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Sample assessment 2020

Multiple choice question book

Digital Solutions



Queensland
Government



Queensland Curriculum
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Section 1

Instructions

- Answer all questions in the question and response book.
 - This book will not be marked.
-

QUESTION 1

In data security, a hash function can be described as a

- (A) one-way cryptographic algorithm that takes an input message of arbitrary length and produces a fixed-length digest.
- (B) cryptographic algorithm that performs the encryption or decryption of an input message of arbitrary length for output or storage.
- (C) feature that dynamically negotiates a mutual set of security requirements between two hosts that are attempting to communicate with each other.
- (D) process of masking password user input with hashes, asterisks or other special characters.

QUESTION 2

A website's content and functionality was evaluated using the following four criteria:

- **operable**, e.g. the website should be navigable without a mouse and with a screen reader
- **perceivable**, e.g. images should have text equivalents
- **robust**, e.g. the website should work with different devices and navigation should be consistent
- **understandable**, e.g. text should not be more complicated than it needs to be and the website should operate in a predictable manner.

Identify the usability principle tested by the four criteria above.

- (A) effectiveness
- (B) accessibility
- (C) learnability
- (D) utility

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QUESTION 3

The following algorithm is used to produce an output based on different input data values.

```
BEGIN  
  IF value1 > value2  
    PRINT "A"  
  ELSE  
    IF value3 ≤ (value1 + value2)  
      PRINT "B"  
    ELSE  
      PRINT "C"  
    ENDIF  
  ENDIF  
  IF (value3 - value1) ≥ value2  
    PRINT "D"  
  ENDIF  
END
```

Identify the output produced by the algorithm when value1 = 7, value2 = 8 and value3 = 15.

- (A) AD
- (B) BC
- (C) CD
- (D) BD

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QUESTION 4

The table below shows two algorithms.

Program 1	Program 2
<pre>BEGIN Main num1 = 50 Sub() PRINT num1 END Main BEGIN Sub num1 is local num1 = 20 END Sub</pre>	<pre>BEGIN Main num1 is global num1 = 50 Sub() PRINT num1 END Main BEGIN Sub num1 = 20 END Sub</pre>

Select the correct output when both programs are run.

- | | Program 1 | Program 2 |
|-----|-----------|-----------|
| (A) | 50 | 20 |
| (B) | 50 | 50 |
| (C) | 20 | 50 |
| (D) | 20 | 20 |

QUESTION 5

JSON uses human-readable text to transmit data objects.

```
{ "name": "John" }
{ "age": 30 }
{ "employees": [ "John", "Anna", "Peter" ] }
{ "sale": true }
```

The JSON data types in the code above would be declared as

- (A) John, 30, John, Sale.
- (B) name, age, employees, sale.
- (C) char, number, list, true/false.
- (D) string, integer, array of strings, Boolean.

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QUESTION 6

The following algorithm produces an output from input data.

Main program

BEGIN

var1 = "4"

var3 = 3

process3()

process2(var3)

process1()

END

Sub process1 ()

BEGIN

PRINT var1 + "4"

Sub **END**

Sub process2 (var2)

BEGIN

PRINT 4 + var2

Sub **END**

Sub process3 ()

BEGIN

PRINT var3 / 3

Sub **END**

The output of the pseudocode will be

- (A) 1744.
- (B) 1544.
- (C) 178.
- (D) 158.

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QUESTION 7

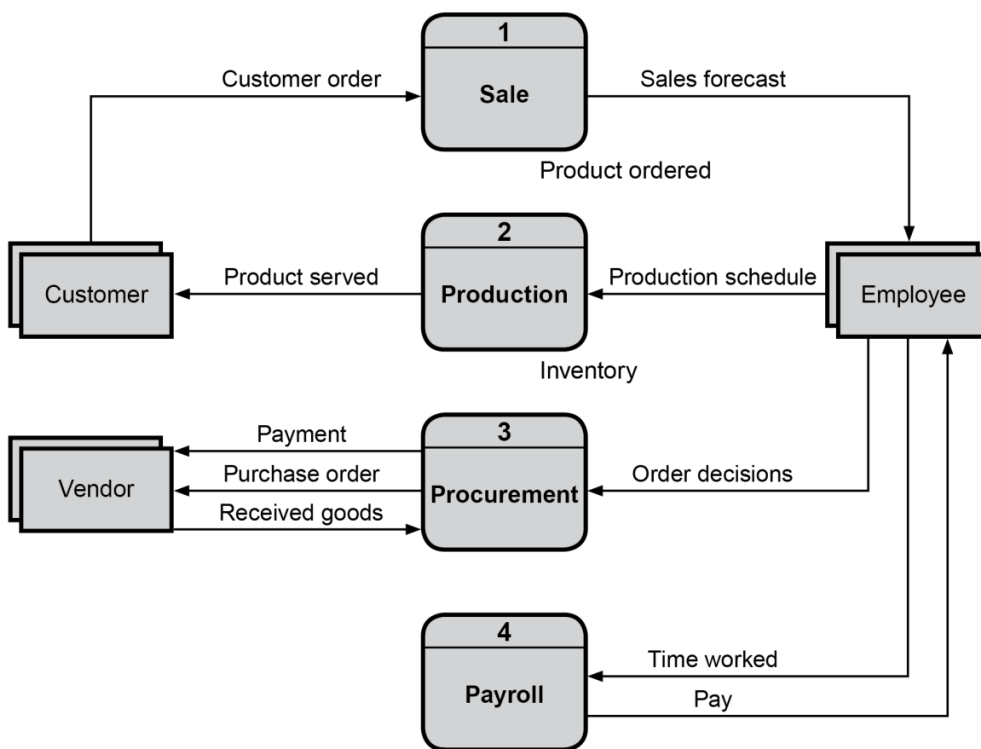
Many symmetric encryption algorithms, including the Data Encryption Standard (DES), use a structure commonly referred to as a Feistel network. Feistel networks have a symmetric structure used in the construction of block ciphers.

The structure of a Feistel network is best described as a

- (A) cipher that uses public and private keys for secure encryption across networks.
- (B) cipher that uses a process of character substitution to encrypt or decrypt the same block of data.
- (C) very similar or identical set of iterative structural processes to encrypt or decrypt the same block of data.
- (D) structural process where plain text digits are combined with a stream of pseudorandom cipher digits.

QUESTION 8

Examine the following data flow diagram for a business that makes and sells widgets.



From the diagram, which of the following statements is most correct?

- (A) Production receives input based on other processes and entities.
- (B) This business consists of four main processes and three entities.
- (C) The sale process receives input from multiple sources.
- (D) Employees provide information to support the sale.

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QUESTION 9

The following extract from a medical database shows patients, vaccines by item number, date vaccination is due, date immunised and the risk of contracting the disease post-immunisation.

Patients				Results			
ID	First	Last		Item	ID	Immunised	Risk
1684	John	Jones		1	1684	1990-09-08	0.001
2893	Mary	Smith		1	2893	1990-09-07	0.00021
3642	Jackie	Joyce		1	1206	1990-09-08	0.0005
1206	Michael	Mentos		1	1934	1990-09-10	0.001
1910	Midori	Ono		1	1935	1990-09-06	0.0005
1934	Beatrice	Thompson		1	3642	1990-09-09	0.00021
1935	Wanda	Granger		2	1684	1990-10-21	0.0005
				2	3642	1990-10-22	0.001
				2	1934	1990-10-21	0.0005
				2	2893	1990-10-22	0.0006
				2	1935	1990-10-21	0.00021
				3	3642	1990-12-10	0.0007
				3	1934	1990-12-08	0.001
				3	2893	1990-11-30	0.0014
				3	1935	1990-11-30	0.00021
				3	1684	1990-12-07	0.001
				3	1206	1990-12-11	0.004

Assess			
Item	Vaccine	Risk	Due
1	Measles	0.001	1990-09-08
2	Polio	0.00021	1990-10-21
3	Tetanus	0.0005	1990-12-02

```
SELECT first, last, immunised
FROM results r
      INNER JOIN assess a ON r.item = a.item
      INNER JOIN patients p ON p.id = r.id
WHERE a.item in (1,2)
      AND r.immunised < a.due ;
```

The query above determines

- (A) the first name, last name and immunisation date for all patients who received items before they were due.
- (B) the first name, last name and immunisation date for patients who received Items 1 and 2 after they were due.
- (C) the first name, last name and immunisation date for patients who received Item 1 or Item 2 before it was due.
- (D) the first name, last name and immunisation date for patients who received Items 1 and 2 before they were due.

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QUESTION 10

The two algorithms below are for the ‘fizzbuzz’ test. The algorithms evaluate numbers between 1 and 100 and print:

- ‘fizz’ if the number is a factor of 3
OR
- ‘buzz’ if the number is a factor of 5
OR
- ‘fizzbuzz’ if the number is a factor of both 3 and 5
OR
- the original number if the number is a factor of neither 3 nor 5.

Algorithm 1	Algorithm 2
<pre>BEGIN FOR i = 1 to 100 IF i modulus 3 = 0 PRINT "fizz" ENDIF IF i modulus 5 = 0 PRINT "buzz" ENDIF IF i modulus 5 = 0 and i modulus 3 = 0 PRINT "fizzbuzz" ELSE PRINT i ENDIF PRINT new line NEXT END</pre>	<pre>BEGIN i = 1 WHILE i <= 100 IF i modulus 3 = 0 PRINT "fizz" ENDIF IF i modulus 5 = 0 PRINT "buzz" ENDIF IF NOT i modulus 3 = 0 AND NOT i modulus 5 = 0 PRINT i PRINT new line i = i + 1 ENDIF ENDWHILE END</pre>

The algorithms were evaluated against the criteria of accuracy and reliability.

Examine the algorithms and choose the statement that is true.

- (A) Algorithm 1 is more reliable than Algorithm 2.
- (B) Algorithm 2 is more reliable than Algorithm 1.
- (C) Algorithm 1 is more accurate than Algorithm 2.
- (D) Algorithm 2 is more accurate than Algorithm 1.

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