csg Xponent

Xponent Decisioning


Training Overview

Xponent Decisioning Learning Outcomes

- What decisioning options are available?
- How do I decide which node to use?
- Using Basic Nodes
  - Conditional 2D
  - Table Decision
  - Tree
  - Columnar Table
  - Using Script
  - NodesJavaScript
  - R

Target Audiences

Primary

Journey Manager

Joanna, the Journey Manager

INTERESTED IN…

- Validate and challenge pre-defined notions of customer journey
- Design, measure and investigate use cases (or visions)
- ROI
- Impact on customer retention, acquisition, revenue

Configurer

Cory, the Configurer

INTERESTED IN…

- Identifying data sources
- Designing logic
- Solution architecting logic and rules
- Testing and deploying new orchestration journeys

Analyst

Alex, the Analyst

INTERESTED IN…

- Discover and investigate the Who, How, Why in order to:
  - Measure and increase effectiveness
  - Predict behavior
- Map journey performance against KPIs and benchmark


Decisioning

Decisioning Nodes

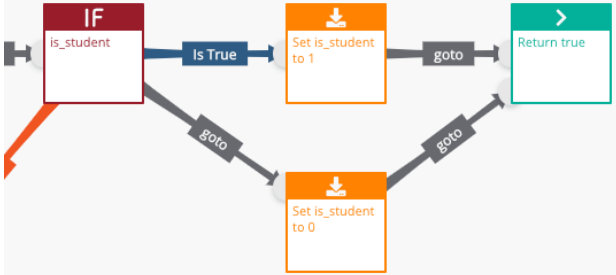
- Which one is the best depends on the complexity of the decision that is being handled
- Complexity = number of inputs and outputs and whether simple conditions are sufficient

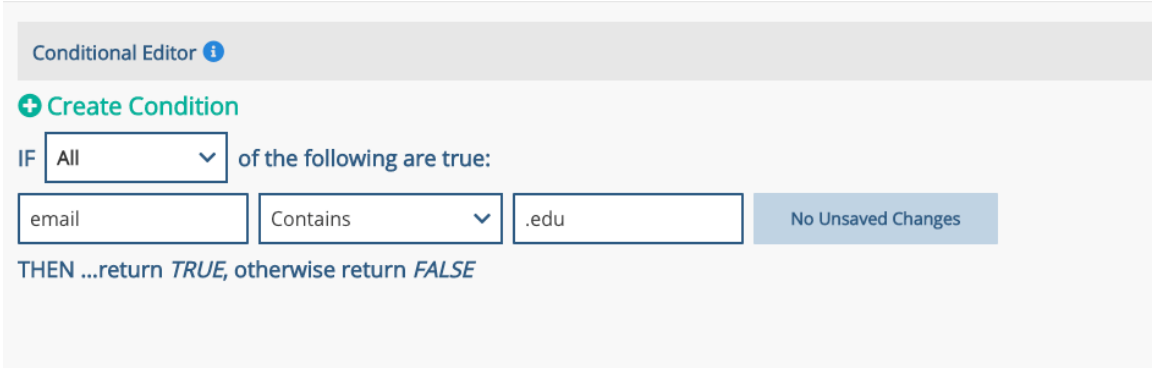
Boolean Logic – The basis of all rules

- In its simplest format ALL decision logic, regardless of the construct being used, breaks down to TRUE or FALSE
- This is called Conditional Boolean Logic
  - IF CONDITION IS TRUE THEN 1 [ELSE 2]
- Often this most simple conditional rule format is sufficient for what is trying to be achieved
- CONDITIONS can usually be Basic or Advanced expressions
- Advanced expressions are JavaScript expressions
- The “magic” variable VAL is always available

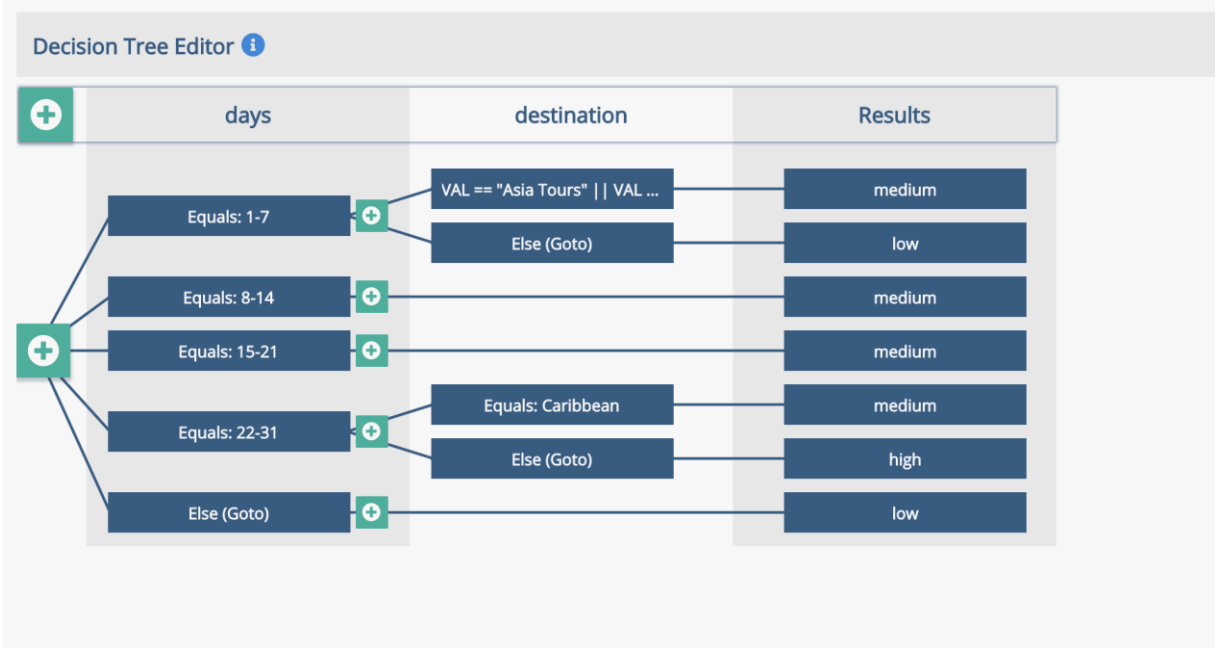
Conditional Logic – Example

- If an email contains .edu then I want to set is_student to 1
- If an email does not contain .edu then I want to set is_student to 0
- Decision Node inputs are selected in the graph as this encourages re-use of the node





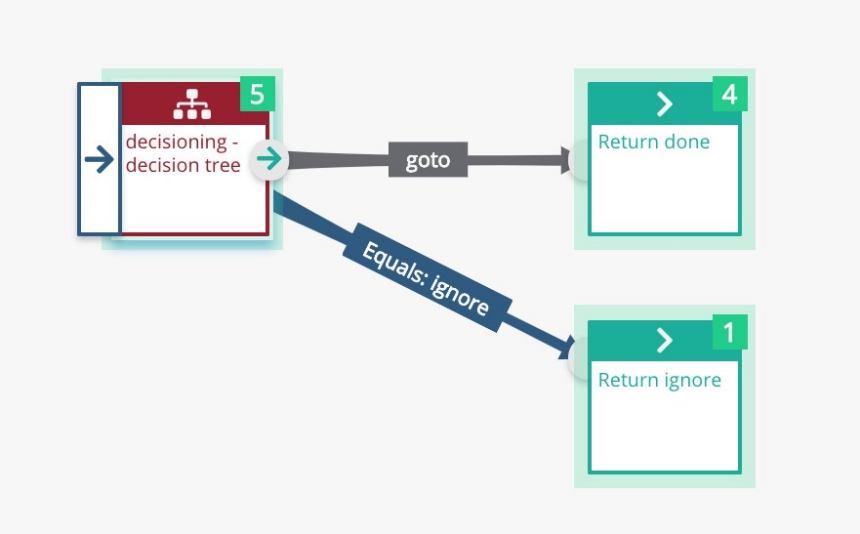
Conditional Logic – Decision Tree

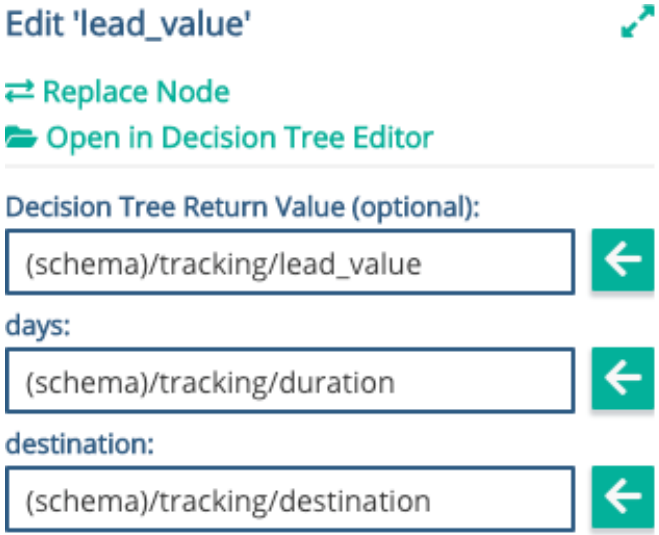


- Segment Users based on the number of days they plan to travel and the destination they are planning on going
- Set low priority to anything that doesn't meet criteria

Decisions Nodes Provide Outputs

- Decision Trees, Columnar Tables and 2D Tables will provide outputs to the graph





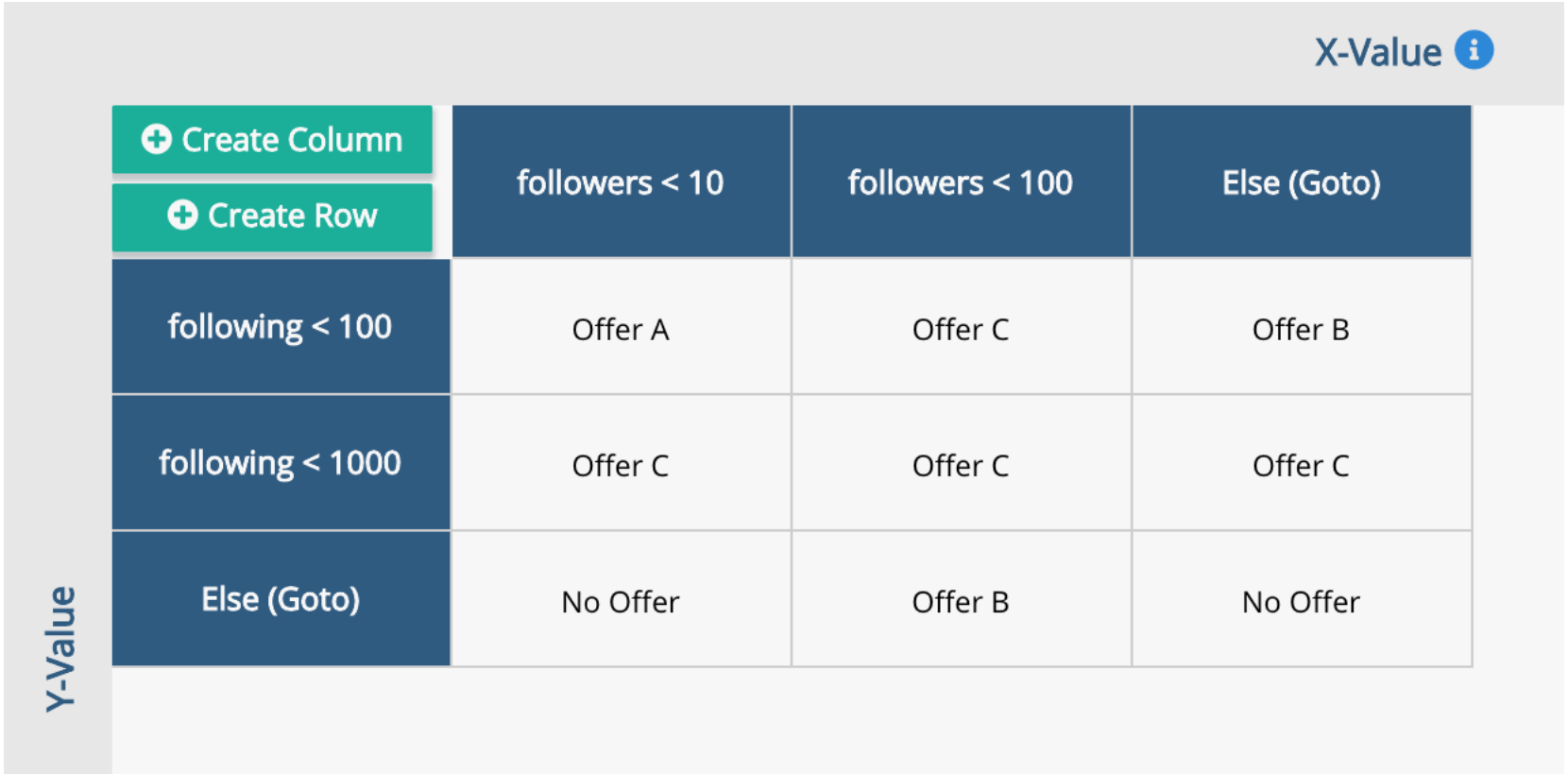
2D Tables are for Two Primary Attributes

X-Value: numFollowers

Y-Value: numFollowing

- Create an offer matrix based on the following / follower bands
- Take into account that people follow more than they are followed
- Choose offers for each intersection point

2D Tables are for two Primary Attributes



X-Value

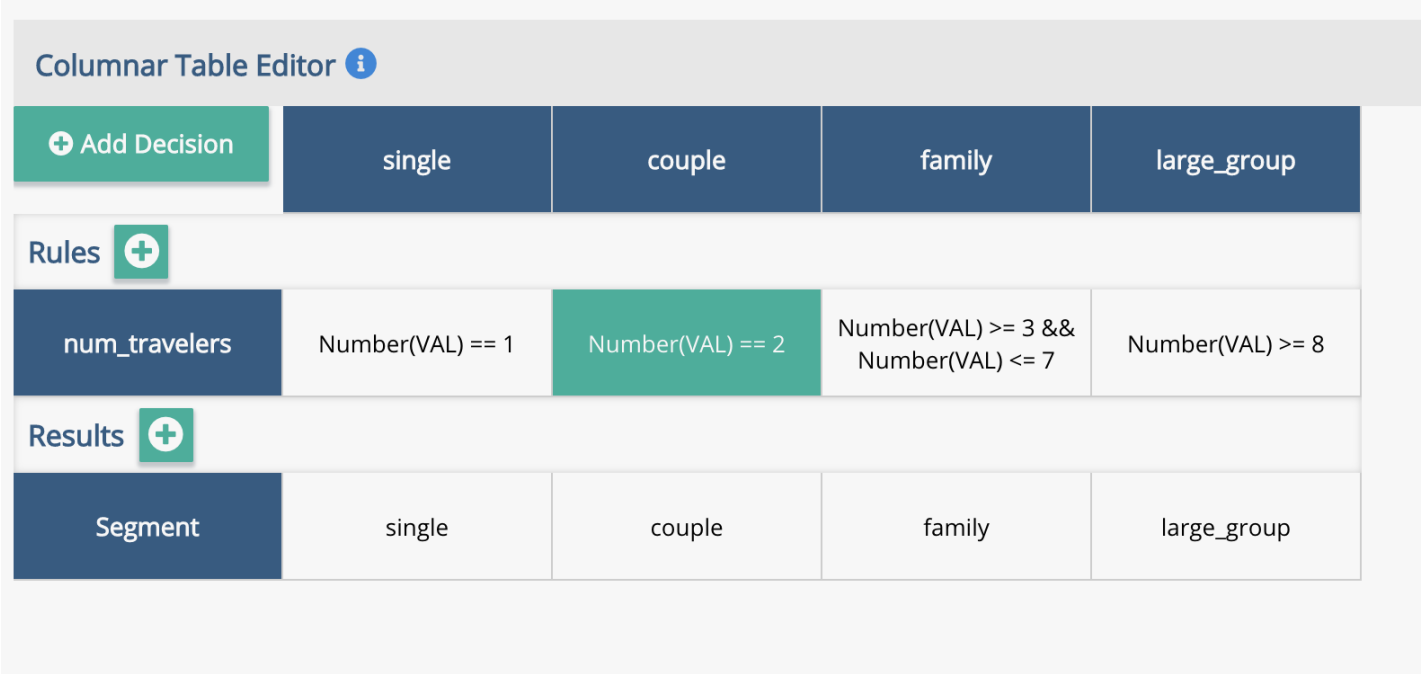
Y-Value

Create Column / Create Row	followers < 10	followers < 100	Else (Goto)
following < 100	Offer A	Offer C	Offer B
following < 1000	Offer C	Offer C	Offer C
Else (Goto)	No Offer	Offer B	No Offer

Columnar Tables

- Used when the number of inputs >= 2
- Not all combinations of inputs are interesting – decisions are sparse – compared to the decision tree
- Provides one or more outputs
- Executed from left to right
- First rule that is “true” provides the output
- Blank cells are always true
- Ensure there is a catch-all rule

Columnar Table



JavaScript Node

- General purpose JavaScript execution node using Node 10
- Each node executes a JavaScript function
- Parameters can be passed to functions from schema or public variables
- Modifications to parameters will make changes in the input variables
- JavaScript nodes can return objects to schema locations
- Some useful packages are included:
  - UUID – generate unique identifiers
  - Moment – date handling
  - lodash – common data structure handling
  - ua-parser – for decoding User Agent strings
  - crypto – for hashing or encrypting

JavaScript Node Example - Convert Fahrenheit to Celsius

- Takes a single argument – the temperature in Fahrenheit
- Returns the temperature in Celsius

JavaScript Editor

Add Argument

```
function FtoC (fahrenheit) {
  1 return (fahrenheit-32)*(5/9)
}
```

Edit 'FtoC'

Replace Node

Open in Script Editor

Script Return Value:

(schema)/temperature/celsius

fahrenheit:

(schema)/temperature/fahrenheit

JavaScript Node Example – Calculate Days on Twitter

- Use the moment library to calculate the number of days between a day in the past and today
- Takes a single argument – the date in the past
- Returns the number of days since that date – should be a positive integer

JavaScript Editor

Add Argument

```
function daysOnTwitter (created_at) {
  1 const moment = require('moment');
  2
  3 return moment().diff(moment(created_at),"days");
}
```

Edit 'daysOnTwitter'

Replace Node

Open in Script Editor

Script Return Value:

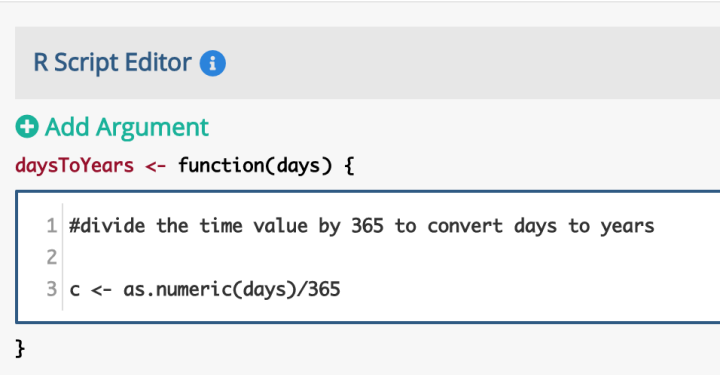
(schema)/user_details/creation_time

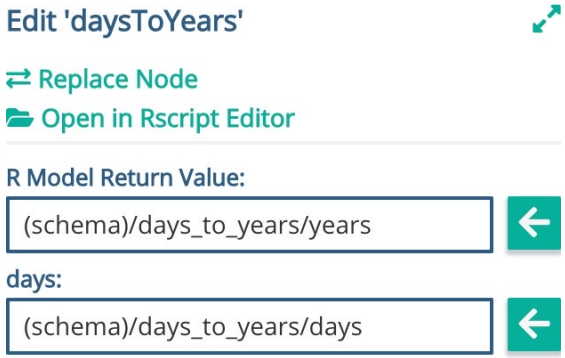
created_at:

(schema)/tweet/user/created_at

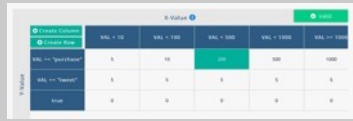
R Script Example – Convert days to years

- Each node executes a R Script function
- Parameters can be passed to functions from schema or public variables
- The return value of the function is the value of the last expression in the function
- All arguments are passed as strings, so type conversions are necessary before manipulation, numeric values for example.
- R Script nodes can return objects to schema locations

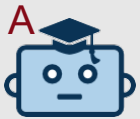
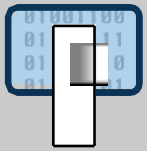
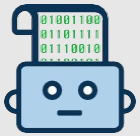




Decision Rules and Logic

Decision Type	Description	Xponent Interfaces
CONDITIONAL RULES	Small number of distinctly different inputs with simple set of outcomes	IF 
DECISION TREES	Large number of distinctly different inputs with simple set of outcomes	
DECISION TABLE	Simple overlapping criteria with a simple finite set outcomes	
COMPLEX DECISION MATRIX	Complex overlapping criteria with multi-dimensional outputs	

Advanced Analytics, Machine Learning and AI

Decision Type		Description	Xponent Interfaces
	**PREDICTIVE MODELS**	Highly complex criteria modeled with existing data and outcomes	 
	**ADAPTIVE MACHINE LEARNING**	Highly complex criteria and with a small set unknown or unpredictable outcomes	A/B 
	**EMBEDDED AI**	Leverage a third-party web-service for Real-Time/Batch scoring or multivariate testing	 Amazon Machine Learning  
	**COMPLEX SCRIPTING**	Data validation, manipulation, optimization and parameterization	JS 

Certification

Certification

- What types of decision nodes does Xponent have?
- What is the key difference between the IF conditional and the other nodes?
- When should you use a 2D Table?
- When should you choose a columnar table rather than a decision tree?
- When should you use JavaScript?
- When should you not use JavaScript?
- What JavaScript libraries are supported?
- Where are the parameter values selected for a decision node?

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Thank You