

# 45 Lecture - CS304

## Important Subjective

### 1. What is resource management in C++?

Resource management in C++ refers to the techniques used to handle and manage system resources, such as memory, files, network connections, etc.

### What is dynamic memory allocation in C++?

Dynamic memory allocation is a mechanism provided by the language to allocate memory at runtime. The memory is allocated using operators such as `new` and `delete`.

### What is a smart pointer?

A smart pointer is a class that provides automatic memory management for dynamically allocated objects. It automatically deletes the object it points to when it is no longer needed.

### What is RAII?

RAII (Resource Acquisition Is Initialization) is a technique in C++ used to manage resource acquisition and release in a scoped manner. It ensures that resources are acquired and released in a predictable and safe way.

### How can you handle exceptions in C++?

Exceptions can be handled using try-catch blocks. The code that might throw an exception is placed in the try block, and the catch block catches the exception and handles it appropriately.

### What is the difference between `throw` and `throw()` in C++?

`throw` is used to throw an exception, while `throw()` is used to specify that a function does not throw any exceptions.

### What are the benefits of using smart pointers in C++?

Smart pointers help prevent memory leaks and improve code safety by automatically releasing resources when they are no longer needed. They also simplify code by eliminating the need for manual memory management.

### What is the role of destructors in C++?

Destructors are used to release resources acquired by an object when it is no longer needed. They are called automatically when an object is destroyed.

### What is the use of the `std::unique_ptr` class in C++?

`std::unique_ptr` is a smart pointer that provides exclusive ownership of the object it points to. It automatically deletes the object when it is no longer needed.

### How can you prevent resource leaks in C++?

Resource leaks can be prevented by using RAII, smart pointers, and exception handling. These techniques ensure that resources are acquired and released in a predictable and safe way, even in the presence of exceptions.