[Draw your reader in with an engaging abstract. It is typically a short summary of the document. When you’re ready to add your content, just click here and start typing.]

CE301 Final Report

Hypertext Game Project: HECC-IT

Project: **Hypertext Game Project**

Student Name: **Rachel Lowe**

Registration Number: **1804170**

Supervisor: **Dr. Richard Bartle**

Second Assessor: **Dr. John O'Hara**

Degree Course: **Computer Games BSc**

# Acknowledgements

I would like to thank Dr Richard Bartle for the support he was able to provide for this project as my supervisor, and for dealing with my general incompetence over the past year or so. Without his guidance, this project would have ended up in a much worse state than it would have been in otherwise.

Thanks to my pastoral and study skills mentors, Michelle Carpenter and Michelle Paul, for putting up with me, and helping me to stay relatively sane and on track with my studies over the past three years.

I would also like to thank David (my brother) for the invaluable support he was able to provide after several components of my desktop PC died; without his help, I would not have been able to recover that computer, which would have made it much harder for me to get this coursework done. Thanks to my parents as well for putting up with me and helping me to stay alive whilst I was at home, and thanks to Betty for the moral support (even if she did eat my ethernet cable in February).

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.

Thanks to the academic and technical staff at the university for helping me to gain the necessary background knowledge to work on this project, and also for providing the software and other technical support which allowed me to complete this project relatively smoothly. In particular, I would like to thank Dr Dimitri Ognibene, for teaching the CE218 module last year, which was rather helpful for working out how to implement part of the final deliverable for this project.

# 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.

This tool has been used to produce several demonstration games (playable at <https://11belowstudio.itch.io/the-hecc-it-demo>), as well as a more fully-featured game: *Backblast*; a murder mystery where **you** are the victim (playable at <https://11belowstudio.itch.io/backblast>).

HECC-IT itself is available for free on my itch.io page, here: <https://11belowstudio.itch.io/hecc-it>.

(note: Depending on when you are reading this, the latter two links may not yet be publicly viewable. If this is the case, the password to view those pages is ‘301’)

Contents

[1. Acknowledgements 1](#_Toc70007479)

[2. Abstract ii](#_Toc70007480)

[3. List of Symbols 3](#_Toc70007481)

[4. Literature Survey 4](#_Toc70007482)

[4.1: The tool-based research. 4](#_Toc70007483)

[4.2: The literature-based research 6](#_Toc70007484)

[4.3: Reviewing the research into actual hypertext games 7](#_Toc70007485)

[5. Technical Documentation 9](#_Toc70007486)

[5.1: Intro 9](#_Toc70007487)

[6. Project Planning 9](#_Toc70007488)

[6.1: Intro 9](#_Toc70007489)

[Jira 9](#_Toc70007490)

[Usage of Jira 9](#_Toc70007491)

[Reflection on the project planning 9](#_Toc70007492)

[7. Conclusions 9](#_Toc70007493)

[Bibliography 10](#_Toc70007494)

# List of Symbols

* Hypertext Game
  + At the simplest level, a hypertext game is a game where the player is offered choices, which may lead to different sequences of events happening (or not happening). These can be presented as electronic html documents, but they don’t need to be.
* 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 (stored in .hecc files).
* 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 (after the .hecc code is parsed). ‘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’.
* HECCER/heccer.js
  + HECC Engine for Runtime
  + The (generic, pre-written) component of the HECCIN’ Game that works as the ‘engine’ for the game, responsible for all the backend logic.
* HECCED/hecced.js
  + HECC Exported Data
  + The component of the HECCIN’ Game that contains the exported game data (constructed from the .hecc file) produced by HECC-UP.
* HECC-SPECC
  + HECC Super Precise Explanation for Creating Code
  + The specification for the HECC language.

# 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. In this section of this report, I shall summarize my findings and explain how these findings influenced HECC-IT itself.

## 4.1: The tool-based research.

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 [2], 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* [3] and *ink* [4] 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* [5] and *Twee2* [6] 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 from this tool-related research was how many of the tools (*Twine* [5], *Inklewriter* [3], *Squiffy* [7], *Undum* [8], *eHyperTool* [9], *ChoiceScript* [10], *Inform* [11], *Quest* [12], *TADS3* [13], and *Ren’Py* [14]) are all capable of exporting games that can be played in .html format (even if, for some of these tools, some server-side legwork may be required by the author). This design choice makes these tools rather appealing from the perspective of a player of the games produced by the tools, as they won’t need to go out of their way to download/install anything beforehand, and can even play these games on their phones. When compared to *Storyspace* [15], which does not have this option, not including this option would very clearly discourage an author from using my tool. Even then, the games exported with some of these tools involve some server-side components, which can potentially discourage some authors from trying to distribute their games if they do not have a server which they can deploy their games on; therefore, I chose to make the games produced with HECC-IT consist of entirely client-side HTML and JavaScript code, for the sake of everyone’s convenience.

In terms of the tools themselves, the only ones which were usable via a web browser themselves were *Twine* [5], *Inklewriter* [3], *eHyperTool* [9], *Squiffy* [7], and *Quest* [12]; of these, only *Inklewriter* and *eHyperTool* could not be used as standalone applications, due to their inherent server-side nature. Therefore, I saw making the tool itself browser-based as not being a necessity, as the existing ‘standard’ for these tools did not extend to making the tools browser-based; in fact, it appeared more like the expectation was for the tools to be downloadable as standalone executable applications. Therefore, I chose to make HECC-IT a standalone application. This then begged the question of ‘what language should I write HECC-IT in?’. Ultimately, I chose to write in in Java. After noticing the operating system-related limitations of *Storyspace* [15] and *Twee2* [6], I knew that I wanted HECC-IT to not be plagued with such arbitrary platform dependence. I could have tried to find a language that has a cross compiler (allowing it to be compiled to multiple operating systems), but I chose Java, because the Java Virtual Machine already is available for multiple operating systems, so, I would only need to build HECC-IT once, and it would inherently run on any operating system. Java is also the language which I feel most confident in using, therefore, it was the obvious choice.

One other discovery I made during this initial research was about the existence of *The* *Treaty of Babel standard for Interactive Fiction Bibliography* [16]. The document itself specified some requirements for interactive fiction development tools that are signatories of this ‘treaty’, such that any works of interactive fiction produced with these tools can all be archived and identified in an appropriate way. The bare minimum requirements are that a tool should allow a title and an author name to be specified for the work produced, assign a unique ‘Interactive Fiction Identifier’ (or IFID) to the work, and for a C routine for the ‘babel’ utility to be contributed which can produce an ‘ifiction’ record for the work in question. The requirements for a tool which falls outside of the scope of the agreement are slightly different (the IFID must be the MD5 hash of the game file), however, during the development of HECC-IT, I chose to assign an IFID for my work as specified for a party which is a signatory to the agreement, and also produce an ifiction file for games produced with HECC-IT during the ‘parsing’ process that reads the input .hecc files and outputs the games. I justified this at the time because, at the time of the initial research, *Twine* [5], which was not currently a signatory to the treaty, assigned IFIDs to games produced with it as if it was a signatory, so I thought that there would be no problems if I were to do the same thing for HECC-IT. However, in January 2021, the tenth revision of *The Treaty of Babel* [17] was published, and *Twine* was now a signatory. Due to this, I am now not sure if the IFID-related components of HECC-IT would be considered ‘allowed’ or not. However, being realistic, I doubt that many people will find out about and use HECC-IT in the first place, so, for the time being, I suppose that I may not need to worry about this until HECC-IT somehow becomes widely used enough to justify asking if HECC-IT can become a signatory to the treaty.

In terms of functionality, the bare minimum supported by all tools was some method of linking between ‘passages’, some method of keeping track of what actions the player had previously taken, and some form of ‘guard conditions’/conditional statements. Some tools (such as *Quest* [12], *Inklewriter* [3], *eHyperTool* [9], and *ChoiceScript* [10]) implemented ‘links’ in the form of ‘pick one of these options’ at the end of each ‘passage’ in the text, always after the main passage content. In these tools, ‘guard conditions’ were implemented such that, depending on certain criteria, each of these ‘links’ would be selectively hidden/shown (with this condition being explicitly for the link), and in turn, could allow greater automatic validation of the game, at the cost of flexibility for the author. Conversely, *Twine* [5] (and the various story formats available for it), *Squiffy* [7], *Storyspace* [15], and *Undum* [8] all have the links defined ‘within’ the content itself. *Storyspace* is the odd one out here, as its links are considered ‘objects’ within the games it produces, and can each be individually configured. However, for the others, ‘guard conditions’ may be implemented in the form of conditional statements, which can be used to conditionally show/hide parts of the ‘content’ of the passages, and, in turn, conditionally show/hide links. This does mean that there is less scope for automatic checking of these ‘guard conditions’, however, due to the additional flexibility it offers the writer in terms of formatting, I chose to use this approach.

## 4.2: The literature-based research

I studied a range of literature for this project as well, both on the topics of hypertext itself, hypertext games, and some on the topic of producing hypertext games.

The article which had the biggest impact on HECC-IT was S. Kitromili, J. Jordan and D. E. Millard’s paper on *What Authors Think about Hypertext Authoring* [18], which, at the time of first reading it, was a very recently-published paper (published in July 2020), and was the ‘Best Student Paper’ at the conference it was presented at, giving it some credibility. It highlighted several key points about the process of authoring hypertexts, from the initial idea to the finished products, and several complaints that some authors had about existing tools. When making HECC-IT, I decided to address the points raised about unclear documentation (by aiming to make it completely clear what HECC-IT could/couldn’t do), debugging tools (by making HECC-UP refuse to produce a game with an obvious error, giving details about it, and also indicating the states of the passages within OH-HECC), some ‘separation of content and behaviour’ (through explicitly-defined ‘comment’ areas, separate from passage contents), and several of the post-lifecycle complaints (making ‘distribution’ easy via the internet, simplifying ‘maintenance’ because only the ‘hecced.js’ file would need updating if the game is updated, offering some avenue for ‘profitability’ due to the control an author can have over the ‘hecced.js’ file with the data, and some level of ‘curatability’ via the *Treaty of Babel*).

From the approach of a literature review, however, I probably should have looked at some other literature on the topic of hypertext game authoring, as that paper was the only one I looked at on this topic. I’m not entirely sure if these findings which I applied to HECC-IT actually will turn out to have been properly useful or not, and, if I had looked at more research on this topic, I may have been able to make even better-informed decisions regarding HECC-IT’s overall design from the perspective of an author. But, I didn’t, so this part of the research is a bit questionable in hindsight.

The rest of the research had fewer obvious problems. On the topic of hypertext itself, I started with E. J. Aarseth’s *Cybertext: Perspectives on Ergodic Literature* (or, at very least, the first chapter of it, as I was unable to legally obtain a copy of the full book). Despite not having access to the full text, it was rather enlightening, explaining that a ‘cybertext’ is a text which, effectively, can be seen as some sort of ‘machine’, where there is a ‘textual feedback loop’, such that ‘the cybertext reader is a player’. It also covered ‘ergodic literature’, where ‘non-trivial effort is required to allow the reader traverse the text’ [19]; this made it very clear that the game I would need to produce with HECC-IT would need to contain these things to qualify as more than just ‘text’.

M. Bernstein’s article *On Hypertext Narrative* was also rather informative, discussing things such as how hypertexts must ‘offer links, but the selection of links must be significant and consequential’, and that ‘the cycle, not the branch, goto, or jump, is the central hypertext structure’ [20]. The former appeared rather obvious, but the latter was rather unexpected, and did start to give me a few ideas about the game I would ultimately produce, even if the game produced didn’t quite include the form of ‘cycles’ discussed by Bernstein in this article. However, the discussion of how ‘using links to vary the *story* is less promising than using links to change the *plot*’ [20] was genuinely rather confusing, and I wasn’t sure how to actually go about doing such a thing. H. K. Rustad’s article on *A Four-sided model for reading hypertext fiction* provided more insight into specific reading methods of hypertexts, from ‘semantization’ (effectively a ‘search for meaning’), ‘exploration’, ‘self-reflection’ (where players ‘play a role’), and ‘absorption’ (where the player is ‘in a condition of confusion’) [21]. These, along with the information about how to invoke these modes of reading, gave me a few ideas about how I could potentially structure the hypertext game I was going to produce, and was re-consulted during the development process, in an atempt to induce the desired effects on the player.

The other pieces of academic literature I read during this research didn’t leave much of an impression that translated into an actual impact on the development of the tool itself, therefore, this aspect of the research was lacking. However, some of these papers did identify a few examples of hypertext games, which I did look into a bit further.

## 4.3: Reviewing the research into actual hypertext games

It would be foolish to attempt making a hypertext game without having first seen some existing hypertext games. The literature I looked at mentioned several existing hypertext games, so, I chose to try looking at them. Unfortunately, I was unable to play several of those existing games, due to them either costing money, being Java Applets (inoperable since 2014), or simply not being publicly available.

Gibbin’s talk on *Telling Tales: Hypertext Writing* gave a rather informative overview of the history of hypertexts, from the start of the genre to nowadays. It discussed hypertext fictions (simply involving the player making choices as the game progresses) as well as ‘ludic hypertexts’ (where some form of external state is involved, which may have some impact on what choices a player may have later on) [22]. The discussion of the latter provided the context for why the tools I had looked at included some forms of conditional logic, and also gave me an explanation for how conditional logic should be used: it turns the ‘reader’ into even more of a ‘player’, delivering on the ‘textual feedback loop’ discussed by Aarseth, and delivers various modes of ‘play’ (all of which map onto the ‘modes’ of reading Hypertext Fiction as proposed by Rustad). It also discussed some of the common tropes for these hypertexts, such as a second-person narrative, generally short ‘lexia’ (sections between choices), but varying levels of ‘constrained’ choices. It also pointed out that academia tends to concentrate on ‘literary hypertext’ (not ‘hypertext fiction’), having ‘non-linear narratives, not non-linear stories’ [22], which did explain why several of the other examples cited by the papers (which ultimately did not have much of an influence on the game I produced) were all varying levels of incomprehensible, compared to these examples. Ultimately, I opted to produce something that more closely resembled a ‘hypertext fiction’ than a ‘literary hypertext’, following the general tropes of the ‘choose your own adventure’ variety of hypertext explained in this talk.

I was able to play one of the literary hypertexts mentioned in some of the previously discussed papers: Pavić’s *The Glass Snail* [23]. The hypertextuality of this manifested itself by the first two ‘sections’ being tellings of the same events, but the reader chooses which ‘perspective’ of the events they want to read first, in turn affecting their perception of the events. There is another ‘choice’ of endings after a ‘middle’ section, again, describing the same events from two perspectives, albeit with both of them ending completely differently. This worked as a practical example to help me understand what Bernstein meant by ‘changing the plot’ [20], however, as this doesn’t really involve the reader as a ‘player’, I opted to not use this approach for my game.

I also played a selection of hypertexts produced with Twine. Anthropy’s *Queers in Love at the End of the World* [24] offered a rather good example of a game which induces the ‘absorptive’ mode of reading (as proposed by Rustad), through the very short time limit which the game introduces via the usage of Twine’s timer functionality, and, despite it simply being text, manages to convey a lot of physicality to the player. This sense of physicality is compounded by the ‘links’ to each passage being naturally embedded into the text, which in turn helps the player to feel more like an active participant than a passive reader. I took a note of this, as it helped me to better understand what the benefits of embedding the ‘links’ into text within a hypertext game actually are.

I also chose to play *Depression Quest* [25] (intentionally not taking the controversy regarding the reception of this game into account), which gave a rather good example of how hypertexts can be used to convey a message to the player, how the intentional restriction of choice can be used in a game, and served as an example of how to go about adapting the experience based on earlier choices made by the player (via an internal state recorded by the game). It also got me thinking about making a ‘serious game’ of sorts with this tool (which I eventually did attempt, even if that particular idea ended up unfinished), but overall, this was rather helpful in terms of working out what I can do.

*the uncle who works at nintendo* [26] contained a rather nice example of some form of ‘dialogue’ system, a ‘timer’ which increments as the player performs certain actions, various endings (keeping a record of what endings have been reached), ambient audio, and effectively abuses the Twine engine at points to install a sense of genuine fear in the player. This did show some of the unexpected advantages to having a hypertext game engine which shows errors at runtime instead of compile time, and provided a further example of what could be done via keeping track of an internal state. The sheer complexity of this game was a bit too much for me to consider imitating, however, the way that options are naturally hidden/shown in each playthrough according to the player’s choices (such that any choices which the player would not have ‘learned’ about so far, or have already ‘chosen’, are hidden, without anything to indicate that choices could have been there) made a lot of sense, and I chose to use that approach in the final ‘game’ I produced with HECC-IT.

Finally, I informally replayed *Zero Time Dilemma* [27] during the winter break, not with the express intent of doing this as research, but just because I simply wanted to play it again, however, this did still have some implications on the final game I produced. This game isn’t a ‘hypertext’ in the literal sense (instead being an ‘escape-the-room’ puzzle game), yet it has a very much hypertextual, non-linear overall plot structure. I knew that I would not be able to make a tool which could make games exactly like this, due to the inherent complexity of this game and the fact that the presentation of this game only makes sense in its own context. However, the plot is presented from several perspectives, several of the ‘branches’ in the plot differ due to the actions of the other characters (not just the player), and acknowledges that the player may know things from other ‘branches’, offering the player several opportunities to apply this knowledge. The latter two points ultimately heavily influenced the game I produced with HECC-IT, albeit by this point in development, HECC-IT had been mostly developed.

In hindsight, I still could have done some more research on individual hypertext games, especially regarding any more recent (post-2016) examples of hypertext games. Additionally, I didn’t actually work out what the current state of the market in terms of hypertext games is, so I’m genuinely not sure what market I should have tried to target with my game, or what specific features the games which my tool will be producing should incorporate to fit into a gap in the market, if there actually is a market which still exists. However, with the amount of free hypertext games which are playable online on websites such as itch.io, the game I shall produce will be published online as freeware, as, if I were to charge money for it, this barrier to entry would discourage people from wanting to play it, which, if the market turns out to be oversaturated/not present, could end up being rather detrimental to the game’s chances of being played.

# Technical Documentation

## 5.1: Intro

The technical documentation for this project is held on Gitlab, and can be seen, in full, [here](https://cseegit.essex.ac.uk/ce301_2020/ce301_lowe_richard_m), on the project’s Gitlab repository [28].

This documentation is in several parts.

Full JavaDoc-style documentation, explaining every single class, method, and class attribute, is held within the ‘/JavaDocs.zip’ folder on the repository. You will need to download it, unzip it, and open it in a web browser in order to peruse it. I tried to work out how to put it on ‘Gitlab Pages’, so it would be easier to browse, but it doesn’t look like the Gitlab instance provided by the university has this configured, meaning that this was not an option. I did consider putting it in a restricted itch.io page, but the JavaDoc-format documentation doesn’t lend itself to being embedded into another html page. Therefore, this approach for showing it was the best out of several equally undesirable choices.

Shorter package-level explanations of the general purpose of each class in the codebase are present in the form of ‘README.md’ files, which can be seen within the ‘/src’ folder of this project’s repository, and within the various subfolders of that folder (albeit the ‘src/assets’ folder only has a single ‘README’, which covers the contents of its subfolders).

Finally, the bulk of the technical documentation, covering the design, development, and testing of the overall deliverable can be seen in the ‘/Technical Documentation’ folder on this project’s gitlab repository, presented as a series of markdown documents. Yes, the numbering for the sections of those documents start anew from ‘1’, so, for the sake of not having ridiculously long prefixes in front of every single section name, consider them to have been prefaced with a ‘5.2.’ in front of the numbers that are there.

## 5.2: The full technical documentation discussing the design, development, and testing of every iteration of HECC-IT and the games produced with HECC-IT

Once again, is in the ‘/Technical Documentation’ folder of the repository, here: <https://cseegit.essex.ac.uk/ce301_2020/ce301_lowe_richard_m/-/tree/master/Technical%20Documentation> [28]

## 5.3: The summarized version of the technical documentation

The first part of HECC-IT to be produced was a rather crude prototype of the ‘HECCIN’ Game’, consisting of a prewritten ‘heccer.js’,’hecced.js’, and ‘index.html’ file. The ‘game’ held within the ‘hecced.js’ file was more of an incomprehensible tech demo instead of a proper game, lovingly referred to as the ‘HeccSample’. This was quickly followed by a rudimentary draft for the ‘HECC-SPECC’, and a retrospectively produced ‘HeccSample.hecc’ file. I then created a crude Java program which was capable of reading the aforementioned ‘HeccSample.hecc’ file and could use that input to create and export a copy of the ‘HECCIN’ Game’, just like the example. Before the academic year started, I made a few improvements to this crude parser, by making it more object-oriented (with ‘Passage’ objects and a ‘Metadata’ object), and making it throw some exceptions if it was given invalid inputs (which it would then proceed to complain about in the console).

I started Challenge Week by making some improvements to this parser to make it less terrible (improving the overall architecture of it so it was less crudely held together), making the outputs look somewhat presentable (removing the garish colours which were added for the sake of making it easier to work out the sizes of each element when I was trying to set up the CSS), and, most importantly, adding a GUI for the parser. This GUI was the final piece in the puzzle which turned this ramshackle, nigh-useless single-purpose Java script into an actually useful utility: HECC-UP. I also considered trying to add in markdown formatting during Challenge Week, however, after a day of very little progress, and a realization about just how much work would actually be needed to make a markdown parser, this was put on the backburner. I also made another HECCIN’ Game whilst I was thinking about it, at the very end of Challenge Week. This game, ‘A Conversation’, was framed as a ‘conversation’ between the player and their internal monologue, and was also an intentionally poorly disguised advert for HECC-IT.

With HECC-UP working, and able to convert .hecc files into playable HECCIN’ Games, this, strictly speaking, meant that I had a Minimum Viable Product before the end of the 2nd week of the academic year. Yes, it might have had more emphasis on the ‘Minimum’ than the ‘Viable’, but the point was that it could be used to create simple hypertext games much easier than doing it manually. Theoretically, I could have stopped here. But I didn’t.

Rest of term 1

Term 1 outputs

Term 2

Term 2 final product

# Project Planning

## 6.1: Intro

## 6.2: Jira

## 6.3: Usage of Jira

## 6.4: 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] | 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]. |
| [3] | inkle Ltd., "inklewriter," inkle Ltd., [Online]. Available: https://www.inklestudios.com/inklewriter/. [Accessed 11 August 2020]. |
| [4] | inkle Ltd., "ink - inkle's narrative scripting language," inkle Ltd., [Online]. Available: https://www.inklestudios.com/ink/. [Accessed 11 August 2020]. |
| [5] | Interactive Fiction Technology Foundation, "Twine / An open-source tool for telling interactive, nonlinear stories," [Online]. Available: https://twinery.org/. [Accessed 5 August 2020]. |
| [6] | D. Q, "Twee2 | Interactive Fiction for Power Users," 2015. [Online]. Available: https://dan-q.github.io/twee2/. [Accessed 17 August 2020]. |
| [7] | textadventures.co.uk, "Squiffy - A simple way to write interactive fiction," 2020. [Online]. Available: https://textadventures.co.uk/squiffy. [Accessed 13 August 2020]. |
| [8] | 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]. |
| [9] | Beck & Bartle Limited, *eHyperTool Design Specification Version 1.02 (unpublished),* 2011. |
| [10] | 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]. |
| [11] | 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]. |
| [12] | textadventures.co.uk, "Quest - Write text adventure games and interactive stories," 2020. [Online]. Available: https://textadventures.co.uk/quest/. [Accessed 11 August 2020]. |
| [13] | 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]. |
| [14] | T. Rothamel, "The Ren'Py Visual Novel Engine," [Online]. Available: https://www.renpy.org/. [Accessed 6 August 2020]. |
| [15] | Eastgate Systems, Inc., "Storyspace: Storyspace," 2020. [Online]. Available: http://www.eastgate.com/storyspace/. [Accessed 3 August 2020]. |
| [16] | Interactive Fiction Technology Foundation, "The Treaty of Babel (Revision 9)," 24 October 2014. [Online]. Available: http://babel.ifarchive.org/. [Accessed 10 August 2020]. |
| [17] | Interactive Fiction Technology Foundation, "The Treaty of Babel (Revision 10)," 23 January 2021. [Online]. Available: https://babel.ifarchive.org/babel\_rev10.html. [Accessed 5 March 2021]. |
| [18] | 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. |
| [19] | E. J. Aarseth, Cybertext: Perspectives on Ergodic Literature, Baltimore, MD: Johns Hopkins University Press, 1997. |
| [20] | M. Bernstein, "On hypertext narrative," in *HT '09: Proceedings of the 20th ACM conference on Hypertext and hypermedia*, Torino, 2009. |
| [21] | H. K. Rustad, "A Four-Sided Model for Reading Hypertext Fiction," *Hyperrhiz: New Media Cultures,* vol. 6, 2009. |
| [22] | N. Gibbins, "Telling Tales - EdShare Southampton," 6 November 2019. [Online]. Available: http://edshare.soton.ac.uk/20145/. [Accessed 21 September 2020]. |
| [23] | M. Pavić and S. Sofrenovic, "The Glass Snail," Word Circuits, August 2003. [Online]. Available: http://www.wordcircuits.com/gallery/glasssnail/. [Accessed 17 September 2020]. |
| [24] | 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]. |
| [25] | 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]. |
| [26] | 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]. |
| [27] | Spike Chunsoft, "Zero Escape: Zero Time Dilemma," Aksys Games, Minato City (Tokyo), 2016. |
| [28] | 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]. |