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CE301 Final Report

Hypertext Game Project: HECC-IT

Project: **Hypertext Game Project**

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Degree Course: **Computer Games BSc**

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Special thanks to the contributors of *showdown.js* (*A bidirectional Markdown to HTML to Markdown converter written in Javascript*) [1], as this has been incorporated into the outputs produced by my tool.

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# Abstract

HECC-IT (Hypertext Editing and Creation Code Integrated Toolkit) is a toolkit for authoring hypertext games, designed for indecisive people. Users may write/edit a raw .hecc file themselves, or use the 'OH-HECC' GUI provided by the tool to assist them in the editing process, before converting their .hecc file into a playable hypertext game. Unlike most existing hypertext game authoring tools, which require authors to exclusively write raw source code or exclusively use a GUI, HECC-IT has been designed to allow authors to edit their games however they want (with or without the GUI), without having to go through a convoluted process of converting their drafts into different formats before using the other editing method.

# List of Symbols

* Hypertext Game
  + At the simplest level, a hypertext game is a game where the player is offered choices for how the story of the game progresses, and those choices may have impacts on what happens in the game. These can be presented as electronic html documents, but they don’t need to be.
  + On a deeper level, a hypertext game is a variety of a cybertext, and is an example of ergodic literature.
* Cybertext
  + Cybertext, as defined by E. J. Aarseth, is a text which considers 'the intricacies of the medium as an integral part of the literary exchange’, treating the 'consumer, or user, of the text, as a more integrated figure', and 'must contain some kind of textual feedback loop' [2]
* Ergodic Literature
  + As defined by E. J. Aarseth, this is literature where ‘nontrivial effort is required to allow the reader to traverse the text’, such as involving a ‘specialized ritual of perusal’, or actively incorporating player choice into the traversal of the text. [2]
* HECC-IT
  + Hypertext Editing and Creation Code Integrated Toolkit
  + This is the hypertext game authoring tool which I created. It will be explained in full throughout the rest of this document.
* HECC
  + Hypertext Editing and Creation Code
  + The intermediate scripting language used by HECC-IT, to store work-in-progress hypertext games.
* OH-HECC
  + Optional Help for HECC
  + A GUI for editing .hecc files, included as part of HECC-IT.
* HECC-UP
  + HECC Ultra Parser
  + The part of HECC-IT responsible for turning .hecc files into playable hypertext games.
* HECCIN’ Game
  + HECC-Infused Nice Game
  + This is the ‘formal’ term for hypertext games produced with HECC-IT. ‘Nice’ in this context is not an indicator of the game’s quality, it’s an indicator of ‘oh nice you produced this hypertext game with HECC-IT’.

# Literature Survey

The creation of HECC-IT was heavily influenced by the research I performed on some existing hypertext game authoring tools, and on the topic of hypertexts in general. I shall summarize my findings in this section, and explain how these findings influenced HECC-IT itself.

I started by researching some existing hypertext game authoring tools. I did this because I wanted to gain an overview of the current state-of-the-art for the tools, to find a gap in the market that I could exploit. A full rundown of the tools (and most of the academic literature) I reviewed can be seen in the report on the background reading [3], so, to avoid reiterating those points again, I shall discuss the conclusions drawn from this reading.

The existing tools could be divided into several categories; some of them had a GUI, whilst others were all effectively just scripting languages (some with an IDE, some without an IDE), and most of these tools would require the author to exclusively use a GUI or a raw scripting language throughout the entire development process. In hindsight, this does make sense; it means that development time is not spent split between two ways of doing the same thing, only being concerned with one way of doing a task. There were two (pairs of) tools which did offer the user a choice between using a raw scripting language and a GUI, meaning that an author could, in theory, freely swap between whatever editing method they would currently deem more convenient, but, both of these did this with a caveat.

The *Inklewriter* [4] and *ink* [5] tools allowed some level of flexibility. *Inklewriter* is a server-side, GUI-based, authoring tool, but two of the obvious problems with it are how it’s server-side (meaning that if the company hosting it stops hosting it, this tool will cease to exist), and how authors need to make an account on the website to save/load their work (deterring authors who don’t want to deal with that). The *ink* tool is a client-side, scripting language-based authoring tool, offering the same functionality as *Inklewriter*, minus the GUI. Those two tools are somewhat interoperable, but in a rather inconvenient way. Whilst *Inklewriter* does have an option to export a game as an *.ink* file, this requires the author to manually copy and pastes the exported code into an .*ink* file. Then, to open an *.ink* file in the *Inklewriter* GUI, an author must first export that *.ink* file to JSON within the *.ink* tool, log in to *Inklewriter*, and then manually copy and paste the JSON into an ‘import from JSON’ option. This inconvenient process realistically means that no author would want to bother doing it.

*Twine* [6] and *Twee2* [7] were a bit less inconvenient in this regard. *Twine* is usable either via a web browser, or as a standalone executable, operates entirely client-side, and is a fully-featured GUI-based tool for producing hypertext games, offering plenty of flexibility for authors, even allowing authors to use different ‘formats’ (offering differing syntaxes/levels of functionality) for the games produced with that tool. Additionally, it presents a very helpful overview of games produced with it as networks of connected passages, making it very accessible for casual users. It saves the games in .html files, which can be opened in a web browser to be played, or opened within *Twine* for the actual game to be edited. *Twee2* is advertised as ‘Twine for power users’, effectively working as a pure code-based version of *Twine*, offering all of the options that *Twine* does (and then some), besides the GUI. The *Twee2* utility itself is a command-line program, which reads *.tw2* files, and exports them as .html files, as if those files had been made in *Twine*. Whilst this is more convenient than the *Inklewriter*/*ink* conversion, there are a couple of problems. If you are using Windows, you can’t use *Twee2* to convert from *Twine* format to *Twee2*. Additionally, the writer still needs to go out of their way to perform this conversion, so it still isn’t entirely convenient.

This exposed a clear gap in the market; a gap for a hypertext game authoring system that allowed users to freely choose if they wanted to edit their games using a GUI or by writing raw source code, so, if a writer wanted to make smaller edits to their game, they don’t need to use the GUI, and if they wanted to make larger changes to the overall structure, they can use the GUI.

Another key finding was how the

# Technical Documentation

The technical documentation for this project is held on Gitlab, and can be seen [here](https://cseegit.essex.ac.uk/ce301_2020/ce301_lowe_richard_m), on the project’s Gitlab repository [4]. They are held within the README.md files in the repository, and are organized with a table of contents on the top-level README.

# Project Planning

## Intro

## Jira

## Usage of Jira

## Reflection on the project planning

# Conclusions

# Bibliography

|  |  |
| --- | --- |
| [1] | E. Santos, P. Deschênes, C. Innis, R. Sharp, K. Käfer, R. Braun, D. Tarr, C. Chen, T. Stone, R. Sutherland, P. Lang, B. Combee, A. Backstrom, H. Wolfe, A. Courtiol, K. Balakrishnan, rheber, J. Gruber and J. Fraser, "showdownjs/showdown: A bidirectional Markdown to HTML to Markdown converter written in Javascript," 2 November 2019. [Online]. Available: https://github.com/showdownjs/showdown. [Accessed 19 Janaury 2021]. |
| [2] | E. J. Aarseth, Cybertext: Perspectives on Ergodic Literature, Baltimore, MD: Johns Hopkins University Press, 1997. |
| [3] | R. Lowe, "The 'Summary of Background Reading' report I produced," 25 September 2020. [Online]. Available: https://cseegit.essex.ac.uk/ce301\_2020/ce301\_lowe\_richard\_m/-/blob/master/Reports%20n%20such/Summary%20of%20background%20reading.docx. [Accessed 25 September 2020]. |
| [4] | R. Lowe, "ce301 / ce301\_lowe\_rachel\_m · GitLab (The Gitlab Repository for this project)," 2021. [Online]. Available: https://cseegit.essex.ac.uk/ce301\_2020/ce301\_lowe\_richard\_m. [Accessed 2021]. |
| [5] | Beck & Bartle Limited, *eHyperTool Design Specification Version 1.02 (unpublished),* 2011. |
| [6] | inkle Ltd., "ink - inkle's narrative scripting language," inkle Ltd., [Online]. Available: https://www.inklestudios.com/ink/. [Accessed 11 August 2020]. |
| [7] | M.-L. Ryan, "From Narrative Games to Playable Stories: Toward a Poetics of Interactive Narrative," *Storyworlds: A Journal of Narrative Studies,* vol. 1, pp. 43-59, 2009. |
| [8] | H. K. Rustad, "A Four-Sided Model for Reading Hypertext Fiction," *Hyperrhiz: New Media Cultures,* vol. 6, 2009. |
| [9] | T. Rothamel, "The Ren'Py Visual Novel Engine," [Online]. Available: https://www.renpy.org/. [Accessed 6 August 2020]. |
| [10] | M. J. Roberts, S. Breslin, E. Eve, M. Nizette and A. Sewe, "TADS 3 Technical Manual," September 2006. [Online]. Available: https://www.tads.org/t3doc/doc/techman/toc.htm. [Accessed 4 August 2020]. |
| [11] | M. J. Roberts and E. L. Stauff, "TADS 3 Library Reference Manual," 5 16 2013. [Online]. Available: https://www.tads.org/t3doc/doc/libref/index.html. [Accessed 4 August 2020]. |
| [12] | M. J. Roberts, "TADS - the Text Adventure Development System, an Interactive Fiction authoring tool," tads.org, 16 May 2013. [Online]. Available: https://www.tads.org/. [Accessed 4 August 2020]. |
| [13] | Z. Quinn, P. Lindsey and I. Shankler, "Depression quest: An interactive (non)fiction about living with depression," 14 February 2013. [Online]. Available: http://www.depressionquest.com/. [Accessed 17 September 2020]. |
| [14] | D. Q, "Twee2 | Interactive Fiction for Power Users," 2015. [Online]. Available: https://dan-q.github.io/twee2/. [Accessed 17 August 2020]. |
| [15] | J. Pope, "A Future for Hypertext Fiction," *Converg. Int. J. Res. New Media Technol.,* vol. 12, no. 4, pp. 447-465, 2006. |
| [16] | M. Pavić and S. Sofrenovic, "The Glass Snail," Word Circuits, August 2003. [Online]. Available: http://www.wordcircuits.com/gallery/glasssnail/. [Accessed 17 September 2020]. |
| [17] | H. Oakley, "Getting started with Storyspace 3 - The Eclectic Light Company," 8 December 2015. [Online]. Available: https://eclecticlight.co/2015/12/08/getting-started-with-storyspace-3/. [Accessed 3 August 2020]. |
| [18] | G. Nelson, "Inform 7 | Inform is a natural-language-based programming language for writers of interactive fiction.," 2015. [Online]. Available: http://inform7.com/. [Accessed 10 August 2020]. |
| [19] | I. Millington, A. Yakovlev, A. Plotkin, B. Dias, D. Fabulich, D. Eyk, D. Eliseev, I. Narozhny, J. Grams, J. Leinonen, M. N. Tenuis, Selene and Zonnah, "Undum – A client side framework for hypertext interactive fiction games," 2010-2018. [Online]. Available: https://idmillington.github.io/undum/. [Accessed 14 August 2020]. |
| [20] | D. E. Millard, "Games/Hypertext," in *Proceedings of the 31st ACM Conference on Hypertext and Social Media*, Virtual Event, 2020. |
| [21] | T. Memmott, "Lexia to Perplexia," eliterature.org, 2000. [Online]. Available: https://collection.eliterature.org/1/works/memmott\_\_lexia\_to\_perplexia.html. [Accessed 17 September 2020]. |
| [22] | M. Lutz, "the uncle who works for nintendo by ztul," itch.io, 6 December 2014. [Online]. Available: https://ztul.itch.io/the-uncle-who-works-for-nintendo. [Accessed 17 September 2020]. |
| [23] | H. Koenitz, "What Game Narrative Are We Talking About? An Ontological Mapping of the Foundational Canon of Interactive Narrative Forms," *Arts,* vol. 7, no. 4, p. 51, 2018. |
| [24] | C. Klimas, "Chapbook, a story format for Twine 2," 6 July 2020. [Online]. Available: klembot.github.io https://klembot.github.io/chapbook/. [Accessed 5 August 2020]. |
| [25] | S. Kitromili, J. Jordan and D. E. Millard, "What Authors Think about Hypertext Authoring," in *HT '20: Proceedings of the 31st ACM Conference on Hypertext and Social Media*, Virtual Event, 2020. |
| [26] | C. Keep, T. McLaughlin and R. Parmar., "The Electronic Labyrinth," 1993-2001. [Online]. Available: http://www2.iath.virginia.edu/elab/elab.html. [Accessed 3 August 2020]. |
| [27] | M. Joyce, "afternoon, a story," Eastgate Systems, Watertown, MA, 1987. |
| [28] | M. Heyward, "of Day, of Night," Eastgate Systems, Watertown, MA, 2004. |
| [29] | M. Heyward, "Live traversal of ‘of day, of night’ Nov 8, 2019 at WSUV, USA | spaces in between time," 23 December 2019. [Online]. Available: https://www.creativecultural.com/meganheyward/?p=1750. [Accessed 17 September 2020]. |
| [30] | N. Gibbins, "Telling Tales - EdShare Southampton," 6 November 2019. [Online]. Available: http://edshare.soton.ac.uk/20145/. [Accessed 21 September 2020]. |
| [31] | T. M. Edwards, "SugarCube," 2020. [Online]. Available: https://www.motoslave.net/sugarcube/2/. [Accessed 5 August 2020]. |
| [32] | D. Cox and C. Klimas, "Snowman 2.0 Documentation," September 2019. [Online]. Available: https://videlais.github.io/snowman/2/. [Accessed 5 August 2020]. |
| [33] | M. Bernstein, "On hypertext narrative," in *HT '09: Proceedings of the 20th ACM conference on Hypertext and hypermedia*, Torino, 2009. |
| [34] | M. Bernstein, "Storyspace 3," in *HT '16: Proceedings of the 27th ACM Conference on Hypertext and Social Media*, Halifax, 2016. |
| [35] | R. Bartle, "Demo 1," February 2011. [Online]. Available: https://www.youhaventlived.com/cbdemo/. [Accessed 4 August 2020]. |
| [36] | B. Barnet, "Machine enhanced (re)minding: the development of storyspace," *Digital Humanities Quaterly,* vol. 6, no. 2, 2012. |
| [37] | L. Arnott, "Harlowe 3.1.0 Manual," 24 September 2019. [Online]. Available: https://twine2.neocities.org/. [Accessed 5 August 2020]. |
| [38] | A. A. Anthropy, "Queers in Love at the End of the World by anna anthropy," itch.io, 12 March 2016. [Online]. Available: https://w.itch.io/end-of-the-world. [Accessed 17 September 2020]. |
| [39] | J. Anderson, "afternoon, a story - Michael Joyce," youtube.com, 26 April 2012. [Online]. Available: https://www.youtube.com/watch?v=djIrHF8S6-Q. [Accessed 17 September 2020]. |
| [40] | Interactive Fiction Technology Foundation, "Twine Wiki," Interactive Fiction Technology Foundation, 2019. [Online]. Available: https://twinery.org/wiki/start. [Accessed 5 August 2020]. |
| [41] | Interactive Fiction Technology Foundation, "Twine Specifications," 2019 February 2020. [Online]. Available: https://github.com/iftechfoundation/twine-specs. [Accessed 5 August 2020]. |
| [42] | Interactive Fiction Technology Foundation, "Twine / An open-source tool for telling interactive, nonlinear stories," [Online]. Available: https://twinery.org/. [Accessed 5 August 2020]. |
| [43] | Interactive Fiction Technology Foundation, "The Treaty of Babel," 24 October 2014. [Online]. Available: http://babel.ifarchive.org/. [Accessed 10 August 2020]. |
| [44] | Eastgate Systems, Inc., "Storyspace: Storyspace," 2020. [Online]. Available: http://www.eastgate.com/storyspace/. [Accessed 3 August 2020]. |
| [45] | textadventures.co.uk, "Squiffy - Documentation," textadventures.co.uk, [Online]. Available: https://docs.textadventures.co.uk/squiffy/. [Accessed 13 August 2020]. |
| [46] | textadventures.co.uk, "Squiffy - A simple way to write interactive fiction," 2020. [Online]. Available: https://textadventures.co.uk/squiffy. [Accessed 13 August 2020]. |
| [47] | textadventures.co.uk, "Quest 5 - Documentation," textadventures.co.uk, 31 December 2018. [Online]. Available: http://docs.textadventures.co.uk/quest/. [Accessed 11 August 2020]. |
| [48] | textadventures.co.uk, "Quest - Write text adventure games and interactive stories," 2020. [Online]. Available: https://textadventures.co.uk/quest/. [Accessed 11 August 2020]. |
| [49] | Choice of Games LLC, "Introduction to ChoiceScript - Choice of Games LLC," Choice of Games LLC, 2020. [Online]. Available: https://www.choiceofgames.com/make-your-own-games/choicescript-intro/. [Accessed 11 August 2020]. |
| [50] | inkle Ltd., "inklewriter," inkle Ltd., [Online]. Available: https://www.inklestudios.com/inklewriter/. [Accessed 11 August 2020]. |