



QUIZ

1. What will be the output of the following C application?

```
#include <stdio.h>
#include <string.h>

void fct(char *s1, char *s2, int idx)
{
    if (idx < (int)strlen(s1) &&
        idx < (int)strlen(s2))
    {
        char temp = s1[idx];
        s1[idx] = s2[idx];
        s2[idx] = temp;

        fct(s1, s2, idx + 1);
    }
}

int main()
{
    char string1[] = "Exam_1";
    char string2[] = "Exam_2";

    fct(string1, string2, 0);

    printf("string1 = %s, string2 = %s\n", string1, string2);

    return 0;
}
```

- a. string1 = Exam_1, string2 = Exam_2
- b. string1 = Exam_2, string2 = Exam_2
- c. string1 = Exam_1, string2 = Exam_1
- d. string1 = Exam_2, string2 = Exam_1

2. What will be the output of the below C application?

```
#include <stdio.h>
#include <string.h>

int main()
{
    char a[] = { 0x00, 'A', 'B' };
```



```
char* pa = NULL;

pa = a;

printf("array size = %u, string length = %u\n",
      (unsigned int)sizeof(a), (unsigned int)strlen(pa));

return 0;
}
```

- a. array size = 3, string length = 3
- b. array size = 0, string length = 0
- c. array size = 2, string length = 2
- d. array size = 3, string length = 0

3. What will be the output when the below C application will run?

```
#include <stdio.h>
#include <stdlib.h>

int main()
{
    char a[] = { '1', '2', '3', '\0' };

    printf("%d\n", atoi(a));

    return 0;
}
```

- a. 1230
- b. 123
- c. -23
- d. 123.0

4. What will be the output when the below C application will run?

```
#include <stdio.h>

int main()
{
    int x = 10, y = 11;
    int *px = NULL, *py = NULL;

    px = &x;
    py = &y;
```



```
*px += 3;
*py += 5;

int m = (x + *py) < (y + *px) ? (y + *px) : (x + *py);

printf("\nm = %d\n", m);

return 0;
}
```

- a. m = 21
- b. "m = 29"
- c. "m = 21"
- d. m = 29

5. What will be the output when the below C application will run?

```
#include <stdio.h>
#include <malloc.h>

void f(int* x)
{
    x = (int*)malloc(sizeof(int));
    if (x)
    {
        *x = 10;
    }
}

int main()
{
    int a = 65;
    int *pa = &a;

    f(pa);

    printf("*pa = %d\n", *pa);

    return 0;
}
```

- a. *pa = &a
- b. *pa = 65
- c. *pa = 0
- d. *pa = 10



6. Consider the following content saved into a file named `Points.txt`:

```
1  -3,-2,4,3
2  3,4,-1,-3
3
```

What will be the output of the following C application?

```
#include <stdio.h>
#include <stdlib.h>

typedef struct point point;
typedef struct rect rect;

struct point {
    int x, y;
};

struct rect {
    point point1;
    point point2;
};

int main()
{
    FILE* pf = fopen("Points.txt", "r");
    rect r;

    while (fscanf(pf, "%d,%d,%d,%d\n",
        &r.point1.x, &r.point1.y,
        &r.point2.x, &r.point2.y) == 4)
    {
        printf("diff_x = %d, diff_y = %d\n",
            abs(r.point1.x - r.point2.x),
            abs(r.point1.y - r.point2.y));
    }

    return 0;
}
```

a.
diff_x = 5, diff_y = 5
diff_x = 4, diff_y = 7



- b.
diff_x = 7, diff_y = 7
diff_x = 4, diff_y = 4
c.
diff_x = 7, diff_y = 5
diff_x = 4, diff_y = 7
d.
diff_x = 7, diff_y = 5
diff_x = 4, diff_y = 4

7. What will be the output when the below C application will run?

```
#include <stdio.h>

#define COMP(A, B) ((A) > (B) ? (A) : (B))

int main()
{
    int x = 10, y = 11, z = 9, t = 10;

    printf("result = %d\n", COMP(x + y, z + t));

    return 0;
}
```

- a. result = 19
b. result = 11
c. result = 21
d. result = 10

8. What will be the output of the following C application?

```
#include <stdio.h>

unsigned char fct(unsigned int x)
{
    unsigned char b;

    for (b = 0; x != 0; x = x >> 1)
        if (x & 01)
            b++;

    return b;
}
```



```
int main()
{
    unsigned int n = 0x8421;

    unsigned char result = fct(n);
    printf("result = %hhu\n", result);

    return 0;
}
```

- a. result = 0
- b. result = 3
- c. result = 4
- d. result = -1

9. What will be the output of the below C application?

```
#include <stdio.h>

int main()
{
    char a[] = { 'A', 'B', '\0' };
    int* pa = NULL;

    pa = (int*)a;

    printf("%s\n", (char*)pa);

    return 0;
}
```

- a. ABO
- b. A
- c. B
- d. AB

10. What will be the output when the below C application will run?

```
#include <stdio.h>

int main()
{
    char a[] = { 'A', 'B' };
    char *pa = NULL, *p2a = NULL;
```



```
    pa = a;  
    p2a = pa + 1;  
    printf("pa = %c, p2a = %c\n", *pa, *p2a);  
  
    return 0;  
}
```

- a. *pa = B, *p2a = B
- b. *pa = A, *p2a = A
- c. *pa = A, *p2a = B
- d. *pa = B, *p2a = A

11. What will the following C++ code print?

```
#include <iostream>  
using namespace std;  
  
class Base {  
public:  
    void show() {  
        cout << "Base" << endl;  
    }  
};  
  
class Derived : public Base {  
public:  
    void show() {  
        cout << "Derived" << endl;  
    }  
};  
  
int main() {  
    Base *x = new Derived();  
    x->show();  
    delete x; return 0;  
}
```

- a. it will generate a runtime error
- b. Base
- c. Derived
- d. BaseDerived



12. Assuming that B is a valid C++ class, what operator(s) could be called in the second line of code from the main function?

```
int main()
{
    B b;
    b + 2;
    return 0;
}
```

- a. only the addition operator
- b. addition operator or explicit cast
- c. only the copy constructor
- d. addition operator or implicit cast

13. What will be the output of the following C++ program?

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

class Car
{
public:
    string producer = "Dacia";
};

int main()
{
    Car c;
    Car* pc = nullptr;
    cout << pc->producer;
    return 0;
}
```

- a. Dacia
- b. runtime error
- c. an empty string
- d. compile error



14. What will be the output of the following C++ program?

```
#include <iostream>
using namespace std;
class Foo {
public:
    Foo() { }

    Foo(const Foo& f) {
        cout << "##";
    }

    Foo method(Foo f) {
        return f;
    }
};

int main() {
    Foo f;
    f = f.method(f);
    return 0;
}
```

- a. ##
- b. #
- c. no output
- d. ###

15. Which of the following best describes the concept of inheritance in C++?

- a. the ability to have multiple functions with the same name but different parameters
- b. the ability to inherit properties and behaviors from a parent class
- c. the ability to encapsulate data and functions that operate on the data within a single unit of code
- d. the ability to define multiple classes with the same name

16. Taking into consideration the following C++ code, what will be the message printed to the console?

```
#include <iostream>

class One
{
    int a; void b() {}
};
```



```
class Two {  
    int c; virtual void d() {}  
};  
  
int main()  
{  
    std::cout << (sizeof(Two) <= sizeof(One) ? "Yes" : "No");  
    return 0;  
}
```

- a. No
- b. YesNo
- c. 0
- d. Yes

17. What will be the output of the following C++ code sequence?

```
#include <iostream>  
using namespace std;  
class Foo { public: int x = 123; };  
  
int main()  
{  
    Foo** v = new Foo*[2];  
    v[0] = new Foo();  
    cout << (*v)->x;  
    return 0;  
}
```

- a. compile error
- b. 123
- c. runtime error
- d. the address of the x attribute

18. What will be the output of the next C++ program?

```
#include <iostream>  
using namespace std;  
  
class X { public: virtual int luckyNumber() = 0; };  
class Y : public X  
{  
public:  
    int luckyNumber() { return 7; }  
};
```



```
class Z : public Y
{
public:
    int luckyNumber() { return 9; }
};

int main()
{
    X* x; Y y; Z z;
    y.luckyNumber() ? x = &z : x = &y;
    cout << x->luckyNumber();
    return 0;
}
```

- a. 7
- b. 0
- c. compile/runtime error
- d. 9

19. Given the C++ classes from below and assuming that we have included the necessary classes and libraries, what will be the output when the main function is executed?

```
class Base {
public:
    Base() {
        cout << "A";
    }
    virtual ~Base() {
        cout << "B";
    }
};

class Derived : public Base {
public:
    Derived() {
        cout << "X";
    }
    ~Derived() {
        cout << "Y";
    }
};

int main() {
    Base *b = new Derived();
    delete b;
    return 0;
}
```



}

- a. AXYB
- b. ABXY
- c. AXB
- d. XAYB

20. Giving the C++ class S from below and assuming that we have included the necessary classes and libraries, what will be the output of the main function?

```
class S
{
public:
    string name;
    char& operator[](int i) {
        return name[i];
    }
};
```

```
int main()
{
    S s;
    s.name = "ABC";
    s[1] = 'X';
    cout << s.name;
    return 0;
}
```

- a. AXC
- b. compile error
- c. A
- d. runtime error

21. What will be the output of the next Java program?

```
public class Main {
    public static int function() {
        try {
            return 2 / 0;
        } catch (Exception e) {
            return 5;
        } finally {
            return 7;
        }
    }
}
```



```
public static void main(String[] args) {  
    System.out.print(function());  
}  
}
```

- a. 7
- b. NaN
- c. compile or runtime error
- d. 5

22. Given the following Java code, and assuming that all the classes are correctly imported, what will be the actual data type of the variable named result?

```
public class Main {  
    public static void main(String[] args) {  
        Callable c = () -> {  
            return new Random().nextInt(100);  
        };  
  
        ExecutorService e = Executors.newSingleThreadExecutor();  
        var result = e.submit(c);  
    }  
}
```

- a. Future<Integer>
- b. void
- c. Integer
- d. int

23. Being given the following Java code, what will be the console output assuming that all the classes are correctly imported?

```
public class Main {  
    public static long square(int value) {  
        return (long) Math.pow(value, 2);  
    }  
  
    public static void main(String[] args) {  
        List<Integer> x = List.of(1, 2, 3, 4);  
        x.stream().map(Main::square).forEach(System.out::print);  
    }  
}
```



- a. compile error
- b. 1234
- c. 14916
- d. runtime error

24. Taking into consideration the following Java code, how can the default constructor call the constructor with one parameter in order to initialize the attribute speed with the value 10?

```
class Car {  
    private int speed;  
  
    public Car() {  
  
    }  
  
    public Car(int speed) {  
        this.speed = speed;  
    }  
}
```

- a. using `this(10)` as the first statement
- b. using `this(10)` anywhere in the constructor
- c. using `super(10)` anywhere in the constructor
- d. using `super(10)` as the first statement

25. What will be the output of the following Java program?

```
public class Main {  
    public static void interchange(Integer x, Integer y) {  
        Integer aux = x;  
        x = y;  
        y = aux;  
    }  
  
    public static void main(String[] args) {  
        Integer x = 3;  
        Integer y = 5;  
        interchange(x, y);  
        System.out.print(x + " " + y);  
    }  
}
```



- a. runtime error
- b. 3 5
- c. 5 3
- d. compile error

26. Which of the following statements is true considering the following Java program?

```
public class Main {  
    public static void main(String[] args) {  
        int[][] m = {{1, 2}, {3, 4, 5}, {6}};  
        for(int i = 0; i < m.length; i++) {  
            for(int j = 0; j < m[i].length; j++) {  
                System.out.print(m[i][j] + " ");  
            }  
        }  
    }  
}
```

- a. it prints 1 2 3 4 6
- b. it throws a checked exception
- c. it throws an unchecked exception
- d. it prints 1 2 3 4 5 6

27. Which of the following best describes the concept of default methods in Java?

- a. methods present in abstract classes with a default implementation
- b. methods present in interfaces with a default implementation
- c. methods defined in interfaces with the default keyword and no body
- d. methods present in abstract or non-abstract classes with a default implementation

28. What will be the output of the following Java program, assuming that we are using JDK 21 and all the imports are correctly specified?

```
public class Main {  
    public static void main(String[] args) {  
        List<String> names = List.of("Amy", "Bob",  
                                     "Charles", "Daniel");  
        var result = names.stream().map(s -> s.substring(0, 1))  
                           .reduce((x, y) -> x + y).orElse("");  
        System.out.print(result);  
    }  
}
```



- a. an empty string
- b. a compile error
- c. AB
- d. ABCD

29. What will be the output of the following Java program (JDK 21)?

```
class Foo implements AutoCloseable {
    public Foo() {
        System.out.print("cyber");
    }

    public void f() {
        System.out.print("ISM");
    }

    public void close() {
        System.out.print("security");
    }
}

public class Main {

    public static void main(String[] args) {
        try(Foo f = new Foo()) {
            f.f();
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```

- a. ISM
- b. cyberISMsecurity
- c. cybersecurityISM
- d. cyberISM

30. Having into consideration the following Java code, which line of code from the main method will return a compile error?

```
class Point {
    public int x;
    public int y;
}
```



```
class Circle {  
    public final Point center = new Point();  
    //...  
}  
  
public class Main {  
    public static void main(String[] args) {  
        Circle circle = new Circle();  
        circle.center.x = 5; // (1)  
        circle.center.y = 10; // (2)  
        circle.center = new Point(); // (3)  
    }  
}
```

- a. all three of them
- b. (1)
- c. (2)
- d. (3)

*** Observation: Each question has same number of points.**

**Cod Grilă**

1	2	3	4	5	6
☐	☐	☐	☐	☒	☐

Disciplină

- | | |
|----------------------------------|--------|
| ☐ | AP1 |
| ☐ | BT1 |
| ☐ | BT2 |
| ☐ | CSIE 1 |
| ☐ | CSIE 2 |
| ☐ | CSIE 3 |
| ☒ | CSIE 4 |
| ☐ | CSIE 5 |
| ☐ | CIG1 |
| ☐ | CIG2 |
| ☐ | DA1 |
| ☐ | DA2 |
| ☐ | ETA1 |
| ☐ | EAM1 |
| ☐ | FIN1 |
| ☐ | MAN1 |
| ☐ | MK1 |
| ☐ | MK2 |
| ☐ | REI1 |
| ☐ | MD |

Nr.	A	B	C	D	
1	☐	☐	☐	☒	3p
2	☐	☐	☐	☒	3p
3	☐	☒	☐	☐	3p
4	☐	☒	☐	☐	3p
5	☐	☒	☐	☐	3p
6	☐	☐	☒	☐	3p
7	☐	☐	☒	☐	3p
8	☐	☐	☒	☐	3p
9	☐	☐	☐	☒	3p
10	☐	☐	☒	☐	3p
11	☐	☒	☐	☐	3p
12	☐	☐	☐	☒	3p
13	☐	☒	☐	☐	3p
14	☒	☐	☐	☐	3p
15	☐	☒	☐	☐	3p
16	☒	☐	☐	☐	3p
17	☐	☒	☐	☐	3p
18	☐	☐	☐	☒	3p
19	☒	☐	☐	☐	3p
20	☒	☐	☐	☐	3p
21	☒	☐	☐	☐	3p
22	☒	☐	☐	☐	3p
23	☐	☐	☒	☐	3p
24	☒	☐	☐	☐	3p
25	☐	☒	☐	☐	3p
26	☐	☐	☒	☐	3p
27	☐	☒	☐	☐	3p
28	☐	☐	☐	☒	3p
29	☐	☒	☐	☐	3p
30	☐	☐	☐	☒	3p
31	☐	☐	☐	☐	
32	☐	☐	☐	☐	
33	☐	☐	☐	☐	
34	☐	☐	☐	☐	
35	☐	☐	☐	☐	