Program Requirements Document

**Description**

The game is a text-based role playing game in which you take the role of a computer hacker. Just after winning a cyber security competition, his one and only friend, a cat, is kidnapped by an unknown organization! He receives a message stating that unless he pays a hefty ransom of $10,000,000.00 within 90 days, he will never see his beloved friend again.

Being a cyber security major at his local college, he knows that a good hacker can make a lot of money quick and decides the only way to get the huge ransom together in time to save his friend is by turning to a life of cybercrime.

The game begins in his home town of Rexburg, ID. During the game you will develop your hacking skills by studying attack methods, taking courses, getting infosec certifications which you will then use to carry out cyber attacks. In order to execute your attacks, you will need equipment and resources, things that don’t come cheap. You work for various criminal organizations, who will pay you for your skills, but they know how sneaky you hackers are and insist that all payments be done in person, cash only, meaning you will have to live wherever the attack takes place. The United States government also doesn’t take too kindly to people who make a career of cybercrime, so you will need to relocate frequently to avoid being caught by the FBI… but with new locations come new opportunities. The game ends when the allotted time has passed, you get caught by the FBI or when you have enough money to pay off the ransom.

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**Description of end user stories**

**Start Program**

The end user enters the command to start the program. The computer displays a banner screen with a short description of the game. The player is prompted for and enters their name. The user enters their name and the computer displays a personalized welcome message and the Main Menu. An error message is displayed if an invalid name is entered and the player is prompted to re-enter a valid name or quit.

**Main Menu**

Display the following menu.

N - New game

S - Open Save File

H - Help (How to play)

Q - Quit

The end user (player) enters the selected item. The computer then displays the selected end user story. If an invalid menu item is entered, the computer displays an error message and redisplays the main menu. The program terminates when Quit is selected.

**Help Menu**

Display the following menu.

1 - Object of the game

2 - Stat description

3 - Relocating

4 - Jobs

5 - Developing skills

6 - Attacking

Q - Quit

The user selects one of the options and the appropriate help message is displayed. If Quit is selected, either the Main or Game Menu is displayed depending on which one was previously displayed before this Help Menu was displayed. An error message is displayed and the menu is redisplayed when an invalid menu item is selected.

**Start a Game**

The player enters New Game. The end user is then prompted to enter the name of their character (the hacker). The computer checks to see if a valid name has been been entered. If an invalid value is entered, display an error message and prompt the player to enter a valid name.

The program then creates and initializes all of the objects need for the game. A description of the story and the situation your character is in is then displayed. The Game Menu is then displayed.

**Game Menu**

The computer then displays the game menu below along with the amount of days until the time limit is reached, how close the FBI is to catching you and how much money you have towards your goal.

Days until ransom is due: XX

FBI detection: XX%

Money: $X,XXX/$XX,XXX,XXX

1 - Character Stats

2 - Available Jobs

3 - Available Courses

4 - Equipment

5 - Store

6 - Relocate

7 - Pay Ransom

8 - Save Game

9 - View map

10 - Help

Q - Quit

The user enters a choice and the computer switches to the selected view. When Quit is selected, display the Main Menu. If an invalid input is entered, an error message will be displayed asking the user to choose a valid option.

**Relocate**

The computer displays a message prompting the player to enter the city they would like to relocate to. The player enters the city name. If they do not have enough funds to move, an error message will be displayed saying “Not enough money” and they will be prompted again to enter a different city. If they enter an invalid city name a message will be displayed saying “Not a valid city”, and they will again be prompted to enter a city name. The user may type ‘Q’ to quit and the game menu will be displayed.

If they have enough money and choose a valid city then they will be moved to that city. Money will be subtracted from their character, days will be subtracted from the timer and detection % will go down (dependent on how far they moved). A welcome to “City name” message will be displayed confirming to the player that the character has moved.

An equation will be used to calculate the cost of the relocation: ((Distance of city A + Distance of city B) \* 100) + (# of times moved \* 100) = Cost

An equation will be used to calculate the reduction in detection %: Detection % - ((Distance of city A + Distance of city B) \* 5) = New Detection %

**View Inventory**

The computer displays a list, showing all resources/equipment that the character currently possesses with a brief description of what they do as well as quantity. A message saying “Press enter to return to Game menu” will be displayed. Hitting the Q key will bring them back to the Game menu.

Example:

{Name}’s Inventory

Equipment:

x1 Laptop - A basic mobile computer that can launch low-end attacks

x1 Email Server - An email server that allows you to send attacks via email

x1 Wifi-Card - A Wireless card that supports packet-injection allowing for low-end wifi attacks

Resources:

x3 Proxy Service - A service that allows you to launch attacks from different locations, increasing your stealthiness by 10.

X4 VPN - A private network using a proxy server to hide your I.P. Address and therefore your actual location, increasing stealth by 15.

x5 Botnet - A group of 1,000 infected computers that can carry out DDoS attacks.

[Press Q to Exit]

**View Available Hacking Jobs**

The computer displays a list of all the available jobs in the city in which the character lives with the pay displayed for each job. The player then types the number associated with the job to accept it and is taken to the attack menu. The player can also type ‘Q’ to return to the game menu. If an invalid value is entered an error message will be displayed saying “Invalid job, please enter a different number”.

Example:

Hacking Jobs in {City}

1 - Hack a local wifi password (+$100)

2 - Steal Credit Card numbers (+$1000)

3 - Crash a rival Bank (+$10,000)

**View Equipment/Resources Store**

The computer displays a list of equipment and resources available in that city with their cost and a description of what the equipment/resource does. The user then types the number associated with the Equipment/Resource and the item is added to their inventory and the money is subtracted from their character’s total. The user can then type ‘Q’ to be taken back to the game menu.

Example:

{City} Store

x1 VPN Services ($1000) - Adds +1 to your stealth skill

x1 Email Server ($2000) - Allows you to perform social engineering attacks

x1 Supercomputer ($5000) - Allows you to carry out brute force attacks

x1 Botnet zombies ($10,000) - Allows you to perform DDoS attacks

x1 Hacking Tools ($500) - Software used to carry out attacks, +2 to hacking skill

**Develop Skills**

The computer displays a menu of all the different classes/courses/study methods available to increase their character stats with a monetary cost, time cost and description for each. The character enters the number associated with the class/course/study and the costs are subtracted from their profile. The skill points are then added to their profile and a message confirming the action will appear. If they do not have enough resources to take the class/course/study then an error message will appear telling them “You do not have enough resources for that class” and they will be brought back to the Develop Skills menu. They may enter ‘Q’ to exit and the game menu will be displayed.

Example:

{City}

1 - Self-Study (+1 Hacking, Cost: $0, Time: 1 Day)

2 - Certification Boot camp (+5 Hacking, +1 Social Engineering, Cost: $5000, Time: 7 Days)

3 - Psychology class (+3 Social Engineering, Cost: $600, Time: 3 Days)

Q - Quit

**Check Character Stats**

The computer will display a list of the different skills and a description of each along with the character’s current level in that skill. The player may enter ‘Q’ to quit and the game menu will be displayed.

Example:

{Name}

Hacking: 10 - Allows you to perform high-level attacks, increases % chance of success

Social Engineering: 5 - Allows you to do social engineering attacks, helps improve success in Social Engineering attacks

Stealth: 3 - Lowers the rate of detection generated by your attacks

[Press Q to return to Game Menu]

**Attack Menu**

The computer will display a list of different attacks that can be used to carry out that job with their detection cost, money cost, time cost, equipment needed, % chance to succeed and skill requirement. The user then enters a number associated with the attack to carry it out and the computer first determines checks their profile if they meet the requirements, if they do not, an error message will be displayed that says “you do not meet the requirements for that attack” and the attack menu will be redisplayed. If they do meet the requirements the costs are added/subtracted to their profile and then the computer determines if it succeeded or not. If it is unsuccessful a message will be displayed telling the player that the attack was unsuccessful. If the attack was successful, the money associated with that job is added to their profile. The player may also type ‘Q’ to exit and be brought back to the Jobs Menu.

Two complex equations will be used to calculate the % chance of success and the % detection of the attack:

((Characters current skill level in Hacking - Skill Level Required) \* 5) + Original chance of Success = New Chance of Success

Detection Increase - (Character's current skill level in Stealth \* 5) = New Detection Increase

Example:

{Job}

1 - Brute Force Attack

Skills Required: Hacking - 4, Social - 0

Equipment Required: Supercomputer

Detection: +30%

Chance of Success: 80%

Time Cost: 3 Days

2 - Social Engineering Attack

Skills Required: Hacking 1, Social 4

Equipment Required: Email Server, Laptop

Detection: +10%

Chance of Success 30%

Time Cost: 1 Day

**Save the Game**

The end user is prompted to enter the file location where the game will be saved. If a valid file location is specified, save the the player, profile, inventory items, progress data to a file. Display a message saying that the game was saved successfully and then return back to the Main Menu. An error message will be displayed if the end user enters an invalid file location and the end user prompted again to enter a valid file location.

**Pay Ransom**

Every X days, the organization will approach the user demanding the ransom. They will be prompted to pay some of the required ransom, the user will enter an amount. If they enter an invalid value or the value 0, the organization will leave and nothing will change and the game menu will be displayed. If they enter a valid amount, the amount will be subtracted from the total ransom and their profile and an extension of days will be added to their time limit depending on how much was paid. The user can also access this prompt from the game menu and pay part of the ransom to get an extension of days. If the total ransom is paid a continuation of the story will be displayed and the player will have won the game.

A complex equation will be used to calculate how many days are added to the total

Math.round(Amount paid / 10000) + Days left = New Days left

**View Map**

The computer will display a map of all the cities, the user can enter the name of a city to get description of the city along with a cost of how much time/money it will take to move there which will be determined by the distance from their current location and how many times they have previously relocated. A time cost based on distance will also be calculated along with a reduction of detection % and displayed to the user. The computer will then prompt them to enter another city name. If an invalid city name is selected an error message will appear. The user may type ‘Q’ to quit and the game menu will be displayed. Users cannot go back to previous cities or they will be caught by the FBI.

An equation will be used to calculate the cost of the relocation: ((Distance of city A + Distance of city B) \* 100) + (# of times moved \* 100) = Cost

An equation will be used to calculate the reduction in detection %: Detection % - ((Distance of city A + Distance of city B) \* 5) = New Detection %

**Reloading a Saved Game**

The end user is prompted to enter the file location where the game was saved previously. If a valid file location was specified, read the player, game progress, map and inventory items data from the file. Set the current game to the game read in. Display a message saying that the game was retrieved and then display the Game Menu. An error message will be displayed if the end user enters an invalid file location and the end user prompted again to enter a valid file location.