

Inform 7

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A brief introduction to the Inform 7 text adventure programming language

Adam Thornton, April 2020

<https://github.com/athornton/i7-talk-2020> (PDF)



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Inform 7

by Graham Nelson, after Don Knuth

...and Crowther and Woods, and Anderson, Blank, Lebling, and Daniels

...and Roberts and Tessman and Plotkin

...and a host of others.

Parser-based Text Adventures

For a brief shining moment, the most popular form of computer entertainment.



Get offa my lawn!

...and a very, very long post-commercial life (1990-present)...

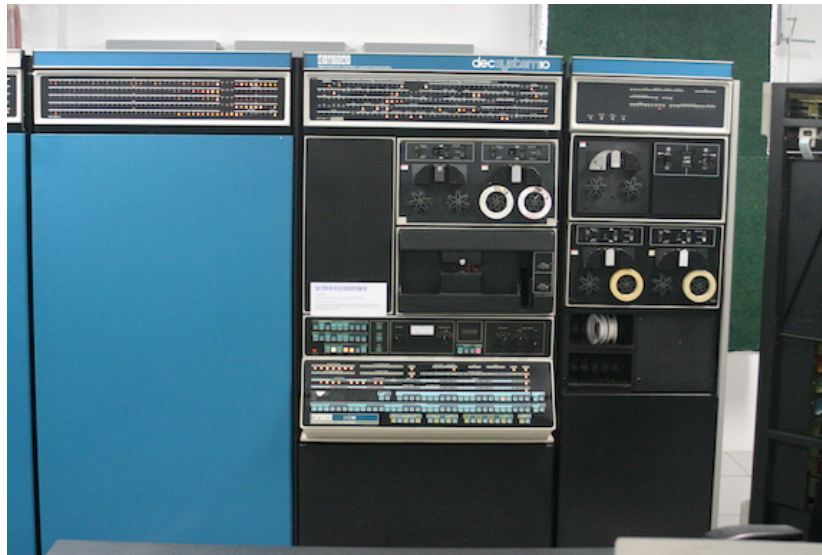
"Interactive fiction."

...frequently used to storyboard games that will have expensive assets.

Good way to prototype puzzle design, for instance.

How were these written, historically?

Adventure: FORTRAN/PDP-10/TOPS-10



<http://www.literateprogramming.com/adventure.pdf> may be the best paper ever written about a computer program.
(KI-10 Picture from Wikipedia user Gah4, CC BY-SA 4.0)

Zork: MDL/PDP-10/ITS

<https://github.com/historicalsource/zork>

Ported to FORTRAN by Bob Supnik. That's the one you've played.

Infocom: ZIL/PDP-10/TOPS-20

<https://github.com/historicalsource/>

The Z-Machine was the magic that enabled easy porting and very big (for the time) games.

Post-Infocom: AGT, TADS

- Even later: Hugo, ChoiceScript, Twine...

Inform: Graham Nelson, 1993 -> Inform 6, 1996

- Compiles to Infocom Z-machine.
- https://en.wikipedia.org/wiki/Inform#The_Inform_6_programming_language

Inform 7: Graham Nelson, 2006

Compilation Target

Z-machine: 16-bit virtual machine

- Most Infocom games version 3 ($\leq 128K$)
- Late Infocom games version 5 ($\leq 256K$)
- Little-used graphical variant version 6 ($\leq 256K$)
- Post-Infocom version 8 ($\leq 512K$)
- Finally, Glulx (32-bit Z-Machine-inspired VM, Plotkin 1999)
- I7 produces Z8 or Glulx

What's it like?

The experience of writing an adventure game should be much like the experience of playing one.

Designed for nonprogrammers:

- In the tradition of BASIC, Hypercard, Scratch...
- ...and COBOL.

Graham on Inform 7 design:

<http://inform7.com/talks/2018/06/09/london.html>

Literate Programming

- I need to talk to Graham about Jupyter as a resurgence of LP.

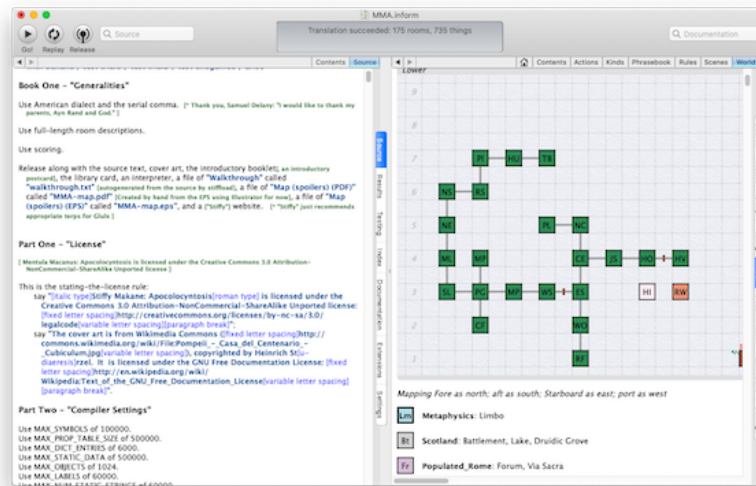
Declarative

Hello, World

"Hello World" by Adam Thornton.
Hello World is a room.

Note that identifiers can have spaces (and other odd characters) in them.

IDE is an integral part of the intended experience



But not, strictly speaking, a necessary one.

I maintain the Linux CLI port.

However, the IDE is a joy to use.

- Integrated documentation, both reference and recipe book
- Testing panel lets you do regression testing and diverging-output-at-nodes
- Excellent indexing facility with automapping
- Good source-level debugger

How suitable is it for writing text adventures?

I have written a 160,000 word game in it.

- <https://www.stiffymakane.com/MMA>
 - WARNING: NOT SAFE FOR WORK. NOT KIDDING.
 - 160,000 word pornographic text adventure, 175 rooms, 735 things...
 - ...set in the waning days of the Roman Republic.
 - What?

Blue Lacuna is about twice that size(!)

Far, far more output text than any commercial text adventure ever.

- <https://blue-lacuna.textories.com/>
- <https://blue-lacuna.textories.com/source/source.html>

Find Inform 7 at <http://inform7.com>

Not Open Source yet (although it was announced for last fall)....

Inform 7 itself is a very large literate program, written in In-web (a superset of a subset of CWEB)

<https://github.com/ganelson> (someday)

What does it simulate?

A physical world

Rooms are topologically connected, there are objects, some of which are mobile...

But more like a stage-set than a physical simulation

The language encourages this: objects are "off-stage", "remove X from play," and sense-modelling and object-player interaction are primitive. Cf. TADS 3.

Language features

Locations defined declaratively, implicitly transitive.

Scotland is a region. Edinburgh, Glasgow, and Aberdeen are rooms in Scotland.
Aberdeen is northeast of Glasgow. Edinburgh is east of Glasgow.

Glasgow is a room. "Gray and grim." [This sets the "initial appearance" property.]

Populating the world is declarative:

The wooden table is a supporter in the kitchen. "A wobbly wooden table rests unsteadily on t
Understand "wobbly" and "unsteady" as the table. [Synonyms]
Some butter is on the wooden table. The butter can be edible. It is edible. [Properties]

Adjectives used in play and in world-construction.

[Define a new kind, and then use it as an adjective.]
Shininess is a kind of value. The shininesses are shiny and dull.

A coin has a shininess. A coin is usually dull.

The Bank is a room. The penny is a shiny coin in the Bank.

Defining new actions

Understand the command "feed" as something new. Understand "feed [something preferably helo
Feeding it to is an action applying to two things.

Carry out feeding it to:

if the second noun is not a person, instead try inserting the noun into the second r
if the second noun is the player, instead try eating the noun;
instead try giving the noun to the second noun.

Rule-based

The most important ones are "before", "instead", "after", and "check
<action>", "carry out <action>", "report <action>".

Instead of a suspicious person (called the suspect) burning something which is evidence aga
["Instead" is the rulebook name; "(called the suspect)" creates a scoped variable for refer

Implicit loop variables:

For printing a locale paragraph about a thing (called the item) (this is the forcibly set pe
if the item is a supporter and the item does not enclose the player
begin;

```

repeat with the possibility running through things on the item
begin;
    if the possibility is a woman, forcibly set the female pronoun from
    if the possibility is a man, forcibly set the male pronoun from the
    if the possibility is a neuter animal, forcibly set the neuter pronoun
end repeat;
end if;
continue the activity.

```

You can also, if you prefer, use Python semantic indentation rather than "begin/end".

Tables take the role of structs.

```

Part Two - "Footnotes"

Table of Footnotes
assignment note
a number "Fulminator" [a traditional epithet of Jupiter] in the original.
-- "The Curia Hostilia burned in 52 BC; Julius Caesar started its renovation, but the Curia Julia (named in his honor)
was not completed until 29 BC during the reign of Augustus. I hope you now feel better-educated."
-- "My heartfelt thanks to Professor Michael Maas of Rice University for locating this reference for me."
-- "This is a rather loose translation from the original."
-- "Lucius Macanus Mentula, to be pedantic about it."
-- "Even, indeed, this one."

```

- Rows and columns
- Things in a column are of the same type.

Lists support apply, filter, and reduce...but not lazy evaluation.

Dimensional analysis (what?)

"Equation Playground" by Adam Thornton

Part Zero - Definitions

Include Metric Units by Graham Nelson.

Part e - Equations

Equation - Volume of a square parallelepiped

$$V = h l^2$$

Where V is a volume, h is a length, and l is a length.

Equation - Area of a square

$$A = l^2$$

Where A is an area and l is a length.

Part pi - Objects


```
Classroom is a room
```

```
The infernal prism is a thing in Classroom. It is fixed in place.
```

```
Carry out examining the infernal prism:
```

```
    Let V be a random volume between 10 cu m and 1000 cu m;
```

```
    Let A be a random area between 10 sq m and 100 sq m;
```

```
    let l be given by the area of a square;
```

```
    let h be given by the volume of a square parallelepiped;
```

```
    say "The infernal prism shifts again. Now its height is [h]. Somehow you know its  
    stop the action.
```

A more traditional programming approach to I7:

Ron Newcomb, <http://www.plover.net/~pscion/Inform%20%20for%20Programmers.pdf>

May help impedance-match if you're more used to coding than writing.

Changes coming in the open-source version, whenever that may be

Two of Graham's talks cover a lot of this

<http://inform7.com/talks/2018/06/09/london.html> <http://inform7.com/talks/2019/06/14/narrascope.html>

LLVM-inspired intermediate representation ("inter")

- Compile to Inform 6 (status quo), or C, or Javascript, or Unity (!!)

Give it a try!

It's fun to try just plain strange languages sometimes.

FRACTRAN

- A starting integer n , and an ordered list of fractions.
- For the first fraction f for which nf is an integer, replace n by nf and repeat.
- When no nf is an integer, halt.