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Year 10 Interleaved Homework 13

1. Janya has made the following statement about sound:

"Sample resolution is the frequency at which the amplitude of the sound is measured."

Explain why Janya is incorrect.

Janya is incorrect because sample resolution refers to the precision of amplitude measurements (bit depth), not the frequency at which they are taken (sample rate).

2. A 30-second sound clip has a sample resolution of 5 bits and a rate of 15Hz.

Calculate the file size in Bytes. Show all your working out.

30*5*15 = 150*15 = 2250   2250/8 = 281.25B

3. Explain the arithmetic effect of shifting a binary number 6 places to the right.

2**6 = 64   Right = divide   Divide by 64

4. Convert the binary 11000010 into hexadecimal.

1100 = 12 = C   0010 = 2   0xC2

5. Complete the Python program that should:
- Generate two random numbers between 1 and 12 inclusive
- Calculate the score:
  - o If the numbers are the same, the score is doubled
  - o If the numbers are different, the score is the sum of the numbers
- Output the final score
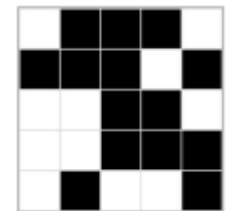
```
Import random
dice1 = random.randint(1, 12)
dice2 = random.randint(1, 12)
score  = dice1 + dice2
if  score == dice2:
    score = score * 2
print(score)
```

6. Here is a 5-pixel by 5-pixel image:

(a) Using 1 for black and 0 for white, write the binary code for the first line of this image.

01110

(b) Compress the first line using Run-Length Encoding.

(1,0) (3,1) (1,0)

7. Look at the following code and answer the question:

schoolName = "Passmores Academy"
street = "Tracyes Road"
town = "Harlow"
county = "Essex"
country = "England"
(a) The variable x is assigned a value using the statement:

X = len(schoolName)

What is the value of X?

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(b) What is the result of concatenating the contents of the variables town and county?

HalowEssex

(c) Substrings can be accessed in Python using square brackets [] after the string.
For example, computing[3:6] would return put.
What is the value of Y when it is assigned a value using the statement:
Y = street[4:10]
yes Ro

(d) The position of a character can be found using .index() after the string.
For example, "Orange".index("a") would return 2.
What is the value of Z when it is assigned a value using the statement:
Z = country.index("d")

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8. Write a Python program to check if a phone number has been entered correctly by a user.

Your program must:
- Get the user to input a phone number
- Get the user to input the phone number a second time
- Output the message "Match" and output the phone number if the phone numbers entered are the same

- Output the message "Do not match" if the phone numbers entered are not the same

Ensure to apply proper indentation, use meaningful variable names, and adhere to Python syntax in your response.

```python
number1 = int(input("Enter phone number 1"))
number2 = int(input("Enter phone number 2"))
print("Match" if number2 == number1 else "No match")
```