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22c:096:002 Topics in Computer Science II
Computer Game Design
Midterm Exam

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Question #1

My spell casting system would involve a player's character learning how to create and manipulate the natural world elements fire, water, light, electricity, earth, and wind. The system be best designed for puzzle/adventure games, such as *The Legend of Zelda* series.

As the game progresses, the character's learnt elements will appear in a row along the bottom of the screen and will have list separate options to create or manipulate the element. The element options will “level up” at certain character levels, similar to *Pokemon*, where the characters learn more powerful versions of the same attack as they level up; this will allow them to perform stronger and stronger attacks to defeat stronger enemies or solve puzzles that require stronger attacks.

After the creation options for each element are mostly learnt, characters will begin to learn the manipulation techniques, allowing them to move the elements in different directions or patterns, such as spirals and zigzags.

Here's a basic table of what the elemental attack levels could be.

Element\Level	1	2	3
Fire	Fireball	Fire Blast	Explosion
Water	Water Beam	Waterfall	Freezing Ice
Electricity	Defibrillator	Electric Burn	Thunderbolt
Earth	Rock Wall	Boulder Toss	Avalanche
Light	Flash Light	Searing Light Beam	Exploding Light Beams
Wind	Soft Wind	Strong Gust	Cutting Wind

Each attack will deal increasingly more damage as players level up. They can level up by solving puzzles or defeating enemies. Each level would be centered around learning and using one or more of the elements. On the first level, the players will learn the Fireball to light up a room, or something simple like that. As they progress through the level, they would learn the Levels 2 and 3 attacks as well as the Level 1 attacks, and eventually use the Level 3 attack against a boss.

The elements would progress from there, one or more elements at a time. For example, Soft Wind would probably be learned to spin a large pinwheel/windmill enough to rotate a bridge and Rock Wall would help block an avalanche from coming down the mountain to save a city.

Later, the more complicated elements, such as electricity, would require the use of manipulation techniques to move elemental attacks around to solve puzzles. For example, there would be a maze/labyrinth that requires players to hit multiple targets in on opposite sides of the maze at the same time with electricity in order to open a door. So then they would begin to learn the manipulation techniques. They can also learn the

manipulation techniques for other elements that are not part of the level too, so they can use it later on in the game if they want to.

Then, nearing the end of each game, the player has to use a combination of the elemental attacks and manipulate several of them at the same time to solve puzzles, before confronting the final boss. The boss would have a combination of every element that would require players to do respond correspondingly. For example, the boss would blow out the torches in the room, making it dark. The player would have to respond by relighting the torches with fire and then attacking him. If the boss removes the torches completely, the player can use light to brighten the room. Then by flooding the room and submerging the boss, the player could either try to electrify or drown the boss. Basically, the final boss fight would be a combination of the elements.

Some benefits of using the powers in the puzzles may not always be for furthering their progress in the game. Sometimes, the player can use their powers to gather money in previously unreachable places. For example, they can use Freezing Ice to freeze a river to cross and gather money in a small cave that was previously unreachable.

Here's a quick rundown of what the spells can do:

Name	What it does
Fireball	Creates a fireball to burn an enemy, catch things on fire, or melt something. Can be used to light torches or to burn evidence.
Fire Blast	Burns a large area, like a large building or warehouse, strikes several enemies simultaneously, or evaporates large body of water or melts large glacier. Considerably stronger than fireball. Not recommended for small

	things.
Explosion	Blows things up with fire from the inside-out. Used to destroy boulders and large buildings, or can be used to kill individual enemies.
Water Beam	Creates a beam of water. Can be used to fill (very slowly) a hole to create a lake, to strike enemies or small obstructions, and to water plants.
Waterfall	Drops a huge amount of water on a target, similar to a waterfall. Can be used to fill an empty lake faster, strike tougher enemies or larger obstacles, and to restore rivers/waterfalls.
Freezing Ice	Freezes anything it touches, including solid or liquid targets, and can make them more fragile to easily break. Can also create sleet and hail to attack enemies with.
Defibrillator	Shock a close-by enemy that can be touched (touching a poisonous enemy or scalding hot target will hurt the character).
Electric Burn	Shocks close-by enemies without touch, and causes a burn. Can also spark fires on flammable items, like grass.
Thunderbolt	Long reaching electric bolt that can strike enemies or targets from a distance without need of touching them. All electricity attacks can conduct through water or other conductive material, allowing character to reach enemies or targets if cannot through air.
Rock Wall	Creates a large protective wall from the ground.
Boulder Toss	Allows the character to lift and toss a boulder at an enemy or target.
Avalanche	Causes avalanche by temporarily creating a mountain and causing rocks to tumble down the side to hit the enemy.
Flashlight	Brightens dark areas.
Searing Light Beam	Creates light beams to burn through targets.
Exploding Light Beams	Creates light beams that explode upon contact with a hard surface (like a wall or a ground).

Soft Wind	Clears off dust or leaves to reveal secrets on the ground/walls
Strong Gust	Blows away toucher objects, such as large rocks or tough enemies.
Cutting Wind	Wind blows so sharp, it can cut targets.

Manipulation attacks can move the attacks around objects to help reach targets that aren't reachable head on, or attack multiple enemies simultaneously that are surrounding the character.

Name	What it does
ZigZag	Moves the elemental attack back and forth.
Spiral	Moves the elemental attack in a spiral, moving outwards from the body.
Dome	Constrains the elemental attack to a certain area around the body, but hits everywhere within that area.

Question #2:

Gameplay can be defined as “what makes a game fun.” While a game's graphics may help with gameplay by helping with clarifying the player's options, graphics can be made for simple aesthetic reasons, or enhance the game's story-telling capabilities.

One of my favorite examples of a game's graphics that are not used for furthering gameplay is *The Legend of Zelda: Ocarina of Time 3D* version. After the original game's initial version was released for the N64 console, a second version was re-released for the Nintendo 3DS version with enhanced graphics (https://en.wikipedia.org/wiki/The_Legend_of_Zelda%3A_Ocarina_of_Time_3D). Some of the enhancements added to the game include more detailed textures and a higher polygon count, smoothing out corners and edges while adding texture and depth

to the bosses' body. However, even with these changes, the gameplay basically stayed the same, as no level layouts, interactions, or music were even changed with the game.

Another example is a game called *Goldeneye: 007* for the N64. As with the *Ocarina of Time* game, a newer version of the game was made with enhanced graphics titled *Goldeneye: 007 Reloaded*, updating the game with voice actors and compatibility for newer platforms (http://en.wikipedia.org/wiki/GoldenEye_007_(2010_video_game)). The newer version of the game involves a graphics enhancement as well as some additional gameplay elements due to more powerful technology. While the better graphics allow for clearer and more realistic action sequences (silently choking enemies from behind rather than a karate chopping them at the neck), the gameplay elements are still basically the same with both games: players are given guns with limited ammo to begin with, players can still silently kill enemies from behind, cameras can be disabled by shooting them, similar level objectives, etc. In essence, the gameplay, actions, and controls didn't really change between the games, but the game's graphics update made it more aesthetically pleasing. So while it does help the gaming experience, it doesn't necessarily mean that it helps clarify anything for the player.

A third example of graphics not necessarily being used for the gameplay was for *Pokemon Stadium* for the N64. While the graphics are better than for its *Gameboy* predecessors, the graphics contributed next to nothing to the gameplay value, as the game could have been implemented without the graphics on a less-powerful platform. However, the fact that the graphics were available for the game makes it clear that the

graphics are not necessary for helping further the gameplay of the game.

Another example of how graphics don't necessarily need to further gameplay is in the game *The Legend of Zelda: Twilight Princess*. While some elements of the game's graphics helps contribute to the gameplay (in wolf form, players can “see” the scent trail of targets by following the cloud of smoke along the ground), many more features of the graphics contributed to the dark atmosphere that helped tell the story of the game, rather than clarify anything. One graphical addition that was not needed for helping further gameplay but was nice for storytelling was the constantly falling ash that covered the realm. While it looked nice, it had no value to clarifying anything for the player; rather, it may even get in the way by distracting players who are new to the game. When it comes to story telling, words can do the same thing on a text-based game; it's not a necessary detail for the gameplay objectives that the developers had in mind, but it's just a nice story telling piece.

Finally, the *Super Mario Kart* game spawned a successful subgenre of games, as it became the third best selling game of all time for the Super Nintendo Entertainment System (SNES) console. Over the years, not much changed with the graphics over the series of racing games for the Mario franchise. Although the number of levels and players have increased and the pixel counts have increased to match the platform's capabilities, the graphics have stayed consistent through the years. This means that a simple graphics While better graphics does indeed help make it clear what options players have when it comes to racing their opponents, the controls of the game were

what made it entertaining and engaging. Cleaner graphics, in these cases, enhances the aesthetics of the game, and makes them in general more pleasing to the eyes. However, graphics don't necessarily contribute to gameplay, as the same gameplay could be done with a racing game on the original GameBoy with poorer graphics. While it is necessary to have some graphics for a racing game of that genre, the graphics' main purpose is to make the game look good, as it's enjoyable to look at an aesthetically good-looking game.

Question #3:

Game-play is really important in developing a good game. Without it, a game will fall flat in the hands of the players, and it will not do well. Recently, I watched a video about the problem with action films that are being made today (https://youtu.be/eac0lXfMs9c), and I think some of the things that the video's maker mentioned about films can be applied to games as well.

One of the things he mentions is that good action films with good action movies will usually have good action sequences to follow; however, having good actions sequences without a good story won't make a good movie. This is one of the main problems that happened with the latest *Die Hard* film, *A Good Day to Die Hard* – too much action with too little story. The same idea can be applied to games, and game play usually needs a good story, and if the game developers don't know where they want to take the the story, they will probably make a bad game.

One example is for a game called *Superman 64*, where a YouTuber mentions in his video (https://youtu.be/YrcASn_FEnc) that the plot line of the game was poorly thought out, which gave the game's objectives “no sense of direction.”

Another necessary feature of good game play is interactivity. If it isn't interactive, it's not really a game at all. One such game is a mini game in *Penn and Teller's Smoke and Mirrors* game, where players will simply drive a bus for several hours in a row without any stops. It's not interactive at all, making it a really bad game widely hated (although it eventually gained a cult gathering).

However, games such as *The Legend of Zelda: Twilight Princess*, involve lots of interactivity *and* a great story. In this game, the hero Link attempts to save Hyrule from the darkness of the parallel dimension's Twilight Realm, which was under the rule of the tyrant king Zant. The mix of allowing Link to transform between a human and a wolf as well as a good story engaged players in a way that only a truly interactive game would. *Duke Nukem Forever,* on the other hand, an FPS game released five years after *Twilight Princess*, had a lame storyline, clunky controls, bad action sequences, and just in general awful design (https://en.wikipedia.org/wiki/Duke_Nuken_Forever) that 15 years of development couldn't save. Without good gameplay, the game will end up being a flop, and its best hope would be to gain a cult following.

Question #4:

Black and White 2

- People
- Buildings
- Animals
- Wood
- Grains
- Land
- Physical animal representations of the player
- Ores
- Water
- “Prayer Power”

Question #5:

Real-Time Games

- Stronghold
- Eve Online
- League of Legends
- Empire: Total War
- StarCraft II: Wings of Liberty

Phased Game

- Super Mario World
- Goldeneye 64
- Donkey Kong Country
- Metroid Prime
- Street Fighter

Question #6

Dungeon Master and *Wolfenstein 3D* are both first-person shooter (FPS) games, meaning that players see from the perspective of the character playing.

They both play with 3D graphics, although they both are quite elementary, as they were both limited by the technology of their times.

Dungeon Master tends to have crisper lines, and generally smaller pixels than *Wolfenstein;* however, this may be due to the fact that *Dungeon Master* only allowed players to look in one of four directions (straight ahead, to the left, to the right, or turning around), and will move along grid squares (as a grid-based game). On the other hand, *Wolfenstein's* graphics tend to be more pixelated as a trade off for the added feature of being able to turn in smaller degree increments and move smoothly along the ground, making graphic animations smoother than in *Dungeon Master.*

Wolfenstein 3D also had background music in addition to the sound effects, something that *Dungeon Master* did not have, as it only had limited sound effects from getting hurt and from enemies.

While *Dungeon Master* has four controllable characters to manage, *Wolfenstein 3D* only has one. In addition, *Dungeon Master* requires players to maintain character food, water, and sleep stats, while *Wolfenstein* simply focuses on health.

Question #7:

My idea for a game is a game of playing music, like in *Rock Band* and *Guitar Hero*. However, the major difference is that the instruments are imaginary. Instead of using real/toy instruments, instead the players will use gloves and socks with sensors attached to them.

The gloves and socks would send the information back to the computer, and based on how they play it, it will become a different instrument. For example, a player may place his hands on a table or desk, and play an imaginary piano or keyboard. Another player could play air drums by pretending to play the drum kit with his hands, and hit the base drum by tapping his foot. A third player may play the guitar/bass by how far his hands are apart, and whether his strum hand is strumming.

The game could appeal to family members of all ages because there would be songs for all ages on the game. If a song isn't included in the game by default, players would be able to download the songs they want, or possibly delete songs they are not interested in. To choose a song to play, delete, or download, the player could either use the keyboard to navigate, or use an imaginary keyboard by “typing” with the gloves, or even swiping or moving their hands across the air to adjust the pointer.