



PRIFYSGOL
BANGOR
UNIVERSITY

**YSGOL CYFRIFIADUREG A
PHEIRIANNEG ELECTRONIG
SCHOOL OF COMPUTER SCIENCE
AND ELECTRONIC ENGINEERING**

**Arholiadau Diwedd Semester Un
IONAWR 2021**

**End of Semester One Examinations
JANUARY 2021**

Amser a ganiateir: 2 awr

Time allowed: 2 hours

COMPUTER SCIENCE

Entrance Scholarship

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Answer all questions.

**Cyfanswm Marciau 100
Total marks 100**

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COMPUTER SCIENCE: Entrance Scholarship

Answer **ALL** questions (Total marks 100)

1. Describe two features of an integrated development environment (IDE) that are designed to assist with the writing and editing of code. [5]
2. Define what is meant by classes, objects, and methods in object-oriented programming. [5]
3. What is the difference between a compiled programming language and an interpreted programming language? [5]
4. Explain the differences between stack and queue data structures. [5]
5. Describe the Linked List data structure. Draw a suitable diagram to illustrate your answer. What is the benefit of this data structure? [5]
6. What are recursive algorithms? Describe a potential advantage and disadvantage of using them in a program. [5]
7. Using pseudo-code or a high-level language of your choice, write a bubble sort algorithm to sort an array of strings into alphabetical order. [5]
8. A company wishes to store the following information about movies; [5]
 - Title
 - Director
 - Release Year
 - Age Rating
 - Average Review Rating
 - Has Subtitles

Suggest the data types needed to represent this information. Include which language you have chosen in your answer.
9. How does a multi-core processor differ from a single-core processor? Why would multi-core processors be useful when dealing with multimedia applications? [5]
10. Describe the purpose of a router within a Local Area Network (LAN). [5]
11. What is the purpose of DNS in a network? How does it help? [5]
12. What is the difference between HTTP and HTTPS as used on the World Wide Web? [5]

13. Define what is meant by the term data mining. Describe two examples of how an organisation might use data mining techniques. [5]
14. Voice input and touch screen are two types of human computer interface (HCI). Give two advantages and two disadvantages of each approach. [5]
15. The University currently uses an ID card system to control access to its premises. This has proven problematic with students and staff damaging, swapping or losing cards. The University wishes to use a facial recognition system in its place. [10]
Describe how this system would operate and explain the strengths and weaknesses of using a biometric system for this purpose.
16. Write a short essay about a new computing technology of your choice. How do you think this technology will affect our lives in the future? [20]