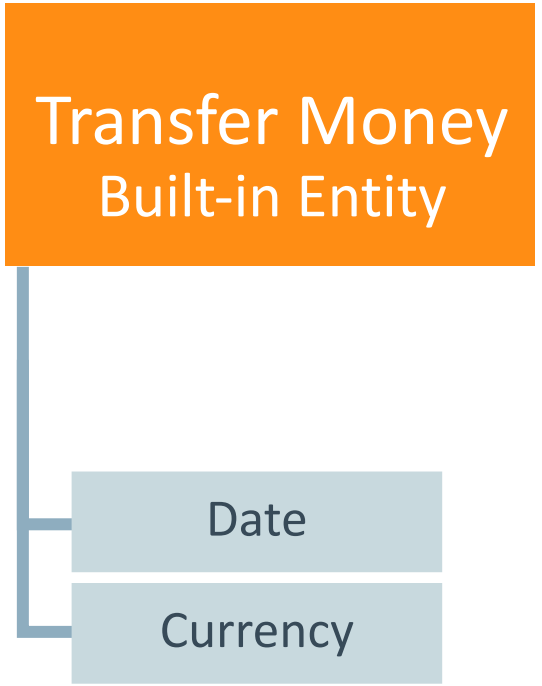

"Transfer $50 to savings tomorrow"

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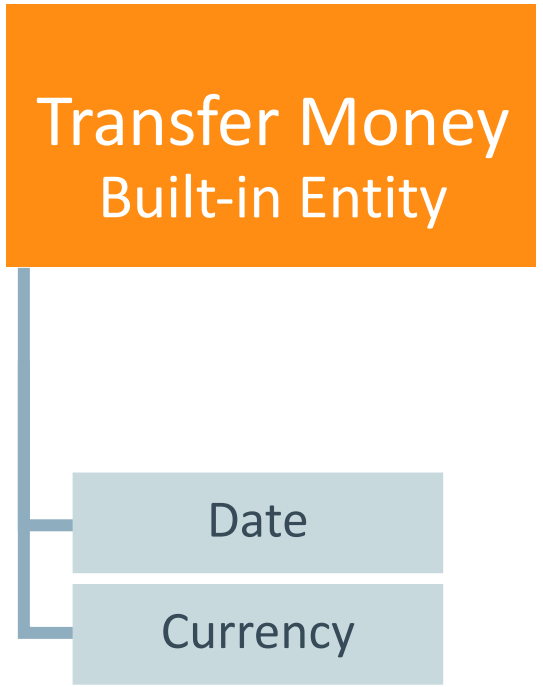

"Transfer $50 to savings tomorrow"

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Composite Bag Entities

Entity Slotting

Entity slotting

```
startBalances:
  component: "System.SetVariable"
  properties:
    variable: "accountType"
    value: "${iResult.value.entityMatches['AccountType'][0]}"
  transitions: {}
askBalancesAccountType:
  component: "System.List"
  properties:
    options: "${accountType.type.enumValues}"
    prompt: "For which account do you want your balance?"
    variable: "accountType"
  transitions: {}
```

```
askBalancesAccountType:
  component: "System.List"
  properties:
    options: "${accountType.type.enumValues}"
    nlpResultVariable: "iResult"
    prompt: "For which account do you want your balance?"
    variable: "accountType"
  transitions: {}
```

- User input components are skipped if the variable they reference has a value set
  - Usually value is set from System.Intent
- Two approaches
  - Use Combination of System.SetVariable and input component
  - Use component nlpResultVariable property

Discussion

When would you use which approach?

Composite Bag Entities

Introduction

A **composite bag** entity **is a grouping of related entities** that illustrates a larger concept like a business domain.

Image courtesy of Farbentek at FreeDigitalPhotos.net

Composite Bag Entity

- Models a business domain object
- Composite bag entities are comprised of one to many entities
  - Custom entities
  - Built-in entities
- All contained entities get resolved in a single dialog flow state
  - System.ResolveEntities
  - System.CommonResponse
- Use sensible (logical) order when adding entities
  - Determines the sequence in which users are asked to provide missing entity values

Order Pizza Dialog Flow With Composite Bag Entity

```
variables:
  order: "PizzaOrder"
  iResult: "nlpresult"

states:
  intent:
    component: "System.Intent"
    properties:
      variable: "iResult"

  orderState:
    component: "System.ResolveEntities"
    properties:
      variable: "order"
      nlpResultVariable: "iResult"
      [...]
```

Configure

"A cheese pizza please."

Composite Bag:
PizzaOrder

- Entity: PizzaType
- Entity: PizzaSize
- Entity: PizzaCrust

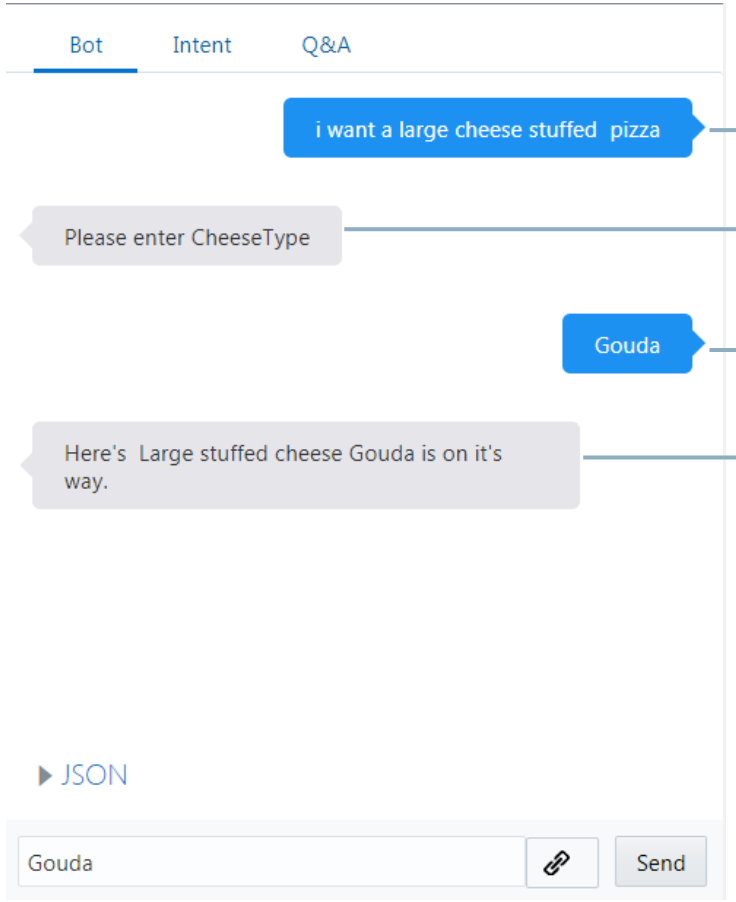
Check for Resolved Entities

- [x] PizzaType
- [ ] PizzaSize
- [ ] PizzaCrust

Which size do you like for your pizza?

Which crust do you like?

Example



OrderPizza intent having **PizzaBag** entity associated with it is resolved

Prompt is invoked since **CheeseType** entity information was missing

User enters the Gouda as **CheeseType** value

At this point all the listed entities in composite bag are resolved!

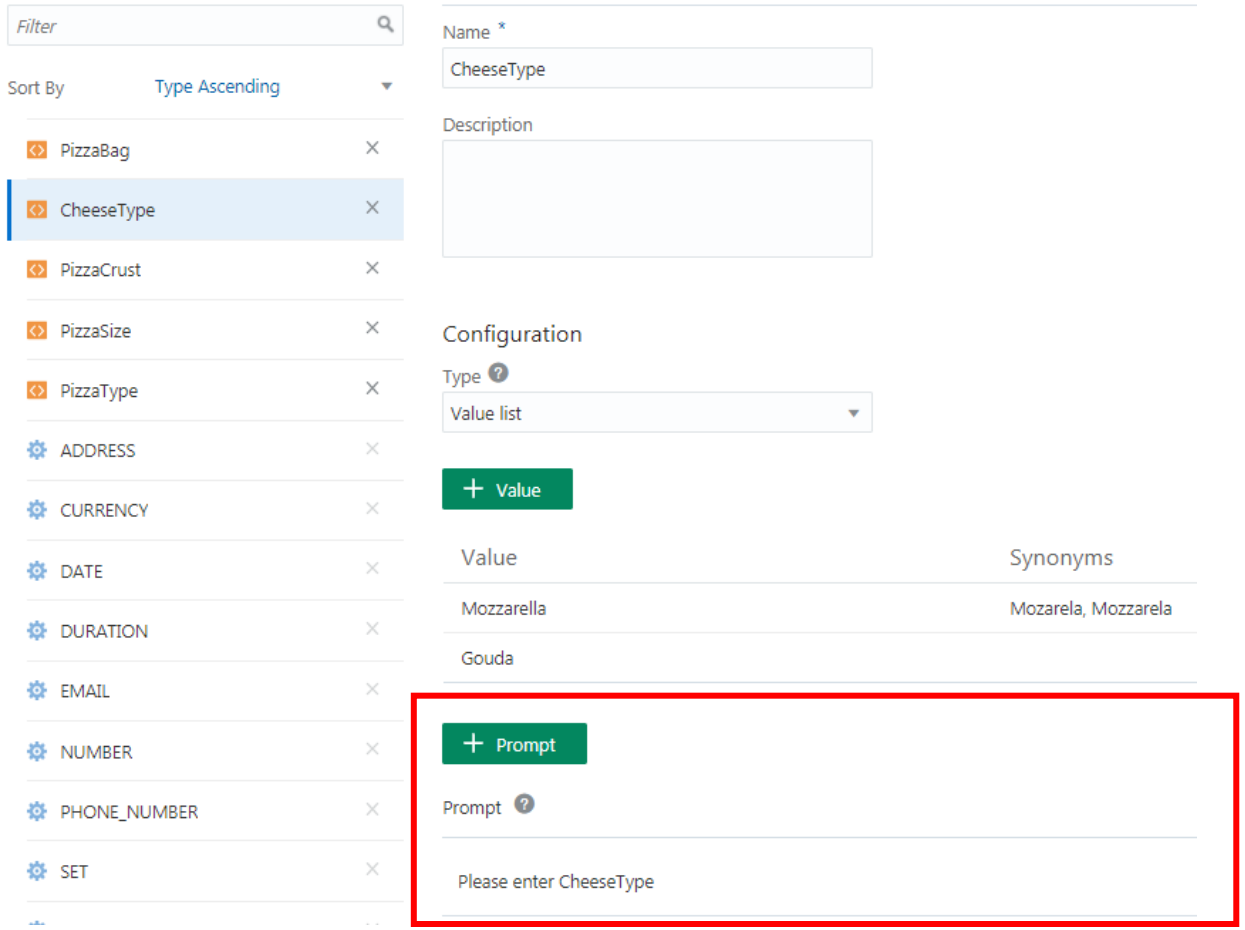
The order in which entity values are provided in a **user input** sentence **does not need to match the order** in which entities are defined **in the composite bag** entity

Image courtesy of Farbentek at FreeDigitalPhotos.net

Composite Bag Entities

Creating a Composite Bag Entity

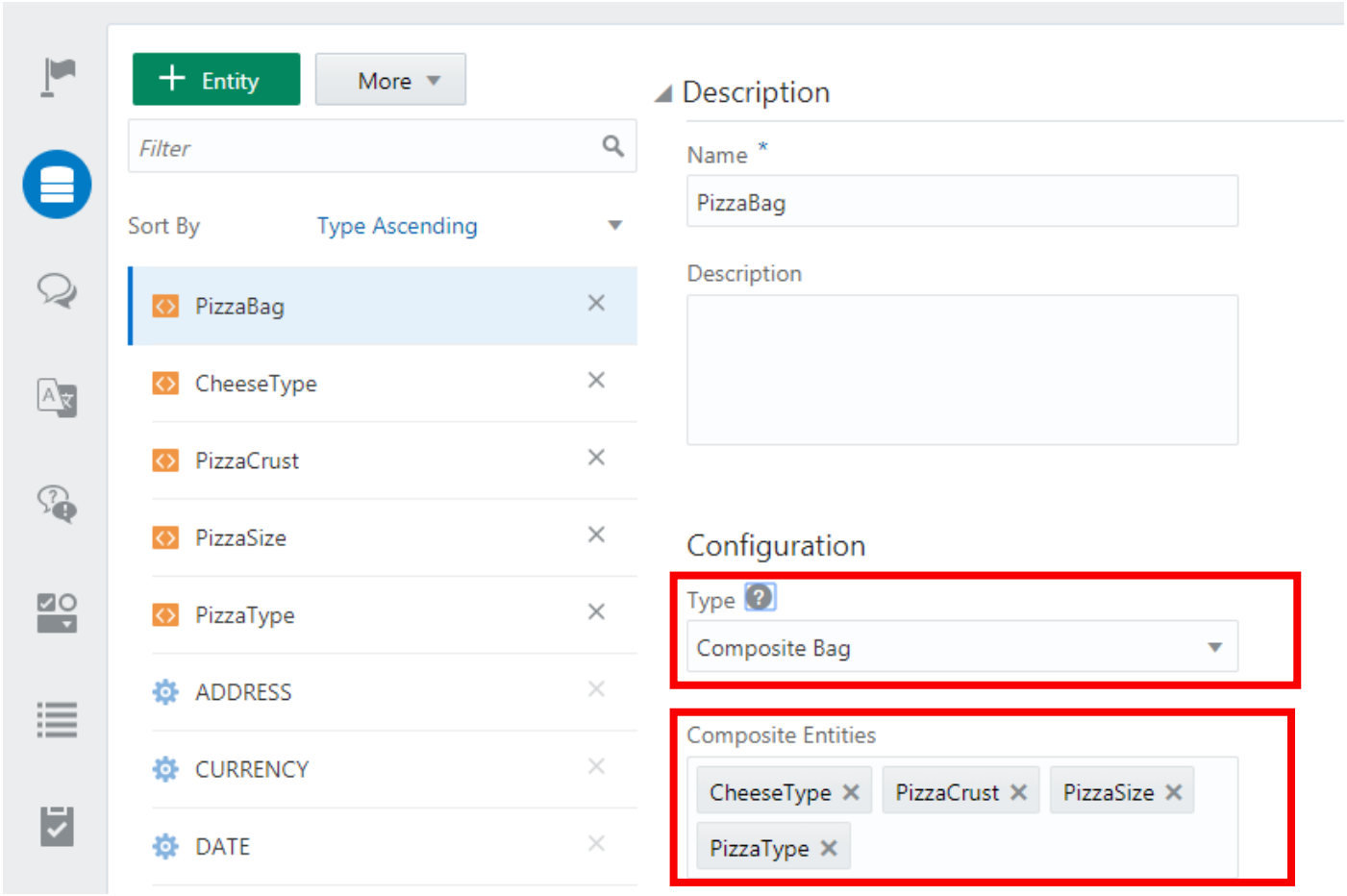
Add One or Multiple Prompts to Custom Entities



If no prompt is defined by the entity designer then **a default** prompts **gets generated**

Image courtesy of Farbentek at FreeDigitalPhotos.net

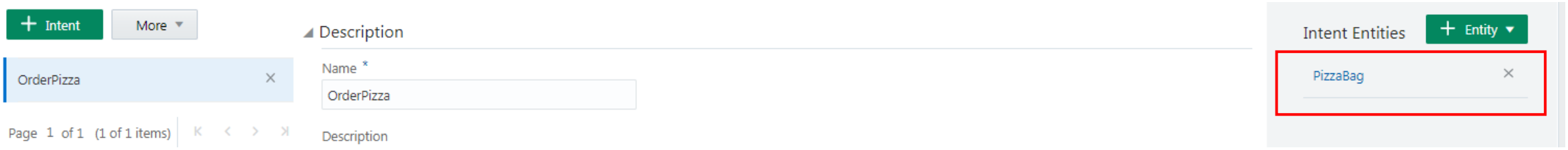
Create an Entity of Type "Composite Bag"



Composite bag entities **cannot contain** other composite bag entities

Image courtesy of Farbentek at FreeDigitalPhotos.net

Associate Composite Bag Entity with an Intent



Add Composite Bag Entity to Dialog Flow

```
context:
  variables:
    pizza: "PizzaBag"
    iResult: "nlpresult"
states:
  intent:
    component: "System.Intent"
    properties:
      variable: "iResult"
      confidenceThreshold: 0.4
    transitions:
      actions:
        OrderPizza: "resolvepizza"
        unresolvedIntent: "unresolved"
  resolvepizza:
    component: "System.ResolveEntities"
    properties:
      variable: "pizza"
      nlpResultVariable: "iResult"
    transitions: {}
  done:
    component: "System.Output"
    properties:
      text: "Here's  ${pizza.value.PizzaSize[0]} ${pizza.value.PizzaCrust[0]} ${pizza.value.PizzaType[0]} ${pizza.value.CheeseType[0]} is on it's way."
    transitions:
      return: "done"
  unresolved:
    component: "System.Output"
    properties:
      text: "I don't understand. What do you want to do?"
    transitions:
      return: "unresolved"
```

System.ResolveEntities Component Properties

The System.ResolveEntities built-in component uses the prompts defined on the custom entities to request input from the user

variable	The name of the context or user variable
variable	References a context variable of a composite bag type
nlpResultVariable	Refers to the nlpresult variable that can be used to resolve the composite entity variable.
maxPrompts	(Optional) specifies the number of attempts allotted to the user to enter a valid value that matches the child entity type.
entityOrder	A comma-delimited list of entity names. It specifies the order in which entities in the composite bag will be resolved. If you omit one or more entities that are in the bag, they will be resolved at the end.
translate	Allows you to override the global autoTranslate variable

Composite Bag Entities

Comparison With Other Entities

Context Variables

Individual Entities

- Declare context variable for **several** entities:

```
context:
  variables:
    size: "PizzaSize"
    type: "PizzaType"
    crust: "PizzaCrust"
    iResult: "nlpresult"
```

Composite Bag Entity

- Declare the **composite bag** entity:

```
context:
  variables:
    pizza: "PizzaBag"
    iResult: "nlpresult"
```

Setting Values

Individual Entities

- Add values to individual context variables
  - System.SetVariable
  - System.MatchEntity
  - System.Text
  - System.List
  - System.CommonResponse

Composite Bag Entity

- Request user input
  - System.ResolveEntities
  - System.CommponResponse

```
resolvePizza:
    component: "System.ResolveEntities"
    properties:
      variable: "pizza"
      nlpResultVariable: "iResult"
      entityOrder: "PizzaSize,PizzaType,CheeseType,PizzaCrust"
```

Number of States Required

Individual Entities

- Require a series of states to collect missing information from the user

Composite Bag Entity

- A single state resolves all missing entity values
  - System.ResolveEntities
  - System.CommonResponse

Referencing Entity Values

Individual Entities

- Use ${*variableName*.value} expressions

```
done:
    component: "System.Output"
    properties:
      text: "Your ${size.value} ${type.value} Pizza is on its way."
    transitions:
      return: "done"
```

Composite Bag Entity

- Reference the fields of the entity ${*variableName*.value.entityName[0]}:

```
done:
  component: "System.Output"
  properties:
    text: "Here's  ${pizza.value.PizzaSize[0]} ${pizza.value.PizzaCrust[0]}
${pizza.value.PizzaType[0]} ${pizza.value.CheeseType[0]} is on it's way."
  transitions:
    return: "done"
```

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