21 December
2016

Interview Preparation

Coding Ninjas

Lecture: 6 - Object Oriented Programming

Ankush Singla

Doubts?

Test Doubts?

Objective Questions

Constant Variables

Object Oriented Programming

C++ Classes

1. Classes & Objects
2. Data
3. Functions

Access Modifiers

1. Public
2. Protected
3. Private

Default methods with every class

Constructor and Default Methods

1. Constructor
2. Copy Constructor
3. Copy Assignment Operator
4. Destructor

User Defined Constructors

Initializer List

Const variables & const functions

Operator Overloading

```
class pair
{
    public:
    int x,y;
    bool operator < ( const pair& p ) const
    {
        if(x==p.x) return y<p.y;
        return x<p.x;
    }
};
```

Components of OOP

1. Encapsulation
2. Inheritance
3. Polymorphism

Encapsulation

1. Bind the data and functions together
2. Hiding the implementation details
3. Lets us change the implementation without breaking code of our users

Inheritance

1. Extending Functionality of an existing class
2. Add new methods and fields to derived class
3. If both classes have a function with same name, which class's function will get called?

Public, Protected & Private Inheritance

Polymorphism

1. Overriding the base class functions(Virtual Functions)
2. Ability of a variable to take different forms
3. Ability of a function to behave differently on basis of different parameters
4. Ability of a function to work with parameters of subtypes

Virtual Function?

Add two numbers in base 14

Abstract functions (Pure Virtual)

Abstract Classes(Interfaces)

Data Member Modifiers

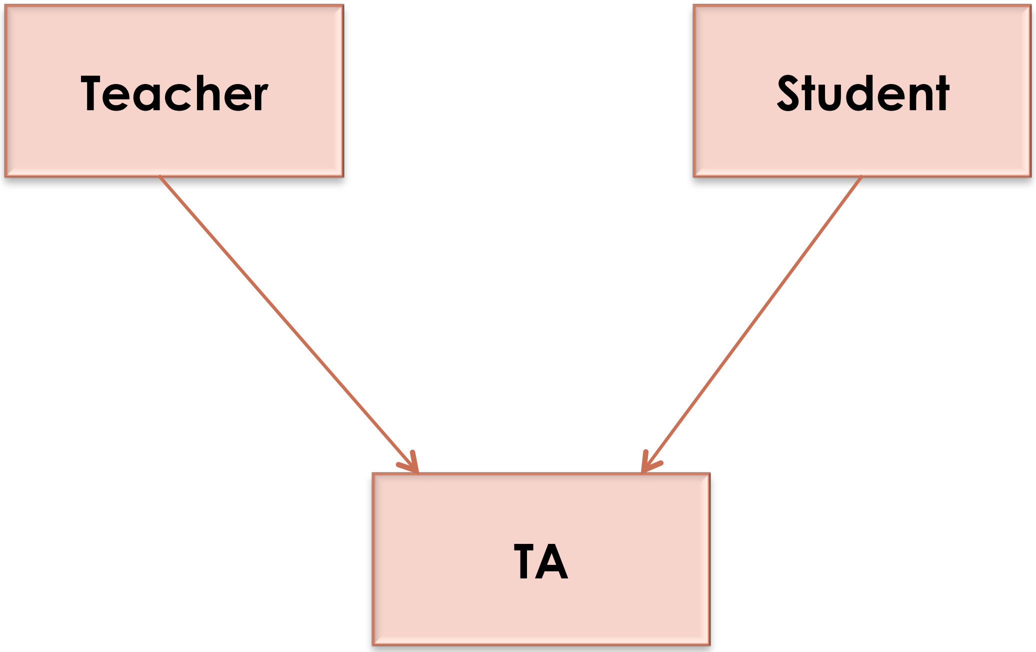
1. Public
2. Protected
3. Private
4. Const
5. Static

Function Modifiers

1. Public?
2. Protected?
3. Private?
4. Virtual
5. Pure Virtual?
6. Const
7. Static

Multiple Inheritance

Multiple Inheritance



Multiple Inheritance

```
class Teacher: public Person, public Employee
{
private:
     int m_nTeachesGrade;

public:
    Teacher(std::string strName, std::string strEmployer,
double dWage, int nTeachesGrade)
        : Person(strName), Employee(strEmployer,
dWage), m_nTeachesGrade(nTeachesGrade)
    {
    }
};
```

Diamond Problem

Templates

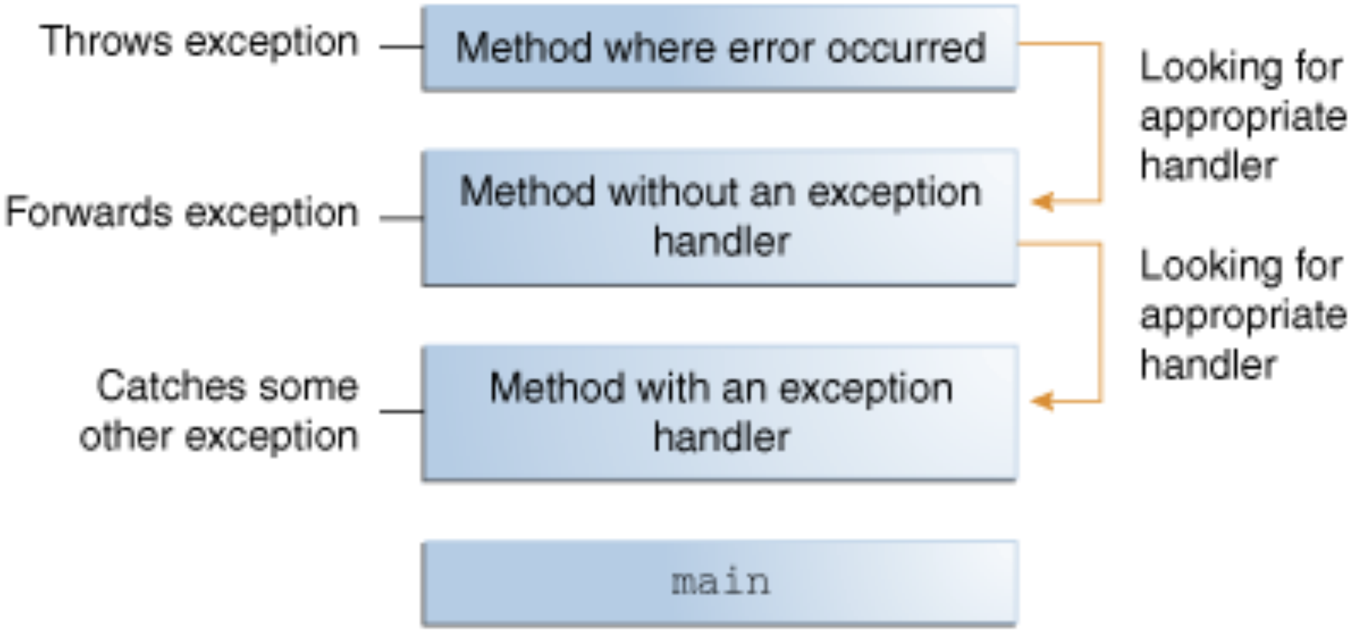
Lets make a template and use it

Template Methods

How to bound the allowed types?

Exceptions

Exceptions & the call stack



Throws exception

Method where error occurred

Looking for appropriate handler

Forwards exception

Method without an exception handler

Looking for appropriate handler

Catches some other exception

Method with an exception handler

main

Try catch block?

Type of Exceptions

1. Std::exception
2. Any type you want to throw

How to create our own Exception Class?

SQL

SQL Queries

1. Create Database
2. Create Table
3. Alter Table
4. Insert data
5. Select Data
6. Delete data
7. Like Queries
8. Order By
9. Group By

SQL Joins

1. Inner Join
2. Left Join
3. Right Join
4. Outer Join

SQL Constraints while creating table

1. Primary Key
2. Not Null
3. Default Value
4. Auto Increment
5. Create Index

SQL Functions Examples

1. Count
2. Sum
3. Avg
4. Now

Linked List with Arbit pointers

CODING NINJAS

Thank you

Ankush Singla
ankush@codingninjas.in