

Information Technology knowledge quiz 2-1(2023-10)

Q1 /20

The following python function takes an input of integer `n` and prints out 1 character. Which character will never be printed?

```
def describe(n):
    if n >= 0:
        if n < 3:
            print("A");
        else:
            print("B");
    else:
        if n < 3:
            print("C");
        else:
            print("D");
```

- A. A
- B. B
- C. C
- D. D
- E. All of the above characters can be printed out

Answer ➤

Q2 /20

The `Sales` table holds all logs of sales. Every log of sales has an ID, a date, and a sales volume. Select an SQL query to list the dates and the total sales volumes for each date in which the total sales volume is more than 100000, in descending order of the total sales volumes.

```
-- Query A
SELECT date, SUM(sales) AS total_sales
FROM Sales
GROUP BY date
IN (total_sales > 100000)
ORDER BY total_sales DESC;
```

```
-- Query B
SELECT date, SUM(sales) AS total_sales
FROM Sales
GROUP BY date
WHERE total_sales > 100000
ORDER BY total_sales DESC;
```

```
-- Query C
SELECT date, SUM(sales) AS total_sales
ORDER BY total_sales
FROM Sales
WHERE total_sales > 100000;
```

```
-- Query D
SELECT date, SUM(sales) AS total_sales
FROM Sales
GROUP BY date
HAVING total_sales > 100000
ORDER BY total_sales DESC;
```



Q3 /20

What is white box testing?

Please choose all of the following choices which are true.

- A. Understanding the inputs but not output.
- B. Understanding the inputs, outputs, and the technical methods in between.
- C. Testing with knowledge of the code (e.g. unit testing).
- D. Testing a computer which is white in color

Answer >

Q4 /20

The following program written in C++ should calculate the sum of an array `a` that consists of n 32 bit integers.

```
int sum(int n, int* a) {  
    int answer = 0;  
    for (int i = 0; i < n; i++) {  
        [ A ]  
    }  
    return answer;  
}
```

Choose the correct statement to fill in for [A].

- A. `answer = a[i];`
- B. `answer += a[i];`
- C. `answer =+ a[i];`
- D. `answer <- a[i];`

Answer ➤

Q5 /20

In UNIX-like OS, when trying to execute a command called foo in the /home/bar directory, the error `-bash: foo: command not found` was displayed. Which command is used to solve this error?

- A. export PATH=/home/bar:\$PATH
- B. export PWD=/home/bar
- C. export MANPATH=/home/bar:\$MANPATH
- D. export SHLVL=2

Answer >

Q6 /20

We have an array that contains n integers between 0 and k (inclusive). What's the correct computational complexity of sorting the array by radix sort?

- A. $O(Nk)$
- B. $O(N \log k)$
- C. $O(\log NK)$
- D. $O(\log N \log K)$

Answer ➤

Q7 /20

Choose the public-key cryptosystem that utilizes the fact that the complexity does not fit within polynomial time.

- A. RSA
- B. IDEA
- C. DSA
- D. AES

Answer ➤

Q8 /20

What is regression testing?

- A. Testing backwards.
- B. Verifying that a technical change or enhancement did not create to ensure that previously developed and tested software still performs after a change
- C. Testing in order to bring back a former client
- D. None of the above

Answer ➤

Q9 /20

I want to create a program that outputs ASCII art of size $n \times n$ ($3 \leq n \leq 100$) where character `.` is surrounded by the character `#`. For example, the program should output the following pattern when given $n = 7$.

```
#####
#....#
#....#
#....#
#....#
#....#
#####
```

This C++ implementation receives an input of integer `n` and should return the corresponding pattern.

```
void printSquare(int n) {
    for (int i = 0; i < n; i++) {
        for (int j = 0; j < n; j++) {
            if ([]) {
                cout << "#";
            } else {
                cout << ".";
            }
        }
        cout << endl;
    }
}
```

Choose the appropriate formula to enter into [].

Answer ➔

Q10 /20

Which of the following is the correct explanation of resource authorization in Web services?

- A. Increase or decrease the number of cores and the storage capacity of the CPU (Central Processing Unit) according to the workload of the web service.
- B. When certain conditions are satisfied, provide information such as the profile of the user stored by the web service to a third party.
- C. Post personal information protection policy, etc. and notify the user to verify these informations.
- D. Before using specific functions in the Web service, display a warning such as "Do you really want to continue?"

Answer ➤

Q11 /20

The below C++ function returns the string `clinic` when given an input of string `yes`.

```
#include <iostream>
using namespace std;

int main(void) {
    while (1) {
        string s;
        cin >> s;
        if (s == "yes") {
            cout << "clinic" << endl;
        } else {
            break;
        }
    }

    return 0;
}
```

Choose the correct statement below.

- A. Entering the string `yes` will exit the program. (not `yes` but `Yes`)
- B. Entering `yessir` will return the string `clinic`.
- C. If you enter `yes` once, it outputs `clinic` and the program exits.

Answer ➤

Q12 /20

Your friend wrote the following function in Java. She says the function should return the average value of the given integer array `a`. Choose **all** of the correct statements about the function from the following.

```
static double mean(int[] a) {  
    int answer = 0;  
    for (int i = 0; i < a.length; i++) {  
        answer += a[i];  
    }  
    return answer / a.length;  
}
```

- A. If the length of `a` is 0, the function does not return any value.
- B. Aside from cases of integer overflow, the function always returns some value. However, the decimals of the returned value are rounded.
- C. An integer overflow may occur when `a` is long and has some large elements.
- D. None of the above are correct.

Answer ➤

Q13 /20

The following JavaScript function returns the number where the integer `x` occurs in the given array of integers `a`.

```
function find(a, x) {
    for (let i = 0; i < a.length; i++) {
        if (a[i] == x) {
            return i + 1;
        }
    }
    return -1;
}
```

Choose the correct statement regarding this function.

- A. If the length of array `a` is 0, the program terminates abnormally.
- B. If multiple occurrences of `x` are found in array `a`, all occurrences are returned.
- C. If `x` is not found in array `a`, the function returns `-1`.
- D. All of the above is incorrect.

Answer >

Q14 /20

Given an integer n , $n \ll i$ is the left shift operator that shifts the integer n to the left i bits, and $n \gg i$ is the right shift operator that shifts the integer n to the right i bits. Which of the following expressions is equal to $6 \times n$?

- A. $((n \ll 1) + n) \ll 1$
- B. $(n \ll 3) + (n \ll 3)$
- C. $(n \gg 2) + (n \gg 1)$
- D. $((n \gg 2) + n) \ll 1$

Answer ➤

Q15 /20

In UNIX-like OS, which is the correct meaning of the command `chmod u+x, foo` ?

- A. Give execute permission to owner of the file named foo.
- B. Give the group that the file named foo belongs to, execute permission of foo.
- C. Give execute permission to all users who use the file foo.
- D. Give execute permission to the owner of the file named foo and removes execute permission of all other users.

Answer ➤

Q16 /20

Which is suitable as a modular design for improving reliability and maintainability?

	Module strength	Module coupling degree
A	strength	strength
B	strength	weak
C	weak	strength
D	weak	weak

A. AB. BC. CD. D**Answer >**

Q17 /20

Which one of the following is not true about Deep Learning?

- A. It is a part of machine learning which builds deep neural networks, and shows higher performance than conventional methods, and it has applications in the fields like computer vision, speech recognition, natural language processing etc.
- B. Deep learning is used in various real world problems such as machine translation, anomaly detection, and automatic tagging of Facebook images.
- C. Deep learning not only produces significantly accurate results, but also it is easy to interpret why such results have been achieved.
- D. AlphaGo, the first computer program to defeat a Go world champion, also uses Deep learning.

Answer ➤

Q18 /20

Which of the following databases are classified as NoSQL?

- A. MySQL
- B. Redis
- C. SQLite
- D. PostgreSQL

Answer >

Q19 /20

Which one of the following is not included in the characteristics of a reliable transaction system?

- A. Atomicity
- B. Isolation
- C. Consistency
- D. Transparency

Answer ➤

Q20 /20

There are seven vertices numbered from 1 to 7. When connecting this with several sides (u, v) , which one create a directed tree structure?

- A. (2, 5) (4, 1) (3, 7) (7, 4) (3, 5)
- B. (4, 7) (1, 3) (2, 4) (4, 1) (2, 6) (4, 5) (4, 3)
- C. (1, 1) (7, 2) (3, 3) (4, 2) (3, 1) (2, 3)
- D. (6, 5) (7, 2) (5, 2) (4, 2) (3, 1) (2, 3)

Answer >