Cyber Panic

David N. Cole

CST-451 Capstone Project Proposal

Grand Canyon University

Instructor: Professor Mark Reha

Revision:

Date: 9/17/2023

**ABSTRACT**

My project proposal is a game called Cyber Panic. The idea behind the game is a pseudo-RPG card game. The player has an HP pool called “software” and they must patch their own software and attack their opponent's software with viruses and glitches. The aim of the game is to crush an opponent’s software into bug ridden virus infested mess.

The gameplay is as follows. The players get a small hand to play with but no deck or discard; what the player starts with is what they end with. Cards in the hand will need to be swapped with cards in play if the player wants to use their ability. Additionally, each player only gets a few actions per turn and abilities have cooldowns, meaning they can only be used again after X number of turns. The cards available for play will be viruses & glitches which attack the opponent, patches which restore the software, firewall which gives the software a shield or HP buffer, and worms, which attack directly through shields.

In order to mark this project as a success a game must be able to be played to completion. Secondly, the AI that will be developed for the project’s sake must behave accordingly and not just mash the first available ability every turn. Lastly, each card element must be able to be executed according to it’s description. For example, if the virus is to reduce software HP, then, when played, the software HP should be reduced.

|  |
| --- |
| History and Signoff Sheet |

**Change Record**

|  |  |  |
| --- | --- | --- |
| **Date** | **Author** | **Revision Notes** |
|  |  | Initial draft for review/discussion |
|  |  |  |
|  |  |  |

|  |
| --- |
| **Overall Instructor Feedback/Comments** |

|  |
| --- |
| **Overall Instructor Feedback/Comments** |

**Integrated Instructor Feedback into Project Documentation**

Yes  No

**Project Approval**

Professor Mark Reha

**TABLE OF CONTENTS**

Project Overview and Project Objectives 4

Project Scope 5

Project Success Measures 6

Project High-Level Solution 7

Project Controls 8

Project Cost and Schedule 10

Appendix A – References 11

Appendix B – Copyright Compliance 12

Project Overview and Project Objectives

**State the Problem and Background**

The project being proposed is a turn based card game. The overall idea is going to be a game about “software.” The software is effectively the HP pool. Viruses and glitches damage opponent HP. Patches heal HP. Firewalls grant barriers. The idea is very loosely based on a game I wanted to make a few years ago, when I started becoming serious about learning code.

The reason for this choice is that I prefer a more creative approach to logic, as can be applied to game development. Web development, and some other applications, require a specific flow and the creativity comes with the design layout. Additionally, given that I have a greater familiarity with game development, with the time restrains on the project, I chose this project to accommodate my schedule.

**Christian Worldview**

Firstly, as it pertains to a christian worldview, the game I am putting forth does not have any demonic or occult elements. It is a minor issue as far as art is concerned, but it is a neutral ground that stands to invite all to the table. This is a spiritual element for me as some number of people in my circle turn away from Jesus and seek salvation in star gazing or sparkly rocks.

Additionally, the theme of the game has the potential to stand as a public service announcement to educate players on the frailty of software. It is our duty to love our neighbor, and the game was originally inspired to foster an intrigue of how malware works. This is my way of incorporating an ethical element into the game. I do not want people to fear technology, but to know how to navigate around it.

**Project Objectives**

List objectives that will be used to measure project success.

The first objective that will be used to mark project success will be playability. I foresee that the testing phase will be developed with a simple AI in order to finish a game to completion. From that point it would be a matter of fine tuning the system to navigate to different pages on completion.

The second objective to measure project success is intentional flow. By this I mean the AI does what it is intended to do. All elements put forward in the proposal are incorporated at least in a simplistic form. They can develop into more complex elements, but as of now, what is proposed is a bare minimum for a functioning game. These elements are that viruses damage hp, patches recover hp, firewalls add an hp buffer, and worms bypass firewall buffers and attack hp directly.

**Challenges**

The challenges faced in the course of the project will firstly be time restraints. This first week was a bit of an anomaly in that I did not know what to expect prior to the start of this project, and, as such, I was delayed in choosing a project. However, going forward, between work and family, time is limited.

Subsequently, I believe the execution of the project may be impacted by my understanding of the finer details. One such example would be incorporating UI elements in a software tool such as Visual Studio or JetBrains Rider.

**Benefits and Opportunities**

Because this game is a reduced variant of another idea, it can be used as a springboard to prototype I genuinely wanted to create. Beyond that I do not forsee many other opportunities that could arise from this game.

***NOTE: If necessary, you may add subsections to those listed in order to match the requirements in the assignment description. Do not remove any top-level sections (those that are listed in the Table of Contents).***

Project Scope

1. Give a clear, concise statement that states the scope of the project. This should also include items that are to be out of scope.
2. Use the template to list all known stakeholders and contacts, if applicable, including self (for some projects self may be the only name listed)

|  |  |  |
| --- | --- | --- |
| Stakeholder Name | Role(s) | Responsibilities |
| Nate | Developer | Game elements (abilities and values) |
|  |  | AI behavior |
|  |  | Procedural logic |
|  |  | UI development |

1. List the work breakdown required to satisfy the project objectives. Identify teams and other resources that may be required to successfully complete the project.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Work Breakdown Structure | | | | | | | | | | |
| ID | Task | Dependencies | Status | Effort Hours | Cost | Start Date | Planned Completion | Estimate to Completion | Actual Completion | Resource |
| 1 | Game AI | N/A | Incomplete | 0 | ??? | ??? | ??? | 15 | ??? | ??? |
| 2 | Card elements | N/A | Incomplete | 0 | ??? | ??? | ?? | 15 | ??? | ??? |
| 3 | Game logic | N/A | Incomplete | 0 | ??? | ??? | ??? | 20 | ??? | ??? |
| 4 | Login | N/A | Incomplete | 0 | ??? | ??? | ??? | 8 | ??? | ??? |
| 5 | Login UI | N/A | Incomplete | 0 | ??? | ??? | ??? | 4 | ??? | ??? |
| 6 | Game UI | N/A | Incomplete | 0 | ??? | ??? | ??? | 10 | ??? | ??? |

Project Success Measures

1. Describe what measures will be used to calculate project success.
2. Use the template to list the project completion criteria.

|  |
| --- |
| Project Completion Criteria |
| 1 - Does the game play to completion |
| 2 - Does the AI behave appropriately. |
| 3 – Do the game elements (player & AI actions) function according to their defined traits |

1. Use the template to list the project assumptions and constraints, if applicable. An assumption is an educated guess that a likely condition or circumstance is presumed to be true. A constraint is a limiting condition or circumstance that defines the project boundaries. Assumptions allow the project to succeed. Constraints restrict or limit the project execution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Assumptions and Constraints | | | | | |
| ID | Description | Comments | Type | Status | Date Entered |
| 1 | the game will not be published publicly | the game will be developed originally with only single player | Assumption |  | 9/17/2023 |
| 2 | Time limitations | 2 available hours on week days, 8 available hours on weekends (sunday & monday). | Constraint |  | 9/17/2023 |

Project High-Level Solution

**Introduction**

The objective of this project is to, hopefully, demonstrate my ability to put together a series of mechanics as they pertain to a game. The mechanics will be simple as an OOP approach. When developing the elements for the game, effectively attacking and healing, I want to create the system to be modular in order to allow for potential updates.

The assumptions are that the game is not going to be published online and that the login elements, if included, will be performed on the local machine. In mentioning publishing online, I mean, specifically, a cloud hosting service. Then with the login elements, I want to be comfortable utilizing a MySQL workbench to process logins.

There should be little data being inserted into the project beyond the account name. The rest of the input will be happened with buttons and click listeners.

**Solution**

This project will likely be developed with C# in Visual Studio or JetBrains Rider. As of now, I do not have any UML or flowchart diagrams. However, the flow of the game will be as followed:

* Game start
* 1-2 cards on table
* 2-5 cards in hand
* Player turn
* Action currency available (2 actions per turn or some such)
* Actions
  + Swap card on table with card in hand
  + Play action associated with the card (One action per card???)
    - Only table cards can directly do anything
  + Draw card (maybe)
* After action currency is exhausted, change turns
* After a player’s “software” has reached 0 HP, the opposing player wins.

The cards will be categorized into the main categories and will have one or two abilities per card

* Virus (attack)
* Glitch (attack/debuff)
* Patch (Heal)
* Firewall (shield/HP buffer)
* Worm (firewall bypass)

Project Controls

1. Use the template to define the risk and list the steps to prevent the risk from occurring or the steps to minimize the chances of it happening. The contingency plan describes alternative solutions to reduce the impact of the risk. An example of a contingency plan is to provide the customer a temporary web server if there are delays in delivery/completion. If the risk has already happened then provide an entry in the issue log.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Risk Management | | | | |
|  | **Risk Probability** | **Risk Impact** |  |  |
| **Event Risk** | **(high, medium, low)** | **Risk Mitigation** | **Contingency Plan** |
| What is the risk? | What is the probability? | What is the impact if the risk occurs? | What can be done to minimize the risk? | What can be done to minimize the impact of the risk? |
| There are few software related risks | low | Slight delays | Not much | Delays will be delays |
|  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Issues Log | | | | | | | | |
| **ID** | **Description** | **Project Impact** | **Action Plan/Resolution** | **Owner** | **Importance** | **Date Entered** | **Date to Review** | **Date Resolved** |
| 1 | What is the issue? | How will this impact scope, schedule & cost? | How do you intend to deal with this issue? | Who manages this issue? |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |

1. All projects have either anticipated and planned or unexpected changes. Describe any issues in management or change management due to the anticipated and planned or unexpected changes. Use the template to list anticipated and planned or unexpected changes.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Change Control Log | | | | | | | | | |
| **ID** | **Change Description** | **Priority** | **Originator** | **Date Entered** | **Date Assigned** | **Evaluator** | **Status** | **Date of Decision** | **Included in Rev. #** |
| 1 |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |

1. Use the template to describe how the end user is involved in the software development, if applicable. Include relevant information about meetings, reviews, presentations, etc.

|  |  |  |  |
| --- | --- | --- | --- |
| Roles and Responsibilities | | | |
| Name | Team | Project Role | Responsibility |
|  |  |  |  |
|  |  |  |  |

Project Cost and Schedule

1. Create a spreadsheet of costs related to the scope of the project, with all necessary material and elements required to accomplish it effectively, and the allocated resources. Note: If the project being designed will not require any cost calculations, please state that here.
2. Create a project schedule after all project tasks have been defined and prioritized.
3. Set a programming schedule by implementing work breakdown and task time estimates. Create a timeline with dates for completion of key components of the project.

Appendix A – References

*List all references using APA style*

Appendix B – Copyright Compliance

For each external technical tool or code used, provide a reference to its copyright policy, clearly showing your right to use it. For each external technical tool or code used, detail how you used it, how you adapted it, how you modified it (if permitted), and why did you use it as opposed to write your own. Only a small portion of your project may rely on external code. When code libraries/packages are used, explain why this was necessary/required/recommended. Seek instructor approval for using external resources prior to beginning to work on the project.