

**THE UNIVERSITY OF WESTERN ONTARIO  
LONDON CANADA**

**COMPUTER SCIENCE 437b/641b  
FINAL EXAMINATION  
APRIL 25, 2004  
3 HOURS**

NAME: \_\_\_\_\_

STUDENT NUMBER: \_\_\_\_\_

Question

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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. At any point in time, to keep the player grounded, the player should have:
  - a. An immediate goal.
  - b. A medium-range goal.
  - c. A long-term goal.
  - d. All of the above.
  - e. None of the above.
  
2. To obtain the best environmental audio effects possible, sound would have to be essentially rendered within the game world.
  - a. True.
  - b. False.
  
3. It is never good to frustrate the player of a game.
  - a. True.
  - b. False.
  
4. If you want to ensure your own intellectual property rights to a game, you must develop it independently on your own time, and through the exclusive use of your own resources.
  - a. True.
  - b. False.
  
5. Which part of game design documentation can be thought of as an extremely detailed first pass on the user manual for the game?
  - a. The overview.
  - b. Game world behaviour.
  - c. Game elements.
  - d. Game progression.
  - e. None of the above.
  
6. When trading off structure versus freedom in designing a video game, freedom should win every time.
  - a. True.
  - b. False.
  
7. Suppose that players only use offensive strategies in a game. This could be an indication of which problem in the game:
  - a. There are too many health, weapon, and shielding power-ups in the game.
  - b. Defensive moves are too slow, too difficult, or too ineffective to use.
  - c. The players are not given the time to react to employ defensive measures.
  - d. Any of the above.
  - e. None of the above.

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8. Third person games tend to have more viewpoint and camera problems than first person games.
    - a. True.
    - b. False.
  
  9. The master copy of a game design document should be kept in paper form.
    - a. True.
    - b. False.
  
  10. It is important to make sure that your game design document is a stimulating and entertaining read.
    - a. True.
    - b. False.
  
  11. The single most effective way to cut a project's schedule is to decrease its scope.
    - a. True.
    - b. False.
  
  12. When should most history, background, and character motivation appear in the three act structure of a story for a video game?
    - a. The beginning.
    - b. The middle.
    - c. The end.
    - d. All of the above are equally good.
    - e. None of the above—this information is generally not necessary.
  
  13. In throwaway prototyping, prototypes are developed as part of which stage of game development?
    - a. Concept development.
    - b. Preproduction.
    - c. Production.
    - d. Any of the above.
    - e. None of the above.
  
  14. When a video game is said to be “going gold” in the game development industry, this statement usually means:
    - a. The game has proven quite popular among game players.
    - b. The game has been released to manufacture.
    - c. The game has sold over 500,000 units.
    - d. The game has earned a “Game of the Year” award.
    - e. None of the above.

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15. Having good visual effects is the only way to immerse a player in a game.
    - a. True.
    - b. False.
  
  16. Which fundamental characteristic of games in general are players most often willing to sacrifice to enhance their overall gaming experience?
    - a. Representation.
    - b. Interaction.
    - c. Conflict.
    - d. Safety.
    - e. None of the above.
  
  17. Suppose you wanted to have a networked game that would allow players to play with complete strangers from around the world. Which approach to locating players and parts of networked games would be most suitable to do so?
    - a. Direct connections.
    - b. Fixed address.
    - c. Broadcasting.
    - d. Location services.
    - e. None of the above.
  
  18. The characteristics of a networked game are not a factor in deciding the best transport protocol to use for communications in the game.
    - a. True.
    - b. False.
  
  19. If it is going to be part of a networked game, persistence must be worked into the game as early in the design process as possible.
    - a. True.
    - b. False.
  
  20. Players tend to have different expectations of the artificial intelligence they find in different types of video games.
    - a. True.
    - b. False.
  
  21. Game artificial intelligence can never be too unpredictable.
    - a. True.
    - b. False.
  
  22. Providing a challenging artificial intelligence is more difficult in a real-time game than a turn-based game.
    - a. True.
    - b. False.

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23. Which search technique is commonly used for searching in pathfinding and navigation algorithms in video games?
- A+
  - A#
  - A\$
  - A\*
  - None of the above.
24. Graphics in a video game are used to support which fundamental characteristic of any game?
- Representation.
  - Interaction.
  - Conflict.
  - Safety.
  - None of the above.
25. Sound in a video game is used to support which fundamental characteristic of any game?
- Representation.
  - Interaction.
  - Conflict.
  - Safety.
  - None of the above.
26. Which of the following is currently the most popular three dimensional modeling technique for modeling characters in video games:
- Polygonal meshes.
  - Bicubic parametric patches.
  - Octrees.
  - Implicit functions.
  - None of the above.
27. Constructive solid geometry is best suited to modeling:
- Biological organisms.
  - Manufactured objects.
  - Terrain features.
  - All of the above.
  - None of the above.

28. The first motion capture used in video games involved which of the following techniques?
- Optical motion capture.
  - Electromagnetic tracking.
  - Electromechanical suits.
  - Digital armatures.
  - None of the above.
29. 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, Decay, Sustain, Release.
  - None of the above.
30. The current name of the organization representing the interests of the video game industry 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.



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

a. What is meant by the breadth, depth, and pace of a video game? Briefly define each term. [6 marks]

b. Why is it that, at most, a game would be able to have only two of breadth, depth, and pace at any time? [4 marks]

c. In class, we described how some games, such as Grand Theft Auto III, can have breadth, depth, and pace. How do they manage all that? [4 marks]

33. Why is the ability to tune the difficulty of puzzles in a video game important?  
Discuss three different methods of tuning the difficulty of puzzles presented to the player in a game. [12 marks]
34. Why is it important for game levels to control the flow of action within a game?  
Explain how well-designed game levels can do this effectively. Provide an example that demonstrates this concept. [12 marks]

35. The following question parts deal with the game development process. [12 marks total]
- a. In class, we said that time is very deceptive at the start of a game development project. What is meant by this statement? What implications does this have on game development? [6 marks]

- b. In game testing, we strive to answer two questions: “Are we making the right game?” and “Are we making the game right?” What are the differences between these questions? Which one is validation, and which one is verification? [6 marks]

36. The following question parts deal with technical issues in networking for game development. [12 marks total]

a. Why are consistency and synchronization such important issues in developing networked video games? [4 marks]

b. Why is security such an important issue in developing networked video games? [4 marks]

c. Why are latency and bandwidth such important issues in developing networked video games? [4 marks]









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