

**THE UNIVERSITY OF WESTERN ONTARIO
LONDON CANADA**

**COMPUTER SCIENCE 437b/641b
FINAL EXAMINATION
APRIL 16, 2005
3 HOURS**

NAME: _____

STUDENT NUMBER: _____

Question

1-30. _____

31. _____

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40. _____

TOTAL _____

(Out of 190 marks)

There are no cheat sheets, books, or other reference materials allowed for this exam. No calculators or other electronic devices are permitted either.

Part I -- Multiple Choice, True/False -- Choose the best answer from the choices given. Circle your answer on the paper, and fill in the answer on the Scantron form. [60 marks total, 2 marks each]

1. Which of the following is not a fundamental characteristic of any game:
 - a. Representation.
 - b. Interaction.
 - c. Conflict.
 - d. Safety.
 - e. All of the above are fundamental characteristics.

2. You can never have too much realism in a video game.
 - a. True.
 - b. False.

3. In theory, a player should be able to complete a game on the first attempt, without dying.
 - a. True.
 - b. False.

4. Issues of network latency and lag are more important to:
 - a. Turn-based games.
 - b. Real-time games.
 - c. These issues are equally important to both types of games.
 - d. These issues are not important at all to either type of game.

5. Which of the following are not elements to be considered during level design of a video game?
 - a. Architectural and environmental design.
 - b. Lighting.
 - c. Sound effects.
 - d. Enemy, obstacle, and object placement.
 - e. All of the above, in fact, must be considered during level design.

6. Which of the following is a sign of imbalance in a strategy game:
 - a. A player always chooses the same team to play.
 - b. A player always adopts the same strategy in the game.
 - c. A player always uses a select set of units in playing the game.
 - d. All players ignore a particular unit in the game.
 - e. All of the above.

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7. As discussed in class, what is the typical amount of time required to develop modern video games?
 - a. Less than 6 months.
 - b. 6 months to 1 year.
 - c. 6 months to 2 years.
 - d. 1 to 2 years.
 - e. More than 2 years.

 8. Even if you plan well and follow a good software development model, things can still go wrong in developing a game.
 - a. True.
 - b. False.

 9. The single most effective way to cut a project's schedule is to decrease its scope.
 - a. True.
 - b. False.

 10. Which of the following is not a requirement for networking in modern video games?
 - a. Synchronization.
 - b. Low latency.
 - c. Reliability.
 - d. Security.
 - e. All of the above, in fact, are networking requirements.

 11. Modern video games no longer use the direct connection method for locating other players and parts of the game, as better and more convenient methods are now available.
 - a. True.
 - b. False.

 12. Persistence in online multiplayer gaming works equally well for all games and game genres.
 - a. True.
 - b. False.

 13. Outnumbering the player and providing additional abilities to opponents are always good methods of providing challenge to the player, when providing challenging artificial intelligence proves difficult.
 - a. True.
 - b. False.

 14. A good game designer will tune the design of levels to fit limitations of the artificial intelligence, instead of the other way around.
 - a. True.
 - b. False.

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15. It is better to provide a variety of character behaviours through variations in:
- Data.
 - Code.
 - Both a) and b) work equally well.
 - Neither a) nor b).
16. Game artificial intelligence can never behave too realistically.
- True.
 - False.
17. Which search technique discussed in class is commonly used for searching in pathfinding and navigation algorithms in video games?
- A+
 - A#
 - A\$
 - A-
 - None of the above.
18. When setting up scripted behaviours for artificial intelligence in games, the level designer must be involved in the process.
- True.
 - False.
19. Graphics in two dimensional games are usually composed of:
- Polygonal meshes.
 - Bicubic parametric patches.
 - Binary space partitioning trees.
 - Octrees.
 - None of the above.
20. Partitions in an octree:
- Do not need to divide the space equally.
 - Only need to divide the space where necessary.
 - Can divide the space at arbitrary angles.
 - All of the above.
 - None of the above.
21. Which of the following can be modeled easily using fractal geometry:
- Clouds.
 - Plant life.
 - Mountains.
 - All of the above.
 - None of the above.

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22. Textures for video games must be stored as two dimensional bitmapped images.
- True.
 - False.
23. Animations should follow the laws and rules (of physics and nature) from real life, regardless of the game world.
- True.
 - False.
24. Which of the following effects in video games cannot be modeled properly using particle animation techniques?
- Smoke.
 - Clouds.
 - Fire.
 - Explosions.
 - All of the above, in fact, can be modeled using this technique.
25. Motion capture requires that the subject body be instrumented with some form of sensors for data collection purposes.
- True.
 - False.
26. Generating voice effects in real-time is not an audio technique commonly used in modern video games.
- True.
 - False.
27. Envelopes used in sound effect generation, generally take the following form:
- Hold, Attack, Decay, Sustain, Release
 - Sustain, Release, Attack, Hold, Decay
 - Attack, Sustain, Release, Hold, Decay
 - Attack, Hold, Release, Sustain, Decay
 - None of the above.
28. The video game industry's self regulatory body is:
- The Software Publishers Association (SPA).
 - The Interactive Digital Software Association (IDSA).
 - The Entertainment Software Association (ESA).
 - The Entertainment Software Rating Board (ESRB).
 - None of the above.

29. Which of the following ESRB ratings was introduced within the last year:
- a. EC (Early Childhood).
 - b. E 10+ (Everyone 10 and Older).
 - c. AO (Adults Only).
 - d. RP (Rating Pending).
 - e. None of the above.
30. The terms “augmented reality” and “virtual reality” both refer to the same technology:
- a. True.
 - b. False.

32. The following question parts deal with issues in game design. [14 marks total]

a. Why should there be predictable and consistent outcomes to the actions of the player of a game? [4 marks]

b. Why should reasonable actions of a game player result in success? [4 marks]

c. If you want *all* reasonable actions of a player to have successful outcomes, what implications does this have on game design? Why would this be an incredibly difficult thing to do? [6 marks]

33. Discuss three things a game designer can do to make a good puzzle. Discuss three things a designer can do to make a bad puzzle. [12 marks]

34. In class, we made the statement: “If you have something in a level that looks important, make sure that it is.” Why is this good advice to follow? Now consider the statement: “If you have something in a level that is important, make sure that it looks important.” Why is this advice more controversial to follow? [12 marks]

35. The following question parts deal with the game development process. [12 marks total]

a. Why is it important to include both seasoned veterans and novices on your testing team? [4 marks]

b. In play testing a game, you notice that testers need constant help from the development team to be able to play the game. How could this problem be effectively resolved? [4 marks]

c. Suppose now that testers can play the game, but instead need constant help from the development team to be able to have fun playing the game. How could this problem be effectively resolved? [4 marks]

40. The following questions deal with audio in video games. [15 marks].
- a. Explain the role that sound in a game can play in setting the mood and tone of a game. Provide one example each of sound effects, speech effects, and music that can accomplish this. [9 marks]

- b. Why is timing particularly important to game audio? Provide two specific examples where this is the case. [6 marks]

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