Dashboard / My courses / COMS1015A-BCO1-S1-2023 / Data Representation III / Tutorial 4: Data Representation (ii)

Started on	
State	
Completed on	
Time taken	
Marks	
Grade	
Feedback	

You are a highly motivated student, who takes full responsibility for your learning. A reflective learner, who recognises areas for development and is committed to personal improvement. An organised learner who always completes class work and homework to a very high standard.

Question **1**

Correct

Mark 1.00 out of 1.00

Which of these applications would best utilize vector graphics?

- ○ a.   Storing frames of a short film.

- ○ b.   A photographer taking photos of nature.

- ⦿ c.   A design that will be engraved on a wide variety of sizes and metals. ✔

- ○ d.   An artist that wants to store photos of their painting digitally.

Your answer is correct.

The correct answer is:
A design that will be engraved on a wide variety of sizes and metals.

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:18	Saved: A design that will be engraved on a wide variety of sizes and metals.	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**1.00**

Question **2**

Correct

Mark 1.00 out of 1.00

Which of the following is an example of analog information?

Select one:

- a.   The result of a rolled dice
- b.   The frequency of a humans voice in air ✔
- c.   Drawing a card from a deck of playing cards
- d.   Morse code
- e.   The result of fipping a coin

The correct answer is: The frequency of a humans voice in air

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:19	Saved: The frequency of a humans voice in air	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**1.00**

Question **3**

Correct

Mark 3.00 out of 3.00

Data compression is the process of taking a dataset and arranging or coding it so that it takes up less memory in a computer.

An important example of this is the JPEG image compression method, where a picture of 5 megabytes can be represented well in 100 kilobytes.

The compression ratio is defined as the volume required for the compressed data divided by the volume required for the original data.

What is the compression ratio of the JPEG example given above?

(Please write your answer to 2 decimal places.)

Answer: 0.02 ✔

The correct answer is: 0.02

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:20	Saved: 0.02	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**3.00**

Question **4**

Correct

Mark 2.00 out of 2.00

Using the Huffman code table below, decode the string 1000100101111011101.

Huffman Code	Character
00	A
01	E
100	L
110	O
111	R
1010	B
1011	D

Answer: | LEADORE | ✔

The correct answer is: LEADORE

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:23	Saved: LEADORE	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**2.00**

Question **5**

Correct

Mark 1.00 out of 1.00

What would be the resulting color from the following RGB color code?

(255,255,0)

Select one:

○ a. Grey

○ b. Magenta

○ c. Blue

○ d. Green

○ e. Cyan

◉ f. Yellow ✔

○ g. Black

○ h. Red

○ i. White

The correct answer is: Yellow

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:24	Saved: Yellow	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**1.00**

Question **6**

Correct

Mark 1.00 out of 1.00

What would be the resulting color from the following RGB color code?

(0,255,255)

Select one:

○ a. Green

○ b. Blue

○ c. White

○ d. Red

○ e. Magenta

○ f. Yellow

○ g. Grey

◉ h. Cyan✔

○ i. Black

The correct answer is: Cyan

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:24	Saved: Cyan	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**1.00**

Question **7**

Correct

Mark 2.00 out of 2.00

Given the string **hhhuuuffffffmmmmaaaaaannnn** what would the compression ratio be?

Answer: 0.72   ✔

The correct answer is: 0.72

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:26	Saved: 0.434692	Answer saved	
3	17/04/23, 17:29	Saved: 0.72	Answer saved	
4	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**2.00**

Question **8**

Correct

Mark 3.00 out of 3.00

A DNA sequence is a practical example of when to use Run-Length Encoding.

Consider the following DNA sequence:

taaaaaactgtacttttccg

Compute the compression ratio when using Run-Length Encoding to compress the string, and round off the answer to two decimal places.

Answer: | 0.8 | ✔

Original string has length 20. The encoded string is t*a6ctgtac*t4ccg, with length 16.

16/20 = 0.8

The correct answer is: 0.8

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:30	Saved: 0.8	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**3.00**

Question **9**

Correct

Mark 1.00 out of 1.00

What would be the resulting color from the following RGB color code?

(0,0,255)

Select one:

- a.   Yellow
- b.   Green
- c.   Grey
- d.   Blue ✔
- e.   White
- f.   Black
- g.   Cyan
- h.   Red
- i.   Magenta

The correct answer is: Blue

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:26	Saved: Blue	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**1.00**

Question **10**

Correct

Mark 1.00 out of 1.00

Select True of False:

When encoding a string with Run-Length encoding, you will always encode a character/sequence of same characters beginning with a flag (eg.*)

Select one:

○ True

◉ False ✔

The correct answer is 'False'.

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:27	Saved: False	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**1.00**

Question **11**

Correct

Mark 2.00 out of 2.00

Using the Huffman code table below, find the code for the word 'REDBOLE'.

Huffman Code	Character
00	A
01	E
100	L
110	O
111	R
1010	B
1011	D

Answer: 111011011101011010001 ✔

The correct answer is: 111011011101011010001

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:31	Saved: 111011011101011010001	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**2.00**

Question **12**

Correct

Mark 1.00 out of 1.00

We can represent infinitely many colors with the RGB system.

Select one:

○ True

◉ False ✔

The correct answer is 'False'.

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:27	Saved: False	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**1.00**

Question **13**

Correct

Mark 1.00 out of 1.00

Select the most correct option about audio compression:

○ a.   Audio can only be compressed using lossy compression

○ b.   Audio can only be compressed using lossless compression

○ c.   Audio can not be compressed

⊙ d.   Audio can be compressed using either lossy or lossless compression ✔

Your answer is correct.

The correct answer is:
Audio can be compressed using either lossy or lossless compression

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:28	Saved: Audio can be compressed using either lossy or lossless compression	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**1.00**

Question **14**

Correct

Mark 15.00 out of 15.00

Following the example done in lectures, design a Huffman code to code up five Greek characters which occur with the percentages given in brackets:

α (50%), β (5%), γ (30%), δ (5%), ε (10%).

α =

```
0
```

✔

β =

```
1111
```

✔

γ =

```
10
```

✔

δ =

```
1110
```

✔

ε =

```
110
```

✔

NB. Check that your code has the prefix property.

b) What compression ratio have you achieved on average with your code? (Give your answer in radix point form)

```
0.6
```

✔

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:52	Saved: part 1: 0; part 2: 1111; part 3: 10; part 4: 1110; part 5: 110; part 6: 0.6	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**15.00**

Question **15**

Correct

Mark 1.00 out of 1.00

What would be the resulting color from the following RGB color code?

(255,0,0)

Select one:

○ a.   Blue

○ b.   Black

○ c.   Yellow

○ d.   White

◉ e.   Red ✔

○ f.   Magenta

○ g.   Grey

○ h.   Cyan

○ i.   Green

The correct answer is: Red

Response history

Step	Time	Action	State	Marks
1	17/04/23, 17:17	Started	Not yet answered	
2	17/04/23, 17:28	Saved: Red	Answer saved	
3	**17/04/23, 17:53**	**Attempt finished**	**Correct**	**1.00**

◄ Images

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