Writing fiction via Inform Programming

CS 395 Computer Game Design
Ken Forbus
April 11, 2002
Overview

• The ontology and processes of Inform worlds
  – Objects & classes
  – Locations, Trees and containment
  – Parsing & verbs
  – Global flow of control

• Story bibles and plot structures

• Programming in Inform
Objects

• Almost everything is an object
  – Numbers aren’t
  – Player and NPCs are

• Objects can have attributes
  – e.g., animate
  – These affect how actions on them work

• Objects can have properties
  – e.g., health
  – Properties can be routines
    • Means of defining method

• New classes of objects can be defined
Location, Trees and Containment

• Everything has to be somewhere
  – The place of an object is another object
    • Exception: *nothing* is not an object

• Objects in the world are organized into a forest

• Location modeled as a form of containment
  – Physical transportation modeled appropriately
  – Propagation of action effects uses location
Part of the Twonky Island Tree

- Airstrip
  - Player
    - Backpack
      - Grenade
      - Grenade
      - Grenade
      - Grenade
      - Grenade
      - Grenade
Natural language processing

• Very simple and elegant NL system for commands
  – Parser kept very simple
  – Semantic interpreter uses world context to help disambiguate
    • What a word refers to can depend on where you are
    • You help it by providing local vocabulary
  – Generator works hard to keep player in state of suspended belief
    • You sometimes have to help it by your declarations
Verbs

• Translate into routines
  – These routines make extensive use of routines associated with classes of objects
• Most effects of actions can be programmed by changing routines for classes
• You can add new verbs if you like
  – Synonyms common
  – Or from scratch, if you really need to
Caveat: Little conversation support

• Conversations drastically harder
  – Requires modeling beliefs and states of knowledge in more detail than a few properties.
  – Requires understanding the kinds of actions at the level of the dialogue itself
    • Example: H. Clark’s model of conversation as joint activity

• Level of support = string matching
  – You can build Elizas, but little else.
What happens during a game

• Turn-based notion of activity
  – Player does something
  – Direct and indirect effects computed
  – Timers, daemons updated
  – Repeat

• Stages of processing: Before, During, After

• You can tune what happens in each stage

• If your code returns true at any time, all processing for that stage stops.
Before

- GamePreRoutine called, if any.
- Orders property of player called
- react_before of every object in scope called
- before of current room called
- before of first noun of action, if any
During

• Library routine for action (or your routine) take over.
• Does the action, but doesn’t print anything until After processing is completed.
After

- Since this occurs before printing in During, action can be undone.
- React_after for every object in scope
- after of current room
- after of first noun of action, if any
- GamePostRoutine called, if any.
Daemons

• Processes that are executed once per turn.
• Read up on these, you’ll need them to implement your NPC’s!
Quick Inform code tour

• Let’s look under the hood at Twonky Island...
Story Bibles

• Your design notes for the story
  – Useful in your own thinking
  – Critical for communication
• Different entertainment genres have different conventions
  – Movies, TV series require extensive documentation
    • Continuity, backstory, visuals…
• For interactive fiction, need to include
  – Plot structure
  – Map
• Example: Twonky Island story bible on web site
Reading assignment

  – (Mirrored on the course web site)
  – All of chapters 2 and 8
  – Dip into Chapters 1, 3, 4, and 6 as you need them
  – If you need Chapters 5 or 7, you’re doing something very unusual!
Homework assignment

• Turn in the story bible for your IF short story. It should include the intended plot structure, map, and lists of the objects and NPCs needed.

• Turn in Inform source containing at least half of the objects and locations needed in your story

• See web site for details