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State	Finished
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Time taken	10 mins 53 secs
Marks	19.00/20.00
Grade	95.00 out of 100.00

Question 1

Complete

Mark 1.00 out of 1.00

In the following C++ program, what is the output?

```
#include <iostream>
using namespace std;
void update(int &a, int b) {
    a += 2;
    b += 3;
}
int main() {
    int x = 5, y = 5;
    update(x, y);
    cout << x << " " << y << endl;
    return 0;
}
```

- ☐ a. 7 8
- ☐ b. 5 8
- ☒ c. 7 5
- ☐ d. 5 5

Question 2

Complete

Mark 1.00 out of 1.00

What is the output of this C++ program using a range-based loop?

```
#include <iostream>
using namespace std;
int main() {
    int arr[] = {1, 2, 3};
    int sum = 0;
    for (int x : arr) {
        sum += x;
        x = 10;
    }
    cout << sum << " " << arr[0] << endl;
    return 0;
}
```

- ☐ a. 30 10
- ☒ b. 6 1
- ☐ c. 6 10
- ☐ d. 30 1

Question 3

Complete

Mark 1.00 out of 1.00

What is the output of this C++ program involving pointers and references?

```
#include <iostream>
using namespace std;
int main() {
    int a = 10;
    int *p = &a;
    int &r = a;
    *p = 20;
    r = 30;
    cout << a << " " << *p << " " << r << endl;
    return 0;
}
```

- ☐ a. 20 20 20
- ☐ b. 30 20 30
- ☒ c. 30 30 30
- ☐ d. 10 20 30

Question 4

Complete

Mark 1.00 out of 1.00

What is the output when calling a function with a static variable in C++?

```
#include <iostream>
using namespace std;
void fun() {
    static int x = 0;
    x++;
    cout << x << " ";
}
int main() {
    for (int i = 0; i < 3; ++i) {
        fun();
    }
    return 0;
}
```

- ☐ a. 3 3 3
- ☐ b. 0 1 2
- ☒ c. 1 2 3
- ☐ d. 1 1 1

Question 5

Complete

Mark 1.00 out of 1.00

What is the output of this C++ program using vector pass-by-value vs pass-by-reference?

```
#include <iostream>
#include <vector>
using namespace std;
void add(vector<int> v) {
    v.push_back(4);
}
void addRef(vector<int> &v) {
    v.push_back(5);
}
int main() {
    vector<int> v = {1, 2, 3};
    add(v);
    addRef(v);
    cout << v.size() << " " << v.back() << endl;
    return 0;
}
```

- ☐ a. 3 4
- ☒ b. 4 5
- ☐ c. 4 4
- ☐ d. 3 3

Question 6

Complete

Mark 1.00 out of 1.00

What is the output of this Java method overloading example?

```
class A {
    void show(int x) {
        System.out.println("int");
    }
    void show(Integer x) {
        System.out.println("Integer");
    }
    public static void main(String[] args) {
        A a = new A();
        a.show(5);
        Integer i = null;
        a.show(i);
    }
}
```

- ☒ a. int Integer
- ☐ b. int int
- ☐ c. Compilation error
- ☐ d. Integer Integer

Question 7

Complete

Mark 1.00 out of 1.00

What is the output of this Java ArrayList remove sequence?

```
import java.util.*;
public class Test {
    public static void main(String[] args) {
        List<Integer> list = new ArrayList<>();
        list.add(1);
        list.add(2);
        list.add(3);
        list.remove(1);
        list.remove(Integer.valueOf(3));
        System.out.println(list);
    }
}
```

- ☐ a. [1, 2, 3]
- ☐ b. [1, 3]
- ☒ c. [1]
- ☐ d. [2]

Question 8

Complete

Mark 1.00 out of 1.00

What is the output of this Java String and StringBuilder modification example?

```
public class Test {
    public static void main(String[] args) {
        String s = "A";
        StringBuilder sb = new StringBuilder("A");
        change(s, sb);
        System.out.println(s + " " + sb.toString());
    }
    static void change(String s, StringBuilder sb) {
        s = s + "B";
        sb.append("B");
    }
}
```

- ☐ a. AB A
- ☐ b. A A
- ☒ c. A AB
- ☐ d. AB AB

Question 9

Complete

Mark 0.00 out of 1.00

What will this Java try-catch-finally method return?

```
public class Test {  
    public static int foo() {  
        try {  
            int x = 10 / 0;  
            return 1;  
        } catch (ArithmeticException e) {  
            return 2;  
        } finally {  
            return 3;  
        }  
    }  
    public static void main(String[] args) {  
        System.out.println(foo());  
    }  
}
```

- ☐ a. 3
- ☐ b. Runtime exception
- ☐ c. 1
- ☒ d. 2

Question 10

Complete

Mark 1.00 out of 1.00

What is the output of this Java stream pipeline?

```
import java.util.*;  
import java.util.stream.*;  
public class Test {  
    public static void main(String[] args) {  
        List<String> list = Arrays.asList("a", "bb", "ccc", "dd");  
        long count = list.stream()  
            .filter(s -> s.length() >= 2)  
            .map(String::toUpperCase)  
            .count();  
        System.out.println(count);  
    }  
}
```

- ☒ a. 3
- ☐ b. Compilation error
- ☐ c. 2
- ☐ d. 4

Question 11

Complete

Mark 1.00 out of 1.00

What happens if a class has at least one pure virtual function in C++?

- ☐ a. It cannot be inherited
- ☐ b. It becomes a final class
- ☒ c. It becomes an abstract class
- ☐ d. It can be instantiated directly

Question 12

Complete

Mark 1.00 out of 1.00

What is the default access specifier for class members in C++?

- ☐ a. protected
- ☐ b. public
- ☐ c. package-private
- ☒ d. private

Question 13

Complete

Mark 1.00 out of 1.00

Which C++ container guarantees constant-time insertion and deletion at both ends?

- ☐ a. vector
- ☐ b. map
- ☐ c. list
- ☒ d. deque

Question 14

Complete

Mark 1.00 out of 1.00

Which feature of C++ allows multiple functions to have the same name but different parameters?

- ☒ a. Polymorphism (Compile-time)
- ☐ b. Namespace resolution
- ☐ c. Abstraction
- ☐ d. Encapsulation

Question 15

Complete

Mark 1.00 out of 1.00

Which of the following is TRUE about virtual destructors in C++?

- ☐ a. They reduce memory usage
- ☐ b. They prevent base class methods from being overridden
- ☒ c. They ensure proper cleanup of derived objects through base pointers
- ☐ d. They disable polymorphism

Question 16

Complete

Mark 1.00 out of 1.00

What does the JVM do during garbage collection?

- ☐ a. Removes final variables
- ☒ b. Frees memory by removing unreachable objects
- ☐ c. Compiles Java bytecode to native code
- ☐ d. Manages thread scheduling

Question 17

Complete

Mark 1.00 out of 1.00

Which Java collection does NOT allow duplicate elements?

- ☐ a. ArrayList
- ☐ b. LinkedList
- ☒ c. HashSet
- ☐ d. Vector

Question 18

Complete

Mark 1.00 out of 1.00

Which Java exception is thrown when accessing an invalid index of an array?

- ☐ a. NullPointerException
- ☐ b. IllegalArgumentException
- ☒ c. IndexOutOfBoundsException
- ☐ d. ArrayStoreException

Question 19

Complete

Mark 1.00 out of 1.00

Which keyword in Java prevents a method from being overridden?

- ☒ a. final
- ☐ b. static
- ☐ c. abstract
- ☐ d. const

Question 20

Complete

Mark 1.00 out of 1.00

Which of the following is NOT a feature of Java?

- ☐ a. Multithreading support
- ☐ b. Automatic memory management
- ☒ c. Pointer arithmetic
- ☐ d. Platform independence