

1.4 DATA TYPES & STRUCTURES · 1.4.1

Character sets: ASCII & Unicode

Original practice questions · 25 marks · about 35 minutes · spec 1.4.1(j)

Instructions. Answer all questions. The number of marks is shown in brackets [].**1** Total: 5 marks

This question is about ASCII.

- (a) Describe what is meant by the term *ASCII*. [2]
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- (b) State how many bits standard ASCII uses for each character. [1]
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- (c) State how many different characters this allows ASCII to represent. [1]
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- (d) State what is meant by a *character set*. [1]
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2 Total: 6 marks

In ASCII, the capital letters A–Z are codes 65–90. The 7-bit code for A is 1000001.

- (a) State the denary ASCII code for the letter C. [1]
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- (b) Write the word CAB in binary using 8-bit ASCII codes (a leading 0 then the 7-bit code). [3]
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- (c) The character '7' is stored using ASCII. Explain why its stored value is not the same as the number 7. [2]
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3

Total: 6 marks

A character set called Unicode is also widely used.

(a) Explain why Unicode was developed when ASCII already existed. [2]

(b) Give **one** similarity between ASCII and Unicode. [1]

(c) Give **two** differences between ASCII and Unicode. [2]

(d) State one disadvantage of using Unicode rather than ASCII. [1]

4

Total: 8 marks

A messaging app is being developed. Its users will be from many countries and will send messages in different languages and use emoji. The developers must choose a character set.

(a) State which character set the developers should choose. [1]

(b) Explain **two** reasons for this choice. [4]

(c) Explain one impact this choice has on the storage required for messages, compared with ASCII. [3]

END OF QUESTIONS