

COIS 1010H – Winter 2019

Test 2 (Final Exam) Review Questions

- when preparing your answers for the short-essay questions, please keep in mind that each question is worth 4 marks which implies that you need to make at least four points. Also, please note that terms like **Describe**, **Discuss**, **Differentiate** mean that we are looking for a sentence or two for each point (not just a list of terms). Here are five (5) short-essay questions from all six lectures in the second half of the term: a total of ten (10) questions from these sets will appear on Test 2. For Questions 21-23 from Lecture 10 and Question 30 from Lecture 11, if one of these were to appear on Test 2, it would have the same format but the **actual** numbers will be different. This means you cannot just memorize the answers, but must know how to do the math.

Lecture 6 (Omar Alam)

1. What is procedural programming? How were programs written prior to procedural programming?
2. What is the difference between compiler errors and run-time errors? Give examples of each.
3. Describe 4 of the 5 phases of the Program Development Life Cycle.
4. Describe 4 different considerations when choosing a programming language.
5. Describe the difference between source code and object code

Lecture 7 (Jamie Mitchell)

6. What is a variable in Scratch? Provide an example of something you might use one for.
7. Draw and appropriately label the X,Y grid used for positioning on Scratch's stage, add a sprite (your choice) to approx. position (-50,90)
8. Describe a Forever loop in Scratch, give an example of a situation where you might use it, and explain why you would use a Forever loop rather than another looping structure.
9. What is message broadcasting and how is it used in Scratch?
10. Describe the purpose of a conditional statement. Give an example of a block in scratch that serves this purpose, and what you might use it for.

Lecture/Seminar 8 (Brian Srivastava)

11. Distinguish between Frame by Frame animation and physical simulation.
12. How has animation been used to help people with autism?
13. Describe how a dyslexic friendly font works. Be sure to use examples.
14. Describe some of the challenges and solutions for having search engines discover the relevance of text (Hint for studying: This is related to the slides on Text and Search through to the slide "titles and titles")
15. List four parameters that can be varied to make a medieval sword combat game balanced for the player, while still attempting to make the game more realistic. (Study tip: specifically, the video on sword combat from Warhorse Studios starting around the 3 minute 30 mark until the end of the video)

Lecture 9 (Brian Patrick)

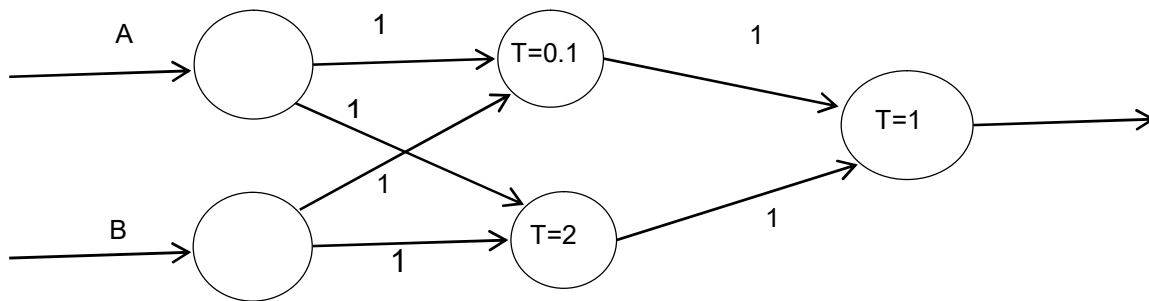
16. Draw an analogy of traditional letter delivery with the concept of package switching. Extend this analogy to the idea of net neutrality.
17. The Web 1.0 and Web 2.0 are sometimes described respectively as the "readable" and "writeable" phases of the World Wide Web. Comment on this distinction.
18. Briefly discuss the ethical issues related to the scandal involving Cambridge Analytica and Facebook.
19. Stephen Hawking, the renowned astrophysicist, died last year on March 14th. He had suffered from amyotrophic lateral sclerosis (ALS) which severely impaired his ability to communicate. Discuss two assistive technologies that enabled Professor Hawking to communicate with the outside world.
20. Internet addiction is viewed as a growing problem worldwide. Briefly outline four symptoms of Internet addiction.

Lecture 10 (Omar Alam)

21. Perform the following operations assuming 6-bit 2's complement binary numbers.
- 110001 + 001111
 - 010011 – 111100
22. How would we represent the decimal value -5 as a:
- 6-bit signed sign-magnitude number
 - 6-bit ones-complement number
 - 6-bit 2's-complement number
23. Perform the following:
- Convert the binary number 1010110110111101 to octal
 - Convert the binary number 1010110110111101 to hexadecimal
 - Convert the hexadecimal number A1B2 to binary
 - Convert the octal number 771 to binary
24. There are many number systems used to count things in your everyday life. Describe four of them.
25. Differentiate between the two coding systems that are used to represent text-based data in current computers.

Lecture 11 (Wenying Feng)

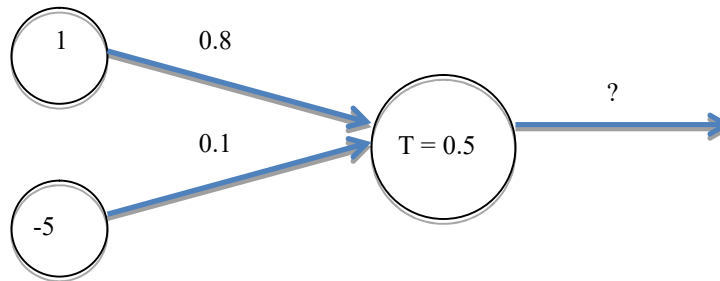
26. Describe two types of Use Cases for Supervised Machine Learning. Give examples of each type.
27. Discuss two advantages and two challenges of Machine Learning.
28. Discuss applications of Artificial Neural Networks in Machine Learning. Give an example.
29. Consider the following neural network:



Give the output in the following table:

A	B	Output
0	0	
0	1	
1	0	
1	1	

30. The diagram below represents a simple neural network.



- (a) What are the inputs?
- (b) What are the weights?
- (c) What is the threshold?
- (d) What will be the output? Show your work.

Terms: here are the terms that you will be responsible for on Test 2. These terms have all been discussed in the lectures (or lecture/seminar combination). We will choose twenty (20) terms in total to appear in a matching question on Test 2.

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| 1. debugging | 22. legibility |
| 2. Java | 23. readability |
| 3. Fortran | 24. discoverability |
| 4. COBOL | 25. intelligibility |
| 5. pseudocode | 26. regression bug |
| 6. compiler | 27. triangle mesh |
| 7. flowchart | 28. geometric primitive |
| 8. stage | 29. hypertext |
| 9. sprite | 30. Archie |
| 10. argument | 31. cloudware |
| 11. block | 32. e-commerce |
| 12. script | 33. carpal tunnel syndrome |
| 13. comments | 34. digital divide |
| 14. stranded code | 35. green computing |
| 15. byte | 36. reasoning |
| 16. nibble | 37. training data |
| 17. hexadecimal notation | 38. capability of an AI system |
| 18. base | 39. machine learning |
| 19. signed magnitude representation | 40. supervised learning |
| 20. ASCII | 41. decision tree |
| 21. octal numbers | 42. neural network |