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Functional Requirements

ID	1
Description	Create a website that has a file traversal vulnerability
Rationale	This will be the first website that a user can break and begin discovering the story. This would also teach about POST/GET HTML methods and will be utilized in future websites.
Fit Criteria	There will be a website with the vulnerability to access a specific file
Priority	
Dependencies	

ID	2
Description	Create a website that has a SQL injection vulnerability
Rationale	This will be a future website that the user can use. The idea is to teach the user about SQL injections and how they can be used to gain unauthorized access to a database and thus get password to an admin account.
Fit Criteria	There will be a website with an SQL vulnerability. Thus there will also be a database that contains login information.
Priority	
Dependencies	

ID	3
Description	Create a website that has a Buffer Overflow vulnerability
Rationale	This will be a future website that the user can attack. This mission will teach the user about buffer overflows and remote code injections to run a script and gain access to an admin terminal
Fit Criteria	There will be a website that has a buffer overflow vulnerability and a script to run that will give the user access to an admin terminal
Priority	
Dependencies	

ID	4
Description	Create a website that utilizes a FTP server and has a file upload vulnerability
Rationale	This will be a future website that the player can attack and by uploading a script file, it will run a remote code execution.
Fit Criteria	There will be a website that has access to an FTP server and susceptible to a file upload attack
Priority	
Dependencies	

ID	5
Description	Create a website that has a Cross-Site Scripting vulnerability
Rationale	This would be an additional website or tied into a previous website as a way to progress into hints or clues. XSS attacks are a common attack method, and are something that people may want to learn how to defend and implement.
Fit Criteria	Create a website with a XSS vulnerability
Priority	
Dependencies	

ID	6
Description	Have a website that has a PCAP for users to download and analyze for a clue or answer
Rationale	This would teach the fundamentals of Wireshark (a networking packet capture analysis tool) and can allow for users to find a hidden flag or clue or key in a packet or network message.
Fit Criteria	Have a PCAP hidden on one or more of the websites that contains a hint, clue, or answer.
Priority	
Dependencies	

ID	7
Description	Have multiple websites use port forwarding techniques and host websites on unknown or random ports
Rationale	This would teach the players about NMAP and how to properly scan a website, connect to a specific port, and see what other ports are open for them to connect to.
Fit Criteria	Have 3+ servers host their website on a port that is not 80 or 443
Priority	
Dependencies	

ID	8
Description	Create the Player VM
Rationale	This VM will hold the players' progress through the missions and host the necessary software to complete the game.
Fit Criteria	There will be a VM that the players can connect to that can access the other web servers
Priority	
Dependencies	

ID	9
Description	Upload the server VMs to CSU's ESXi server
Rationale	The ESXi server will host the VMs and websites for the players to interact with
Fit Criteria	All VMs are uploaded to the server
Priority	
Dependencies	

ID	10
Description	The VMs have unique IP addresses through CSU's ESXi server
Rationale	This way, when a player scans a server, they do not accidentally scan for multiple or can easily skip to the next website with out completing the previous ones. They will also be on different networks as to have a full network scan lead to only finding one website. For example, 192.168.x.x where the IP addresses are unique. The only exceptions are specific VMs that might need multiple servers.
Fit Criteria	All VMs will have unique IP addresses with different networks and IP addresses
Priority	
Dependencies	

Look and Feel

ID	11
Description	Each website will have a unique home page and design
Rationale	We want the players to feel like they are going to different webpages within the company's network or access. If all of the websites looked the same, then there would be no reason for the player to look forward to the next mission aesthetically.
Fit Criteria	Each website will have a different home page and accesses.
Priority	
Dependencies	

ID	12
Description	The Player's VM will have an onboarding document to read that has a realistic tone and feels like its from the company that they were hired by.
Rationale	When the player starts the game, they should already feel like they are having fun. This starts with the exposition of the story and their first experiences. So, from the start the onboarding document will have the main premise of the story, who their boss is, what the situation is, and why they were hired. There it would also explain the tools at their disposal and how to progress through the game.
Fit Criteria	There will be a document to tell the player how to play the game
Priority	
Dependencies	

ID	13
Description	There will be unique mission documents and briefs for each website
Rationale	When a player finishes their current mission and wants to access the next website, they should be rewarded by congratulations from their boss, and how to proceed to the next mission. This would contain story elements and make the user feel like they are moving forward on their goal
Fit Criteria	For each mission, there will be a mission orders story element that tells them what the new target is, how to get to it, and what the next goal is
Priority	
Dependencies	

ID	14
Description	There will be a unique URL for each website
Rationale	When a player accesses a specific website they don't tend to enter the website's IP address. Instead they enter something like www.website.com. Well, using URLs also show that either there is a DNS server available or if the player knows about Linux's etc/hosts file, they can have access to all websites ahead of time. Sort of as a bonus reward, but they won't know the ports and other ways to connect to it.
Fit Criteria	Each website has a unique URL added in either a DNS server or in the /etc/hosts file
Priority	
Dependencies	

ID	15
Description	The Player VM will have a background related to the game's story
Rationale	When a player starts a job and receives a "company" laptop, some companies have custom backgrounds for their employees. So when the user loads into the VM, it looks like it could be a company laptop.
Fit Criteria	There will be a non-default desktop background
Priority	
Dependencies	

Usability

ID	16
Description	There will be multiple hints and clues available to the user
Rationale	There can be leaps in logic and difficulties making connections if someone has never played a game like this. So, there needs to be multiple clues for the user to figure out what they need to do. This includes but is not limited to, additional webpages that give added context to the problem, leaked messages and logs that show content, and Flint, an insider that is providing hints available for more direct and simple hints
Fit Criteria	For each mission, there are at least two mission clues on the website or mission orders, and at least two Flint hints available through the computer.
Priority	
Dependencies	

ID	17
Description	There will be two certificates of completion that the player can receive
Rationale	The final mission will require the player to choose between one of two teams. So, it would feel weird and more personalized to their experience based on what team they sided with. They would also be able to print it out or save it to a flash drive.
Fit Criteria	There will be a way for the player to receive a Certificate of Completion from the team they sided with to print or download with their name on it.
Priority	
Dependencies	

ID	18
Description	There will be a special pop-up congratulating the user if they do not reach out to Flint
Rationale	While completing the game itself will be challenging, there should be a special reward for the player if they did not use the Flint hints (easy mode). There will be story elements saying Flint is trustworthy, but the company would prefer not to use him and to reach out as a last resort.
Fit Criteria	There will be a special pop-up or message available to the player if they complete the game without using Flint's hint commands.
Priority	
Dependencies	

ID	19
Description	There will be an instructor's manual for each mission
Rationale	Since each mission can be completed individually, an instructor or class could work their way through the game. However, if a student is stuck or needs help, before reaching out to Flint, they could ask the instructor. This manual would have the intended answer and some possible other options the players can achieve their mission. It would also include detailed explanations about how the exploit works and how it can be mitigated.
Fit Criteria	For each mission there will be an instructor's manual that explains the known solutions, exploits, and why the systems work.
Priority	
Dependencies	

ID	20
Description	There will be a vulnerability and exploit guide for each mission
Rationale	After the players complete the mission and unlock the next mission, there will be a file that explains the vulnerabilities and exploits in more depth. This would allow the player to progress if they would like to, read how what they broke into works (or better yet, doesn't work), and how to fix it. It would be similar to the instructor's manual but doesn't show answers and focuses more on the player's recent mission(s).
Fit Criteria	There will be a vulnerability and exploit guide available for players that explains the vulnerabilities on the website, why they are vulnerable, and how to fix them for each mission that appears after they complete the mission.
Priority	
Dependencies	

ID	21
Description	Ensure that the Player VM can reach the internet
Rationale	Players should have access to outside resources and help for solving these problems. If they find through clues and hints about the exploit type and want to find ways for them to start attempting, they need access to the internet. You would also have access to those resources if you were working in a corporate environment as well.
Fit Criteria	The player VM can access Google, YouTube, and other outside websites
Priority	
Dependencies	

Performance

ID	22
Description	All intended answers are tested and checked for precision and accuracy
Rationale	Because there are multiple methods to achieve the goal, players may accidentally break the systems too much. So testing for redundancy and ensuring that multiple people can access the websites at the same time is required
Fit Criteria	Each solution is tested 10 times at a minimum
Priority	
Dependencies	

ID	23
Description	Multiple players can access the websites at the same time
Rationale	Allowing multiple players to play at the same time builds teamwork and problem solving. So, the websites should be able to hold 5 users on the website at the same time.
Fit Criteria	The websites can pass a stress test of 7 users at a time
Priority	
Dependencies	

Maintainability and Support

ID	24
Description	There will be a Maintainer's manual
Rationale	In the event that I am unavailable, the scripts are not working, or the user does not know how to operate the ECXi server, there will be an in-depth manual on how to turn on the servers, ensure the networking is correct, what the scripts are and do, how to access the player VM's admin account, and how to utilize the snapshots of the VMs.
Fit Criteria	There will be a maintainer's manual
Priority	
Dependencies	

ID	25
Description	Each VM will have a start-up script to start all required services and servers automatically
Rationale	In the future, when I am not the maintainer of the program, there will be confusion on how to start the services and servers in the correct way to allow for the vulnerabilities. So, the scripts should help mitigate confusion. These scripts should be blended into the /bin folder and not be named startup.bash, so players do not view and get an extra advantage. If the player did go through all the scripts, then props to them.
Fit Criteria	Each VM will have a script that will run at start-up resetting the servers to their intended state.
Priority	
Dependencies	

ID	26
Description	There will be a way for a player to give feedback while playing the game
Rationale	I intend to make future iterations of this game and users giving feedback while playing the game and giving their frustrations before solving the problem and beating the game allows for more responses and more honest feedback. This will likely be a Google Forms sheet that would get sent to my email available on the Desktop as a weblink
Fit Criteria	There will be a link to a Google Forms survey for feedback on the Player VM Desktop
Priority	
Dependencies	

ID	27
Description	Each VM will have snapshots taken before release
Rationale	In the event that the players break the website, the VM, or server too much, there should be a snapshot available for the maintainer to revert to. This snapshot should be taken once all changes, testing, and story elements are finalized for this image.
Fit Criteria	There will be a VM snapshot of each VM
Priority	
Dependencies	

Security

ID	28
Description	There are 10 different user accounts on default user permissions
Rationale	To ensure that no player can get access to another player's progress, there should be a way for players to access their user with no sudo privileges unless required
Fit Criteria	All of the player accounts do not have admin/sudo permissions
Priority	
Dependencies	

ID	29
Description	There will be an Admin account with full permissions
Rationale	There will need to be an account that can access any account and reset the player accounts or make adjustments if needed
Fit Criteria	There will be an Admin account with Sudo permissions
Priority	
Dependencies	