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Internal Assessment Test 1– May. 2024

Sub:	Fundamentals of Game Design							Sub Code:	22MCA423
Date:	25/5/2024	Duration:	90 min's	Max Marks:	50	Sem:	IV	Branch:	MCA

Note : Answer FIVE FULL Questions, choosing ONE full question from each Module

PART I

- 1 Differentiate Conventional games and Video games.
2. What is a Genre? Explain the Classic game Genres.

PART II

- 3 List and explain the key components of Video games.
4. Describe the Vanden Berghe's Five Domains of Play

PART III

- 5 Describe the structure of a video game.

OR

- 6 Explain the game design team roles

PART IV

- 7 What are the stages of Design process

OR

- 8 Compare and contrast between Stand alone games and browser based games

PART V

- 9 Explain the anatomy of a Game Designer

OR

- 10 List and explain different types of devices suitable for game play.

MARKS	OBE	
	CO	RBT
10	CO1	L2
10	CO3	L2
10	CO1	L4
10	CO3	L4

10	CO1	L2
10	CO3	L2
10	CO1	L2
10	CO3	L2
10	CO3	L4
10	CO2	L2

1. Differentiate Conventional games and Video games.

Conventional games must have a thorough understanding of the essential elements play, rules, goals, and so on and should be able to design an enjoyable game with nothing but paper and pencil. Video games are a subset of the universe of all games. A video game is a game mediated by a computer, whether the computer is installed in a tiny keychain device such as a Tamagotchi or in a huge electronic play environment at a theme park

Hiding the Rules:

Unlike conventional games, video games ordinarily do not require written rules. The game still has rules, but the machine implements and enforces them for the players.

Setting the Pace: In conventional games that don't use a timer, either the players or an independent referee sets the pace of the game—the rate at which the events required by

the rules take place. In effect, it is up to the players to make the game go. In video games, the computer sets the pace and makes the game go. Unless specifically waiting for the player's input, the computer keeps the game moving forward at whatever pace the designer has set.

Presenting a Game World:

The players can think of themselves as make-believe characters in a make-believe place. With conventional games, this takes place primarily in the player's imagination, although printed boards, cards, and so on can help.

Video games can go much further. By using a screen and speakers, video games present a fictional world the players can sense directly. Modern video games are full of pictures, animation, movies, music, dialog, sound effects, and so on that conventional games cannot possibly provide

Creating Artificial Intelligence: AI brings considerably more to video gaming than artificial opponents for traditional games. Game developers use AI techniques for the following: strategy, pathfinding, natural language parsing, natural language generation

1. What is a Genre? Explain the Classic Game Genres.

A genre is a category of games characterized by a particular set of challenges, regardless of setting or game-world content.

Classic Game Genres:

Action Games:

- Action games include physical challenges.
- They may also incorporate puzzles, races, and a variety of conflict challenges, typically among a small number of characters.
- Action games often contain simple economic challenges as well, usually involving collecting objects.
- They include strategic or conceptual challenges.
- Action games may be further subdivided into a variety of sub-genres.
- Two of the best known are shooter games and fighting games.

Strategy Games:

- Strategy games include strategic (naturally), tactical, and sometimes logistical challenges.
- They may also offer economic and exploration challenges to lengthen the game and give it more variety.
- They also have a physical challenge thrown in for spice, but this often annoys strategically minded players.

Role-Playing Games:

- Role-playing games involve tactical, logistical, and exploration challenges.
- They also include economic challenges because the games usually involve collecting loot and trading it in for better weapons.
- They sometimes include puzzles and conceptual challenges, but rarely physical ones.
- Real-world simulations include sports games and vehicle simulations, including military vehicles.
- They involve mostly physical and tactical challenges but not exploration, economic, or conceptual ones.

Construction and Management Genres:

- Construction and management games such as RollerCoaster Tycoon primarily offer economic and conceptual challenges.
- Only rarely do they involve conflict or exploration, and they almost never include physical challenges.

Adventure Genres:

- Adventure games chiefly provide exploration and puzzle-solving.
- They sometimes contain conceptual challenges as well.
- Adventure games may include a physical challenge also, but only rarely.

Puzzle Games:

- Puzzle games offer logic challenges and conceptual challenges almost exclusively, although occasionally there's time pressure or an action element.

2. List and explain the key components of Video games.

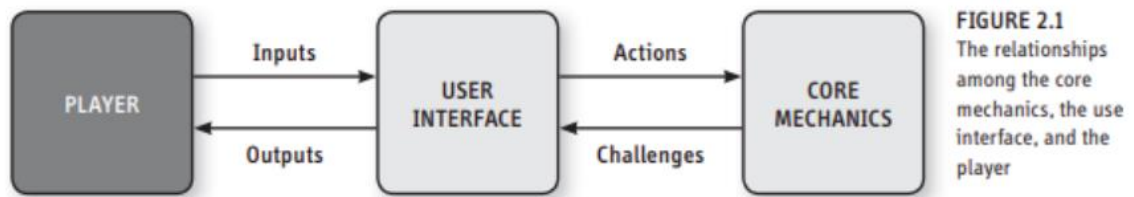
Core Mechanics:

- One of a game designer's tasks is to turn the general rules of the game into a symbolic and mathematical model that can be implemented algorithmically.
- This model is called the core mechanics of the game. The model is more specific than the rules.
- The core mechanics are at the heart of any game because they generate the game-play.
- They define the challenges that the game can offer and the actions that the player can take to meet those challenges.
- The core mechanics also determine the effect of the player's actions upon the game world.
- The mechanics state the conditions for achieving the goals of the game and what consequences follow from succeeding or failing to achieve them.
- One quality of the core mechanics is their degree of realism
- We will decide what degree of realism that our game will have when we decide upon its concept.
- The decision we make determines how complex the core mechanics are.
For example, a real army requires a large general staff to make sure the army has all the ammunition and supplies it needs. In a game, a single player has to manage everything, so to avoid overwhelming him, the designer abstracts these logistical considerations out of the model

User Interface:

- UI is designed to be as efficient as possible and to present the user's work clearly.
- The user interface mediates between the core mechanics of the game and the player (see Figure 2.1).
- It takes the challenges that are generated by the core mechanics (driving a racing car, for example) and turns them into graphics on the screen and sound from the speakers.
- It also turns the player's button presses and movements on the keyboard or controller into actions within the context of the game.
- As the user interface lies between the player and the core mechanics, it is sometimes referred to as the presentation layer.
- It presents the story of the game

- All the artwork and all the audio of the game are part of its user interface, also known as its presentation layer. Two essential features of the user interface of a game are its camera model and its interaction model



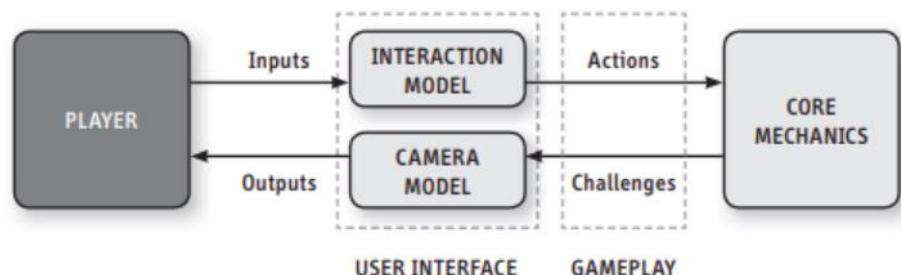
Interaction Models:

- The relationship between the player’s inputs and the resulting actions is dictated by the game’s interaction model.
- The model determines how the player projects her will, her choices, and her commands, into the game.
- Video games use a number of standard interaction models, including multi presence, avatar-based models, contestant models, and so on.
- In a multi-present model, for example, the player can act on different parts of the game world whenever she wants to, reaching “into” it from the “outside.”
- Just as the visible parts of a game’s user interface change during play, a game can have more than one interaction model depending on what is happening at the time

Camera Models:

- If a game includes a simulated physical space, or game world, then it almost certainly uses graphics to display that space to the player.
- The user interface must display the space from a particular angle or point of view.
- Designers usually imagine that a hypothetical camera is pointed at the virtual space, creating the image that the player sees.
- The system that controls the behavior of this imaginary camera is called the camera model.
- To define the camera model, think about how you want the player to view the game world and specify a system in your design documents that the programmers can implement.
- Static camera models is in which the camera always shows the virtual space from a fixed perspective
- Dynamic camera models require more effort to design and implement, but they make the player’s experience livelier and more cinematic.
- The most commonly used camera models are first person and third person for presenting 3D game worlds and top-down, side-scrolling, and isometric for presenting 2D worlds.

FIGURE 2.2
Camera model and interaction model are features of the user interface.



3. Describe the Vanden Berghe’s Five Domains of Play

VandenBerghe's work is based on a well-known psychological model of human personality traits called the Five Factor Model.

also known as "The Big Five,"

explains personality traits in terms of five non overlapping domains:

Openness to new experiences

Conscientiousness

Extraversion

Agreeableness and

Neuroticism

Novelty:

- Players who seek novelty like games that include a lot of variety and unexpected elements.
- People who don't like novelty seek familiarity instead: games that offer them a comforting sameness.
- These players might prefer Words with Friends to a science fiction extravaganza set in a strange world with strange rules

Challenge:

- VandenBerghe correlates a desire for challenge—and perhaps more specifically effort and control—with the trait of conscientiousness.
- High-challenge players prefer games that are difficult and require precision to win.
- Their conscientiousness drives them to act, to accomplish things, and perhaps to try to complete everything in a game.
- Low-challenge players like sandbox games and others in which the player is free to fool around without being required to achieve something.

Stimulation:

- Particularly via social engagement, this naturally correlates with extraversion.
- These players enjoy party games and others that involve interacting with other players.
- Those who prefer to avoid stimulation prefer games they can play alone, games that let them be the only real person in the game world.

Harmony:

- the feeling that all parts of the game belong to a single, coherent whole.
- VandenBerghe is referring to social harmony and correlates this motivation with the personality trait of agreeableness.

Threat:

- This domain is the most peculiar one because players' reactions to it are the opposite of what you might expect.
- The game quality of threat (an element of danger, or frightening content—anything that is likely to generate unpleasant emotions) is popular with people who have high neuroticism scores in OCEAN tests.

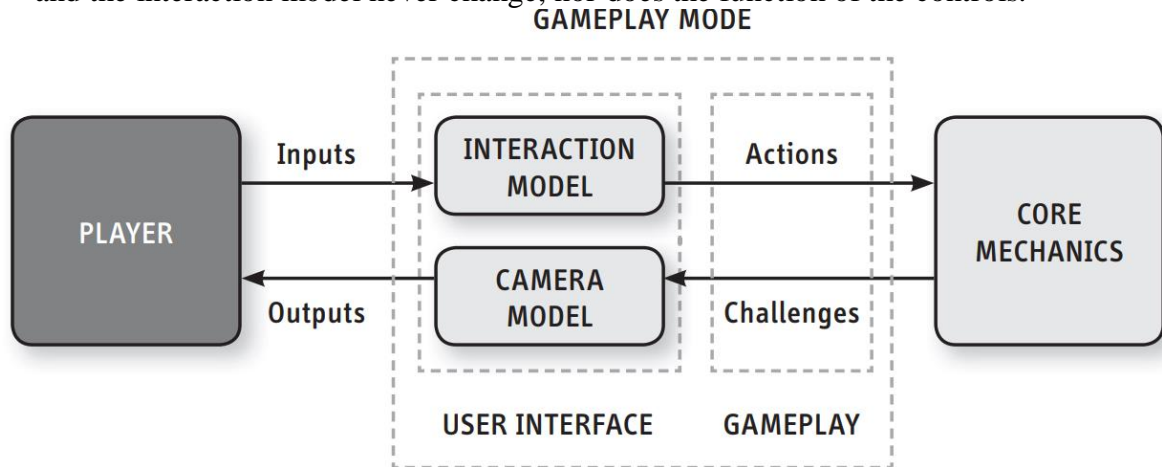
4. Describe the structure of a video game.

How and why the changes occur are determined by the game's structure. The structure is made up of gameplay modes and shell menus.

GamePlay Modes:

- The combination of related items available gameplay and supporting user interface at a given point in the game—collectively describe something called a gameplay mode.
- A gameplay mode consists of the particular subset of a game's total gameplay that is available at any one time in the game, plus the user interface that presents that subset of the gameplay to the player.
- The concept of the gameplay mode is central to the process of designing video games.

- A game can be in only one gameplay mode at a time.
- Many of the earliest arcade games have only one gameplay mode. In Asteroids, for example, you fly a spaceship around a field of asteroids, trying to avoid being hit by one and shooting at them to break them up and disintegrate them. The camera model and the interaction model never change, nor does the function of the controls.



Shell Menus and Screens:

- modes in which the player cannot affect the game world but can make other changes is called shell menus.
- Non interactive sequences such as title screens or credits screens are called shell screens.

The Game Structure:

- The gameplay modes and shell menus of the game, and the relationships among them, collectively make up the structure of the game.
- To document the structure, you can begin by making a list of all the modes and menus in the game.
- You must also include a description of when and why the game switches from one mode or menu to another: what event, or menu selection, causes it to change.
- Each mode or menu description should include a list of other modes and menus it can switch to and, for each possible switch, a notation about what causes it
- A better approach is to document the structure of a game with a flowboard, a combination of flowchart and storyboard.

5. Explain the dangers of Binary Thinking

We can't make a game for everyone, so your target audience is necessarily a subset of all possible players, a subset determined by your answers to the questions "Who will enjoy this game?" and "What kinds of challenges do they like?"

This is binary thinking: We assume that if group A likes a thing, everyone outside that group won't like it. It's unsound reasoning and may actually cause you to lose part of your potential customer base

Reasoning Statistically about Player Groups Suppose you ask a group of players to rate their level of interest in a particular game on a scale of 0 to 10, with 0 representing no interest at all and 10 being fanatical enthusiasm. A few people will be at the extremes and the majority somewhere in the middle. If you graph the responses of men and women separately, you may find for a given game that the two groups have different arithmetic means; that is, the centers of their bell-shaped curves fall at different places on the graph.

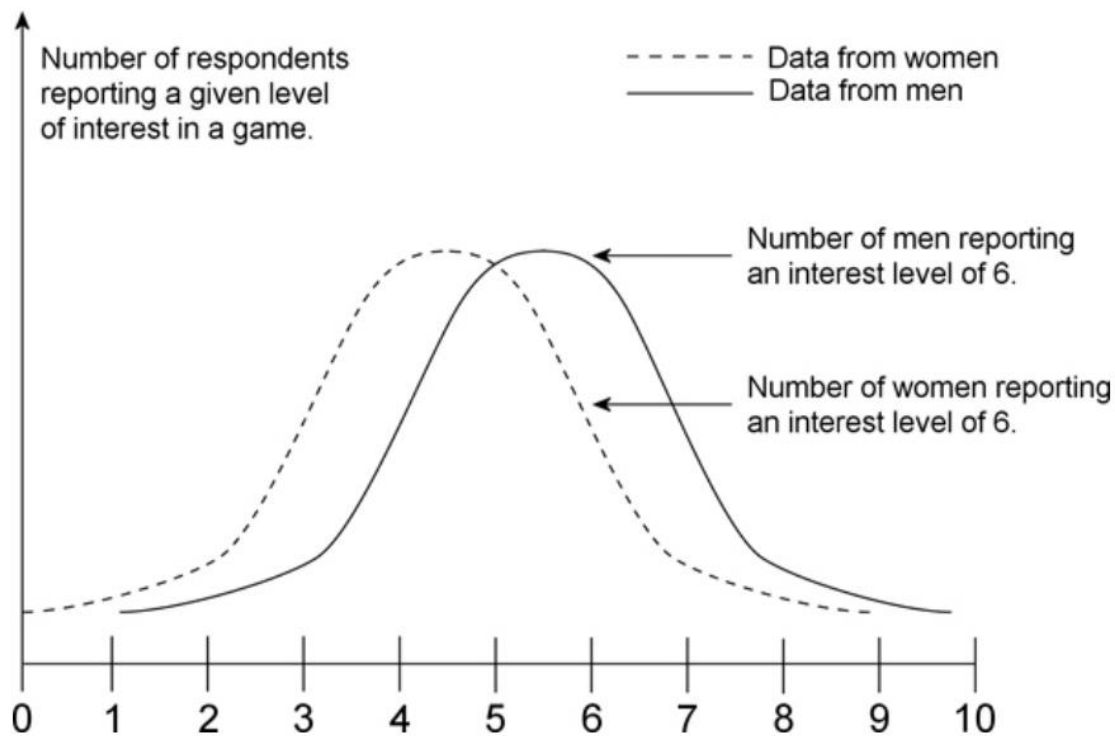


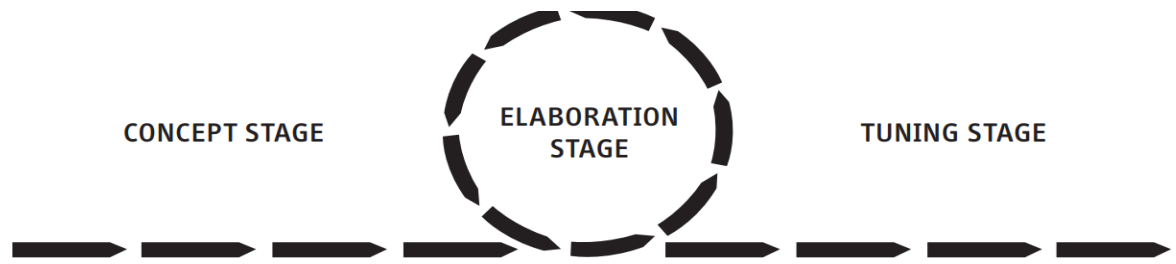
Figure 4.3 Reported level of interest in a game on a 0–10 scale

Men have a higher level of interest in this game than women do,” in fact, a large area of overlap indicates that a significant portion of the women surveyed are interested in the game as well. Furthermore, the number of women reporting an interest level of 6 is about two-thirds that of the number of men reporting the same interest level. two-fifths of all the people reporting an interest level of 6 are women—far too many to simply ignore.

Strive for Inclusiveness, Not Universality We cannot make a game that appeals to everyone by throwing in a hodgepodge of features because group A likes some of them and group B likes others. If you do, you will produce a game that has too many features and no harmony. For instance, you can’t make a game that appeals to action fans, to strategy fans, and to fans of management simulations by combining kung fu, chess, and Monopoly—the result would be a mess that appeals to none of them. On the other hand, you can include a story line in a fighting game so long as the story line doesn’t interfere with the gameplay. The story line adds depth to the game without driving away its key market of fighting-game enthusiasts, and it might attract the interest of people who otherwise wouldn’t pay any attention to a fighting game. Heavenly Sword and God of War are good examples.

6. What are the stages of Design process

- The concept stage, which you perform first and whose results do not change
- The elaboration stage, in which you add most of the design details and refine your decisions through prototyping and playtesting
- The tuning stage, at which point no new features may be added, but you can make small adjustments to polish the game.



The Concept Stage:

- It establishes things about the game that are so fundamental, changing them later would wreak havoc on the development process because a great deal of the work done to implement the game would have to be thrown away

Getting a concept: a general idea of how you intend to entertain someone through gameplay and, at a deeper level, why you believe it will be a compelling experience.

If your game resembles others that are already on the market, you would normally playtest several to see how they did things and how you can improve on them.

Defining an audience: Once you know what kind of experience you want to present, you have to think about who would enjoy that experience.

, in player-centric design, you test every design decision against your hypothetical representative player to be sure that the decision helps to entertain your target audience.

Determining the players role: In a representational game, the player does a lot more pretending. Sometimes the roles in a game are multifaceted

Fulfilling the dream: Representational games are about fulfilling dreams—dreams of achievement, of power, of creation, or simply of doing certain things and having certain experiences.

Once you have a game concept, a role, and an audience in mind, it's time to begin thinking about how you will fulfill your player's dream. What is the essence of the experience that you are going to offer? What kinds of challenges does the player expect to face, and what kinds of actions does she expect to perform? Deciding what it means to fulfill the dream is the first step on the road to defining the gameplay itself.

The Elaboration Stage:

In the elaboration stage, you normally begin working with a small development team to construct a prototype of the game. If you are planning to incorporate radically new ideas or new technology, your team may also build a test bed or technical demonstration to try them out.

Prototyping:

Prototyping A prototype is a simplified, but testable, version of your game. Designers make prototypes to try out game features before they spend the time and money to implement them in the actual game; they also use them for play-testing with their audience to see if the game is enjoyable.

To build a software prototype, you create software that isn't as complete as your full game in order to try out some aspect of it. Tools such as Game Maker can make this much easier than doing it from scratch.

- **Defining the primary gameplay mode:**

The first task after deciding your concept is to define the primary gameplay mode of the game, the mode in which the player spends the majority of his time. Most games have one gameplay mode that is clearly the primary one. In a car racing game, it's driving the car. Tuning up the car in the shop is a secondary mode. In war games, the primary gameplay mode is usually tactical—fighting battles. War games often have a

strategic mode as well, in which the player plans battles or chooses areas to conquer on a map, but he generally spends much less time doing that than he does fighting.

- **Designing the protagonist:** If your game is to have a single main character who is the protagonist (whether or not the interaction model is avatar-based), it is essential that you design this character early on. You want the player to like and to identify with the protagonist, to care about what happens to her.
- **Defining the game world:** The game world is where your game takes place, and defining it can be an enormous task. There are many dimensions to a game world: physical, temporal, environmental, emotional, and ethical. All these qualities exist to serve and support the gameplay of your game, but they also entertain in their own right.
- **Designing the core mechanics:** If we have a sense of the kinds of challenges and actions that need to be included in the primary gameplay mode, you can begin thinking about how the core mechanics create those challenges and implement the actions.
- **Creating additional modes:** As we decide upon our game concept, you may realize that you need more than one gameplay mode. In the elaboration stage, design the additional modes: their perspective, interaction model, and gameplay. You must also document what causes your game to move from mode to mode—the structure of your game
- **Designing levels:** Level design is the process of constructing the experience that the game offers directly to the player, using the components provided by the game design: the characters, challenges, actions, game world, core mechanics, and storyline if there is one. Creating a working playable level is an important milestone in the development of a game because it means that testers can begin play-testing it
- **Writing the story:** A story may be integrated with the gameplay in a number of different ways. The story may be embedded, with prewritten narrative chunks, or emergent, arising out of the core mechanics. It may be linear and independent of the player's actions, or it may go in different directions based on the player's choices.
- **Build, test and iterate** Video games must be prototyped before they can be built for real, and they must be tested at every step along the way. Each new idea must be constructed and tried out, preferably in a quick-and-dirty fashion first, before it is incorporated into the completed product.

The Tuning Stage:

- Feature lock-No more features can be added.
- The features are defined and executed in elaboration stage. In tuning stage we can add some changes to the features.

8. Compare and contrast between stand alone games and browser based games.

STAND ALONE GAMES: stand-alone PC games can be the most visually spectacular. If you want to develop for the highest-end gear, you should build stand-alone PC games. That choice usually limits the size of your market to the truly dedicated hobbyist gamer. On the other hand, many stand-alone games are aimed at the middle of the range and do very well. Most edutainment games are stand-alone games because it's easier for a parent to help a young child with a keyboard and mouse than a handheld controller.

BROWSER-BASED GAMES: Browser-based games are a rapidly growing sector of the game market. Because they run in a web browser, they are isolated from the machine's hardware. A browser-based game can run on a Windows PC, Macintosh, or Linux machine with no modifications. This advantage comes at a price, however; browser-based games cannot take full advantage of the machine's capabilities, and this usually includes 3D rendering. Most

browser based games—and there are thousands—are 2D games aimed at the casual player. They are often written in Java or Adobe’s ActionScript language, which works with Flash Player.

9. Explain the anatomy of a Game Designer.

1. Imagination

A game exists in an artificial universe, a make-believe place governed by make-believe rules. Imagination is essential to creating this place. It comes in various forms:

Visual and auditory imagination enables you to think of new buildings, trees, animals, creatures, clothing, and people—how they look and sound.

Dramatic imagination is required for the development of good characters, plots, scenes, motivations, emotions, climaxes, and conclusions.

Conceptual imagination is about relationships between ideas, their interactions, and dependencies.

Lateral thinking is the process of looking for alternative answers, taking an unexpected route to solve a problem.

Deduction is the process of reasoning from a creative decision you’ve made to its possible consequences. Deduction isn’t ordinarily thought of as imagination, but the conclusions you arrive at produce new material for your game.

2. Technical Awareness:

Technical awareness is a general understanding of how computer programs, particularly games, actually work.

Level designers, in particular, often need to be able to program in simple scripting languages.

You must also be aware of its limitations so that you don’t create unworkable designs.

3. Analytical Competence:

Analytical competence is the ability to study and dissect something: an idea, a problem, or an entire game design. No design is perfect from the start; game design is a process of iterative refinement. Consequently, you must be able to recognize the good and bad parts of a design for what they are.

4. Mathematical Competence:

Designers must have basic math skills, including trigonometry and the simpler principles of probability. Balancing games that feature complex internal economies, such as business simulations or real-time strategy games, can require you to spend a lot of time looking at numbers.

5. Aesthetic Competence:

Although you need not be an artist, you should have a general aesthetic competence and some sense of style. Far too many games are visual clones of one another, depending on stereotypes and clichés rather than real imagination.

It’s up to you (along with your lead artist) to set the visual tone of the game and to create a consistent, harmonious look

6. General Knowledge and the Ability to Research:

The most imaginative game designers are those who have been broadly educated and are interested in a wide variety of things. It helps to be well versed in such topics as history, literature, art, science, and political affairs.

7. Writing Skills

A professional game designer actually spends most of his time writing, so a designer must have good writing skills. This means being clear, concise, accurate, and unambiguous.

Technical writing is the process of documenting the design in preparation for development.

Fiction writing (narrative) creates the story of the game as a whole—a critical part of the design process if the game has a strong storyline.

Dialog writing (drama) is needed for audio voiceovers and cinematic material. Dialog conveys character, and it also can form part of the plot.

8. Drawing Skills

The vast majority of computer games rely heavily on visual content, and drawings are essential when you're pitching a product to a third party.

9. The Ability to Synthesize:

Synthesis, in this context, means bringing together different ideas and constructing something new from them.

First, you must allow your team some ownership of the vision as well, or its members won't have any motivation or enthusiasm for the project.

Second, a designer who can't deliver in a team environment, no matter how visionary she may be, doesn't stay employed for long. You must be able to work successfully with other people.

10. List and explain the different categories of devices to play games.

Personal Computers Personal computers appeared in the marketplace shortly after home game consoles. They were immediately successful as gaming platforms, and the Commodore 64, Atari ST, Amiga, and other personal computers were wildly popular among gamers and early computer hobbyists

Typical Use:

A personal computer (PC) can be set up away from the communal living space, on a computer desk. In this , the player has a keyboard, a mouse, possibly a joystick, and (more rarely) a dedicated game controller such as those on console machines. The player sits 12 to 18 inches away from a relatively small (compared to the television) high-resolution display. The high resolution means that the game can have subtle, detailed graphics. The mouse allows precision pointing and a more complex user interface. The keyboard enables the player to enter text conveniently and send messages to other players over a network, something that is nearly impossible with console machines.

Input Devices:

The keyboard and mouse are unique to the PC and laptop experience. With its 101 keys, the keyboard allows user interfaces to employ many, many buttons, and complex computer role-playing games (RPGs). The keyboard enables the player to enter text conveniently and send chat messages to other players over a network, something that is much less convenient with console machines.

Business Considerations The great advantage of PC development is that anyone can program one; you don't have to get a license from the manufacturer or buy an expensive development station. Consequently, personal computers are at the cutting edge of innovation in computer gaming. They're the platform of choice for interactive art and other experimental forms of interactive entertainment. Mobile devices are similarly easy and inexpensive to develop for, but they haven't achieved the same level of acceptance as platforms for artistic expression that PCs have. The great bane of PC development is that no two machines are alike.

PC games may be divided into two general and quite different categories: standalone games, which the player installs on his machine like any other program, and browser-based games that run inside a web browser such as Safari or Internet Explorer.

STAND ALONE GAMES: stand-alone PC games can be the most visually spectacular. If you want to develop for the highest-end gear, you should build stand-alone PC games. That choice usually limits the size of your market to the truly dedicated hobbyist gamer. On the other hand, many stand-alone games are aimed at the middle of the range and do very well. Most edutainment games are stand-alone games because it's easier for a parent to help a young child with a keyboard and mouse than a handheld controller.

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Portable Devices Portable devices are a hugely popular and inexpensive form of entertainment. They began as dedicated handheld devices that could play only a few built-in games (sometimes only one), and were primarily regarded as toys for children. Since then, they have branched out and out, widening their demographics to adults and becoming moderately powerful and flexible computing devices. Their CPUs are slower than their console counterparts but still have enough power to run sophisticated games. The Sony PSP represented a huge jump in the power and display quality of dedicated handheld game machines.

Typical Use A portable device is designed to be carried around and used by one person. Such devices range in size from quite small mobile phones up to tablet computers that can be nearly the size of a laptop. A key distinction among use cases is whether the device will fit into a pocket. Because portable devices are frequently used in public, every game must include a way to turn off the sound, even though the device itself also includes a master volume control. Battery life also affects the typical use of portable devices. Games tend to be CPU- and graphicsintensive applications. You cannot expect a player to play for long periods without being able to save the game as you can on other machines, because at any moment he may have to take an incoming phone call or power down the device to save the battery.

Input Devices unlike either consoles or PCs, portable devices frequently include global positioning systems, enabling you to create augmented reality games that are played by moving around in the real world.

Handheld Game Machines:

Handheld game machines are a hugely popular and very inexpensive form of entertainment. Handhelds support few add-on features; the input and output devices are usually fixed. These machines have a smaller number of buttons than a console controller does and only a small LCD screen. Their CPUs are slower than their console counterparts but still have enough CPU speed to run sophisticated games. The Sony PSP represented a huge jump in the power and display quality of handheld game machines.

Mobile Phones and Wireless Devices

Mobile phones now have enough computing power to play decent games. The worst thing about developing for a wide range of mobile phones is the lack of standardization. The screens are all different sizes and color depths; the processors are different; the operating systems are different. Even the layout of the buttons is nonstandard, making it difficult to be certain what user interface design is convenient across a range of phones. Expect to do a lot of compatibility testing on different hardware if you develop for mobile phones.

Many are given away free and then paid for through what are called in-app purchases (IAPs)—small payments that allow a player to continue to buy items, play past a certain point, or play more frequently. home game consoles are closed systems, and developing for them normally requires a license from the manufacturer; PCs are open systems that anyone can develop for.

Other Devices Games show up on all sorts of other devices these days. The more specialized the device, the more important it is to understand clearly its technical limitations and its audience. Airlines are starting to build video games into their seats; these games tend to be aimed at children or the casual market. Video gambling machines, too, enjoy growing popularity. Because they are heavily regulated and not sold to consumers, they really constitute an industry unto themselves but video gambling games require programmers and artists just like any other computer game.