1. Which of the following is not a basic data structure in C++?

a) Array

b) LinkedList

**c) Queue**

d) Stack

2. #include <iostream>

int main() {

int x = 5;

std::cout << x++ << " " << ++x;

return 0;

}

What will be the output of the above C++ program?

**a) 5 7**

b) 6 7

c) 6 6

d) 5 6

3. What is the time complexity for accessing an element in an array with n elements?

a) O(n)

**b) O(1)**

c) O(log n)

d) O(n^2)

4. #include <iostream>

int main() {

int arr[] = {1, 2, 3, 4, 5};

std::cout << arr[5];

return 0;

}

What will be the output of the above C++ program?

a) 0

b) 1

c) 5

**d) Garbage value**

5. What is the primary drawback of using an array in C++?

a) Fixed size

b) Dynamic memory allocation

**c) Inefficient insertion and deletion**

d) Inefficient access time

6. #include <iostream>

#include <string>

int main() {

std::string str = "Hello, World!";

std::cout << str.length();

return 0;

}

What will be the output of the above C++ program?

a) 12

**b) 13**

c) 14

d) 11

7. Which data structure is used to implement undo functionality in text editors?

a) Array

b) LinkedList

**c) Stack**

d) Queue

8. #include <iostream>

#include <vector>

int main() {

std::vector<int> numbers = {1, 2, 3, 4, 5};

std::cout << numbers[2];

return 0;

}

What will be the output of the above C++ program?

a) 1

b) 2

**c) 3**

d) 4

9. Which of the following is NOT a valid method to traverse a tree data structure?

a) In-order

**b) Out-order**

c) Pre-order

d) Post-order

10. #include <iostream>

#include <array>

int main() {

std::array<int, 5> arr = {10, 20, 30, 40, 50};

std::cout << arr.size();

return 0;

}

What will be the output of the above C++ program?

a) 4

**b) 5**

c) 10

d) 50

11. Which data structure can be used to find the shortest path in a weighted graph?

**a) Dijkstra's Algorithm**

b) Breadth-First Search (BFS)

c) Depth-First Search (DFS)

d) A\* Search Algorithm

12. #include <iostream>

#include <queue>

int main() {

std::queue<int> q;

q.push(1);

q.push(2);

q.push(3);

std::cout << q.front();

return 0;

}

What will be the output of the above C++ program?

**a) 1**

b) 3

c) 2

d) Compiler Error

13. Which of the following data structures is best suited for implementing a dictionary (key-value pairs)?

a) Array

b) LinkedList

**c) Hash Table**

d) Stack

14. #include <stack>

int main() {

std::stack<int> s;

s.push(1);

s.push(2);

s.push(3);

std::cout << s.top();

return 0;

}

What will be the output of the above C++ program?

a) 1

**b) 3**

c) 2

d) Compiler Error

15. #include <iostream>

#include <map>

int main() {

std::map<std::string, int> scores;

scores["Alice"] = 90;

scores["Bob"] = 80;

scores["Charlie"] = 85;

std::cout << scores["Bob"];

return 0;

}

What will be the output of the above C++ program?

**a) 80**

b) 85

c) 90

d) Compiler Error

16. What is the time complexity for adding an element at the beginning of an ArrayList with n elements (in the worst case)?

a) O(n)

b) O(log n)

c) O(1)

**d) O(n^2)**

17. #include <iostream>

#include <set>

int main() {

std::set<int> numbers = {3, 2, 1, 4, 5};

std::cout << \*numbers.begin();

return 0;

}

What will be the output of the above C++ program?

**a) 1**

b) 2

c) 3

d) 5

18. Which of the following data structures can efficiently maintain a dynamic collection of unique elements?

**a) Set**

b) ArrayList

c) Stack

d) Queue

19. #include <iostream>

#include <deque>

int main() {

std::deque<int> dq;

dq.push\_front(1);

dq.push\_back(2);

std::cout << dq.back() << " " << dq.front();

return 0;

}

What will be the output of the above C++ program?

**a) 2 1**

b) 1 2

c) 1 1

d) 2 2

20. What is the worst-case time complexity for searching an element in a Hash Table with n elements (assuming no collisions)?

a) O(log n)

b) O(n)

c) O(1)

**d) O(1) (constant time)**