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Year 10 Interleaved Homework 24

1. Here is a Python program

```python
fruits = ["apple", "banana", "cherry"]

choice = input("Enter a fruit: ")

if choice in fruits:
    print("Yes, the fruit is in the list.")
else:
    print("No, the fruit is not in the list.")
```

a. On what line number does user input first occur?

3

b. What is the index value of "banana" in the list fruits?

1

c. On what line number does Selection first occur?

5

d. What is the output if the user enters in "pineapple"?

No, the fruit is not in the list.

e. What is the output if the user enters in "Apple"?

No, the fruit is not in the list.

2. Read through the following Python program, carefully

```python
numberToConvert = "01110001"
total = 0
counter = 128
for i in numberToConvert:
    total = total + counter * int(i)
    counter = counter // 2

print(total)
```

a. What is the purpose of this program?

Convert a binary number to denary

b. What constructs are evident within the program?

- Sequence ☐
- Selection
- Iteration ☐

c. What is the output of the program?

113

d. What is the purpose of line 6 counter = counter // 2?

Change binary columns

3. Complete the following binary addition

			1	0	0	1	1	0

+		1	0	0	0	1	0	1
+	1	0	1	1	0	0	1	1
1	0	0	0	1	1	1	1	0

4. Show how a binary number can be divided by 8 using a binary shift

Original: 1 0 1 1 0 0 1 1

After / 3:   0 0 0 1 0 1 1 0

5. Convert the decimal number 164 into binary. Show all your working out

164 – 128 = 36 36-32=4

10100100

6. The diagram below shows an 8 x 8 black and white bitmap image. The image has been represented as a bit pattern with each bit representing a pixel. Row 3 has been represented as 01011010.

Row 1
Row 2
Row 3
Row 4
Row 5
Row 6
Row 7
Row 8

What is the binary representation of Row 7 in the diagram?

00111100

7. Write a Python program that:

- Generates a random number between 1 and 12 inclusive.
- Assign this number to a variable called dice.
- If dice is even, output "Red".
- If dice is odd, output "Black".
- Ask the user if they would like to roll again.
- If yes, repeat the above steps.
- If no, output a farewell message.

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

```python
import random
def roll():
    dice = random.randint(1,12)
    if dice % 2 == 0:
        print("red")
    else:
        print("black")
while True:
```

```python
    roll()
    redo = input().lower()
    if redo not in ["yes", "no"]:
        print("please enter a valid input")
        redo = input()

    if redo == "no":
        break
```