Questions

Predict | Investigate

1) Below are some OCR ERL commands. The user will be asked to input values for x and y.

A)
```
for a = 1 to 10
   print("YES")
next a
```

B)
```
while x == y
   print("YES")
endwhile
```

C)
```
if x == 5 then
   print("YES")
endif
```

D)
```
while X == 4 AND Y == 5
   print("YES")
   X = input()
endwhile
```

For each question below, choose the most appropriate letter. Assume that input is accepted as integers, not strings.

a) Which one is a count-controlled loop? [1]

b) Which one is selection? [1]

c) Which one will never display "Yes" when <x> is input as 4. [1]

d) Which one of B, C or D will display "Yes" at least once when <x> is 4 and <y> is 5?

2) Here is some code used during a game:


```
if lives > 0 then
    print("Keep going")
else
    print("Sorry, you have lost all your lives")
endif
```

Predict

a) If the value of lives is 5, what will be displayed on the screen? [1]

Modify

b) Change one line of code to display how many lives are left. [1]

3) Draw lines to connect the symbols to each relational operation. [6]

a)	==	greater than
b)	>	less than
c)	!=	equal to
d)	<=	not equal to
e)	>=	greater than or equal to
f)	<	less than or equal to

4) Which relational operators should be used in place of ❑ in each example below? If more than one operator can be used, then list them all. [3]

a) 298 ❑ 300

b) 1,987 ❑ 1,987

c) 565 ❑ 560

Modify

5) a) Complete the code below so that it continues until either <p> is greater than 256 or equal to 256. [1]

```
p = 1
while ###
   print("The next number is " + p)
   p = p * 2
endwhile
```

Predict

b) Predict what the output to the screen will be? [1]

Predict Investigate

6) Line numbers are used for the algorithm below but are not part of the code.

```
1   value1 = input("Please enter a value")
2   value2 = input("Please enter another value")
3   while value !=2
4       If value1 > value2 then
5           value1 = value1 - 1
6       else
7           value2 = value2 - 1
8       endif
9   endwhile
```

a) State the line number where iteration is first used. [1]

b) State the line number where selection is first used. [1]

c) How many lines use variable assignment? [1]

d) In what circumstance would the algorithm finish with value1 and value2 being less than the value they both started with? [1]

e) If the users chooses 5 for value1 and 20 for value2, how many iterations will there be? [1]

7) Line numbers are used for the algorithm below but are not part of the code. The algorithm calculates the amount of discount to apply for a holiday.

```
1   price = float(input("Please enter the price without
                         discount: "))
2
3
4   discountCode = input("Please enter the discount code: ")
5   if discountCode == "a" then
6       discount = 0.1
7   elseif discountCode == "b" then
8       discount = 0.15
9   elseif discountCode == "c" then
10      discount = 0.2
11
12
13  endif
14  discountAmount = price * discount
15  discountedPrice = price - discountAmount
16  print("Discount Amount: £", discountAmount)
17  print("Discount Price: £", discountedPrice)
```

Predict

a) Calculate the value of discountedPrice and show your working when the price and discount code entered are:

(i) 100 and b [2]

(ii) 600 and a (2)

Modify

b) Add code to lines 11 and 12 to assign the value 0 to the discount code if one of a, b or c are not entered. [2]

Modify

c) Add code for lines 2 and 3 above to only allow values of a, b or c to be accepted for the discount code. If another value is entered, the user should be asked for the discount code again. [3]

8) Describe each of the Boolean operations NOT, AND, OR. [3]

Make

Write code for the algorithms below:

9) A user is asked to enter a new password and then asked again to enter it to confirm it matches. If the passwords match, then the password is assigned to the variable <good_pass> and the user is told “Password successfully changed”. If the passwords don’t match then the user should be asked to enter the password two times again until they both match. [5]

10) Ask the user for a number between 0 and 200. If the number is below 50, display "Too high". If it is smaller than 50, display "Too low". Keep repeating until the user enters 50. Display how many attempts it took the user to guess the number.

11) A cipher is an algorithm that encrypts text so that it cannot be understood without the decryption key. Ask the user to input a phrase. The cypher should dd all the odd positioned characters of the phrase to a new string. It should then add the even positioned characters to that new string so they appear after the odd positioned characters.

a) Write code to encrypt the phrase using this cypher.

b) Write the code to decipher the encrypted text.

12) A game of rock, paper, scissors. The computer will ask the user to input “Rock”, “Paper” or “Scissors”. The computer then randomly generates its own answer from those 3 options. Paper beats Rock (scrunches it up), Rock beats Scissors (makes them blunt) and Scissors beat Paper (cuts it up). The computer should state who won and what the computer chose.