1. Copy Constructor for char\*
   1. Specifically use strcpy(). Do not use for loop to add data in char becoz it will take time
2. Difference between reference and pointer ;
   1. Ans main difference is-> reference cannot assign to nullptr
3. Can we use \* in copy constructor
   1. Ans : yes . But what is the problem

Class CopyTest

{

public:

CopyTest(const char\* str):

{

lenght =strlen(str);

Data = new char[length+1];

Strcpy(Data, str);

}

//If we remove & what will happen? (it will call recursive copy ctr)

CopyTest(const CopyTest& otherObj)

{

lenght = otherObj.lenght;

Data = new char[length+1];

strcpy(Data, otherobj.Data)

}

//Que: can we use \*(pointer) here? Yes

CopyTest(const CopyTest\* otherObj)

{

//But problem is that by mistake we can write otherobj=nullptr. This will create problems So do not use \*

lenght = otherObj->lenght;

Data = new char[length+1];

strcpy(Data, otherObj.Data);

}

~CopyTest()

{

delete[] Data;

}

private:

char\* Data;

int lenght;

};

int main()

{

CopyTest obj1(“Rohini”);

CopyTest obj2 = obj1; //copy will done

CopyTest obj2 = &obj1; //to call copy ctr of \* (pointer)

return 0;

}

1. What is mean by Polymorphism
2. Static polymorphism and dynamic polymorphism difference
   1. Static =Function overloading and dynamic = Function overriding
3. How to check function overriding is not happened at compile time
   1. Use override keyword in front of function in derived class
4. What is mean by static keyword, where we need to initialize it and why? Static variable in templates. What will be the output for the given program [Program was given]
5. Difference between ordered map and unordered map? insert is the one method and what will be other methods are there?
   1. emplace()
   2. Insert (key,,value)
   3. Insert (position, {key,val})
6. How to iterate map?
   1. Using iterator
   2. Range based for loop
7. Vtable and vptr corresponds to what?
   1. Vtable = per class
   2. Vptr=per object
8. How to create unique pointer? how it takes ownership? write down program for smart pointer? Why copy ctr not called in Unique ptr.?   
   Below code questions are : how to pass unique pointer in method.

// Online C++ compiler to run C++ program online

#include <iostream>

#include<memory>

using namespace std;

//1st approach

void Fun(unique\_ptr<int>& sp)

{

\*sp = 1000;

cout<<"fun called"<<endl;

}

//2nd approach

void Fun1(unique\_ptr<int> sp)

{

cout<<"fun1 called"<<endl;

}

int main() {

// Write C++ code here

std::cout << "Hello world!"<<endl;

unique\_ptr<int> sp (new int(20));

//unique\_ptr<int> sp1 = make\_unique<int>(10);

cout<<"Value="<< \*sp << " Address " << sp.get() <<endl;

//first Approach

Fun(sp);

cout<<"After changing value="<< \*sp << " Address " << sp.get() <<endl<<endl;

cout<<"MOst important approach ------"<<endl;

//Second Approach

Fun1(move(sp));

//cout<<"After move="<< \*sp <<endl;//got segmentation fault

if(sp.get() == nullptr) //sp==nullptr also use

{

cout<<"null after move"<<endl;

}

return 0;

}

1. Try catch block program

try

{

A obj;

A\* ptr = new A();

int val;

cin>> val;

//if val is 4 then what will happen?

//Ans: Throw will get call and beco of new A creation the memory leave will happened. To avoid this use Smart pointer concepts

if(val<5)

{

throw;

}

//code , calling third API

}

catch(...)//what is this ? (Ans Generic block)

{

}

1. What will be the default things provided by compiler for one empty class?
   1. Ans : default contructor
   2. Default assignment operator
   3. Default copy ctr
   4. Default dtr
   5. Default move copy ctr
   6. Default move assignment operator
2. How copy ctr works
3. How assignment operator works?
4. Program on copy ctr for the pointer in class.(IMPORTANT QUE)
5. Question on below code [Does C++ compiler create default constructor when we write our own?]

class Test

{

public:

Test(int a, int b)

{

}

};

Test t(1,2); //will default ctr of my class get call by compiler or not?

Ans : <https://www.geeksforgeeks.org/does-c-compiler-create-default-constructor-when-we-write-our-own/>

1. Most important Program : Inside copy ctr called the other class copy ctr

// Online C++ compiler to run C++ program online

#include <iostream>

#include <cstring>

using namespace std;

class X

{

public:

int valX;

X()=default;

X(int val):valX(val)

{

cout<< "X class ctr = " << valX<<endl;

}

X(const X& other)//added to check this called or not

{

valX = other.valX;

cout<<"X class copy ctr = "<< valX<<endl;

}

X& operator=(const X& other) //added to check this called or not

{

if(this!=& other)

{

valX = other.valX;

cout<<"X Assignlemnt Operator called"<<endl;

}

return \*this;

}

};

class Y

{

public:

int valY;

Y(int val):valY(val)//added to check this called or not

{

cout<< "Y class ctr = "<< valY<<endl;

}

Y(const Y& other)//added to check this called or not

{

valY = other.valY;

cout<< "Y copy class ctr = " << valY<<endl;

}

};

class Emp

{

public:

int A;

int \*ptrA;

X objX;

Y \*ptrY;

char\* Str;

Emp(int a,

int\* p,

X obj1,

Y\* ptr,

char\* c)

{

cout << "Emp Param ctr called" << endl;

A = a;

ptrA = new int();

\*ptrA = \*p;

objX = obj1;

ptrY = new Y(\*ptr);

int len = strlen(c);

Str = new char[len+1];

strcpy(Str, c);

}

Emp(const Emp& other)

{

cout<<endl<<endl;

cout<<"Emp Copy ctr called"<<endl;

A = other.A;

ptrA = new int;

\*ptrA = \*other.ptrA;

objX = other.objX;

ptrY = new Y(\*other.ptrY);//copy ctr get called

int len = strlen(other.Str);

Str = new char[len+1];

strcpy(Str, other.Str);

}

~Emp()

{

delete ptrA;

ptrA = nullptr;

delete ptrY;

ptrY = nullptr;

delete [] Str;

Str = nullptr;

cout<<"Emp dtr"<<endl;

}

};

int main() {

// Write C++ code here

std::cout << "Hello world!"<<endl;

X obj(30);

Y ptr(40);

int val=20;

Emp objEmp(10, &val, obj, &ptr,"ABC");

Emp objEmp1 = objEmp;

objEmp.ptrY->valY = 50;

objEmp1.ptrY->valY = 50;

cout<<"ptrY value After Copying = "<< objEmp1.ptrY->valY<<endl;

cout<< "String = "<<objEmp1.Str<<endl;

return 0;

}

1. In map key as object , it will work or not?

Class A{int id, string str};

Map<A, double> mapobject;

Mapobject.insert(make\_pair<objA, 3.4));//is it possible?

Ans : C++ map having key as a user defined data type

//verify below program

// Online C++ compiler to run C++ program online

#include <iostream>

#include <cstring>

#include <map>

using namespace std;

class A

{

public:

int id;

string str;

A(int i, string s):id(i),str(s){}

//friend ostream operator << (ostream& out, const A& obj);

};

**//To use the object(user defined data type) as a key in map , need to overload operator <**

bool operator<(**const** A& obj1 ,const A& obj2)

{

cout<<"Operator<"<<endl;

return( obj1.id < obj2.id);

}

/// Extra info : to print object for e.g A obj ; cout << obj<<endl;

// ostream operator << (ostream& out, const A& obj)

// {

// out << obj.id << " " << obj.str <<endl;

// }

int main() {

// Write C++ code here

std::cout << "Hello world!"<<endl;

map<A, double> objMap;

A obj1(10, "A");

A obj2(4, "A");

A obj3(12, "AC");

objMap.insert(make\_pair(obj1,3.4));

objMap.insert(make\_pair(obj2,3.44));

objMap.insert(make\_pair(obj3,3.4444));

for(auto v: objMap)

{

cout << endl;

A obj = v.first;

cout<<"first = "<< obj.id << " " << obj.str <<endl;

cout<<"Second = "<< v.second<<endl;

}

return 0;

}

1. Difference between List and vector? How the random access/insertion/deletion can explained ?
2. How to assign pointer to reference
   1. Ans :

int i=10;

int\* p = &i;

int& val = \*p;

1. If try to access nullptr then what will happened? Or defere it?
   1. Ans : Segmentation fault

Below code gives segmentation fault

int\* p = nullptr;

cout<<\*p;// segmentation fault

1. Program

/\*\* Create a user defined datatype - "person" having two data members - (name, age)

person :

string name

int age

Store 5 entries of person in a vector. Sort the vector according to the name of person objects. \*/

#include <iostream>

#include <vector>

#include <cstring>

#include <algorithm>

class Person

{

private:

std::string Name;

int Age;

public:

Person(std::string name, int age)

{

Name = name;

Age = age;

}

Person(Person&& other)

{

std::cout<<" MOve Ctr " <<std::endl;

Name = other.Name;

Age = other.Age;

}

Person& operator=(const Person& other)

{

std::cout<<"Assignment Op"<<std::endl;

if(this != &other)

{

this->Name = other.Name;

this->Age = other.Age;

}

return \*this;

}

std::string GetName() const

{

return Name;

}

int GetAge() const

{

return Age;

}

};

int main()

{

std::vector<Person> vec;

vec.emplace\_back("Rohini", 30);

vec.emplace\_back("Riya", 4);

vec.emplace\_back("Abhinav", 32);

vec.emplace\_back("Sachine", 33);

vec.emplace\_back("Bhanu", 34);

std::cout<< "Before Sorting"<<std::endl;

for(const Person& p: vec)

{

std::cout << p.GetName() << " " << p.GetAge() << std::endl;

}

std::**sort**(vec.begin(), vec.end(), [](const Person& P1, const Person& P2) //for this operator= is required

{

return P1.GetName() < P2.GetName(); // If userdefind object is passed In sort then we //need to explicitly do comparision

});

std::cout << std::endl;

std::cout<< "After Sorting"<<std::endl;

for(const Person& p: vec)

{

std::cout << p.GetName() << " " << p.GetAge() << std::endl;

}

return 0;

}

1. Questions was based on above program

g++ -fno-elide-constructors -std=c++11 -Wall -pedantic -pthread main.cpp && ./a.out

* 1. If we use command line argument then the copy ctr is marked as deleted by the compiler becoz copy elision is happened and no overhead of copy is done. And for that we need to use const & .
  2. Why to not prefer to use using namespace std;
     1. Ans: if two class names are same then conflict will show .
  3. If we use const object then const methods we can call.otherwise error will show

1. Have u used templates and metaprogramming?
2. Diff between tuple and pair?
   1. Ans: if more than one values want to return then use this. But Tuple needs const values and pair takes non const
3. Difference between Array and vector?
   1. Ans: if we declare vector at compile time and assign the fixed size then the values inside that vector are get added at runtime and that’s why vector is dynamic array
4. Which one preferred to use vector/list and what is the difference?
5. What is mean by move semantics?
   1. Ans: passing ownership of one object to another
6. What is the diff between Push\_back and emplace\_back
   1. Note : push\_back is also used move ctr in c++11 . then what is exact diff?
7. What are the storage classes ?
8. What is register, volatile?
9. What are the oops concepts?
10. What types of casting available in c++ ? and explain each
11. What is mean by polymorphisam ? how used practically
12. What types of memory available? E.g heap….
13. Register come into which segment ? (Global data segment or ?)
    1. Ans: register comes in stack
14. What is mean by const int\* p? const int\* const P
15. If memory created using new and deleted using free then what will happen?
    1. Int\* p= new int; Free(p); //what will be output (will not free memory. The pointer still points to memory location) .Now, creating memory using new keyword and try to delete it using free() then the destructor will not be called and because of that memory and resources will not be free. And it will lead to memory and resources leak.
    2. Int\* p = new int; delete p; free (p) //What is output (Ans : Double free memory ..aborted)
16. What is mean Race condition? And how avoid it
17. What is mean by Deadlock?
18. Pass by value Vs Pass by reference
19. How to do dynamic memory allocation in c and c++
    1. Ans -> malloc , calloc, realloc , new
20. What is the size of stack
    1. Stacks are temporary memory address spaces used to hold arguments and automatic variables during invocation of a subprogram or function reference. In general, the default main stack size is 8 megabytes.
21. If class contains member as array (int arr[]) then is it required to add copy ctr or else use directly default copy ctr?
22. Finally keyword in try catch? Why used generalise catch block at the end [catch(…)]?
23. Difference between push\_back and emplace\_back?
    1. Ans: push back calls copy constructor and emplace back calls move ctr.

<https://www.geeksforgeeks.org/push_back-vs-emplace_back-in-cpp-stl-vectors/>

1. Which algorithms used in STL?
   1. Ans : Sort. How sorting is done internally ? required more explanation
   2. Any other algo?
2. How stack elements prints without popping them?

for (std::stack<int> dump = stack; !dump.empty(); dump.pop())

std::cout << dump.top() << '\n';

1. Write the program for Unique Pointer?

|  |
| --- |
| // Online C++ compiler to run C++ program online #include <iostream> using namespace std;  class Emp { int Id; public: int GetId() const { // const int i=100; return 100; } };  template<typename T> class SmartPointer { T\* P; public: SmartPointer(T\* ptr=nullptr) { P = ptr; }  SmartPointer(const SmartPointer& other)=delete; SmartPointer& operator=(const SmartPointer& other)=delete;  SmartPointer(SmartPointer&& other) { P = other.P; other.P = nullptr; }  ~SmartPointer() { delete P; }  T& operator\*() { cout<<"Operator \* overloading"<<endl; return \*P; }  T\* operator->() { cout<<"Operator -> overloading"<<endl;  return P; }  };  int main() { // Write C++ code here std::cout << "Hello world!"<<endl;  SmartPointer<Emp> uniqueObj(new Emp);  cout<<"Value Of Smart Pointer = "<< uniqueObj->GetId() <<endl;  return 0; } |

1. Internally which data structure used by map?
   1. Ans: Balanced Binary Search Tree

**QT+Thread**

1. Signal slot has 5th parameter what is that?
   1. Ans: Connection type.
2. What are the connection types in QT? When used that connection Type ? Unique connection example , Queued connection, Blocked Queued connection, auto connection, direct connection
3. How Queued connection work in case of thread? Where connection get queued?
   1. Ans: If signal is in one thread and slot is in other thread then the queue is maintain at slots thread side.
4. Signal slot is the one syntax and what will be other syntax for that using C++11?
   1. Ans: lambda can use in place of slot .
5. How moc file is get generated?
   1. Ans: By looking towards the Q\_Object macro the moc file is get generated
6. And who generate this moc file ?
   1. Ans : moc exe internally used to create moc file. And RSS is there for other source like qrc.
7. If I have a GUI thread and Worker thread how they will communicate means how worker thread send the data to GUI thread to display some data?
   1. Ans : Using InvokeMethod.
8. What is the 5th parameter in Invoke method?
   1. Ans: Connection Type;
9. If I want to work on GUI thread and want to display that data on ui (NO other worker thread present) then how can we show data .Data is continusouly popup those data onUI . And becoz of that my UI can get hanged?
   1. Ans: QApplication has processEvent method which will process that data.
10. I have class and class have one vector<int> and SetMethod() write the data in vector continuously and other method GetMethod() read the vector data continuously. I have two threads one thread write data in vector and other thread read data from vector separately. What will be the problem then?
    1. Ans: The Synchronisation issue there and to avoid this will use single Lock mechanism.
11. What the syntax of thread in c++11,14. ? How many ways are there to create thread?
    1. Ans: Callable function(function pointer), Lambda expr, Functor.
12. If I remove Q\_Object from file then will moc file get created or not?
    1. An: no
13. Std:: async in thread?
14. Which one you preferred to use Inheritance or Contentment (composition and aggregation)
    1. Ans: Contentment(Composition and aggregation)

Asked question based on programming

1. What types of inheritance are present? And explain each
2. What is mean by Diamond problem? And how to resolve it?What error we get if diamond problem is present(Ans-> ambiguity)?

Example:

Class A{}

Class B{}

Class C{}

Class D : virtual public B, virtual public C{} //What will be the result and is it solve the diamond problem?

Tips: by adding only virtual never print the ambiguity . When we write any method /variable and try to access that time shows the error of ambiguity else result print two times ctr of A class .

1. What is the result?

Example :

Class A{}//some code of ctr, dtr

Class B{}

Int main()

{

A\* ptr = new B;//what will be the result? -> A() ctr , B ctr() only.

//The destructor is not get called here becoz delete ptr is not written here.

}

1. In mall parking , the types of vehicle are there and want to manage those in and out vehicles. Which STL/Data structure will use?
   1. Ans: Map will use and key will be vehicle no.
2. Merge two sorted link list
   1. Recursive

if (a->data <= b->data)  
{  
result = a;  
result->next = SortedMerge(a->next, b);  
}  
else  
{  
result = b;  
result->next = SortedMerge(a, b->next);  
}

* 1. Non recursive

Node\* MergeList(Node\* first, Node\*second)

{

If(first->next==Null and second->next==null)

{return;}

If(first->next==Null and second->next==null)

{return;}

If(first->next==Null)

{return;}

For(traverse first)

{

For(traverse second)

{

If(first->data < second->data)

{

First = first->next;

}

Else If(first->data > second->data)

{

second = second->next;

}

}}}

1. How to find out register in GDB?
2. Remove duplicate char from string ?

Example = “Rohini” output=”Rohin”

string s;

for(Rohini)

{

char c=o;

for(S)

{

if(s[i]==o)

{

s+='R';

}

else

{

//do nothing

}

}

}

1. Strcpy() operation is faster or not? What is the issue in strcpy?
2. What is mean by inline ? and if size of code is increased then what is the issue?
3. What is mean by pass by Address and pass by reference?
4. What is mean by this ptr ? should I use this pointer in constructor?
5. Vptr and vtable? If my class is abstract then should I have vptr? Vptble?
6. How can I count no of threads using linux?
7. How many threads can create in linux?
8. What is mean by thread and process?
9. What is mean by crono job in linux?
10. If want to start one program at the time of boot then how canwe start?
11. If I have large file and have low space to load and read file , then how to read file?
12. Std::vector<int>X; //Ans->creation of vector

Std::vector<int> X(); // x() function returns vector

What does this mean?

1. What is mean by smart pointer/unique pointer
2. How scale size in qt
3. Thread synchronization in QT and how to avoid
4. Deadlock?
5. Make file?
6. GTest? EXPECT\_CALL()?
7. How tractor use coordinates? Ans->Lat lon , altitude
8. What is mean by curve in guidance line?
9. Kernel object related to What?
   1. Options : Mutex, Sempahore, ?
10. Std::find() use which search?
    1. Oprions : binary, linear?
11. Templates in inheritance is allowed?
    1. Options : yes / no
12. Const pbject modified by? (option: volatile, mutable,)
13. Constexpr is only meant for ? (options: only compile time , some times compile time)
14. Time complexity for binary search tree?
15. What is the sequence for insertion of data? (which one is faster and then slow .slow)
    1. List, map, unordered\_map
16. Std::sort use in-place always? (y/n)
17. Can we have pure virtual destructor? (y/n)
18. // have you ever heard about "false sharing"?

struct S

{

int i1; // f1

char pad[CACHE\_LINE\_SIZE];

int i2; // f2

};

void f1(S& s)

{

while(true)

s.i1++;

}

void f2(S& s)

{

while(true)

s.i2++;

}

S s;

std::thread(f1, std::ref(s));

std::thread(f2, std::ref(s));

struct S

{

int i\_;

S(int i) : i\_(i)

{

static int i = 0;

i++;

}

~S()

{

static int j = 0;

j++;

}

S& operator= (const S&)

{

static int k = 0;

k++;

}

S(const S& )

{

static int l = 0;

l++;

}

};

Vector<S> v;

For(int i=0;i<3;i++)

{

v(s(i));

}//What will be the out put for I,j,k,l

bool operator < (const S& obj1, const S& obj2)

{

return obj1.i\_ < obj2.i\_;

}

std::set<S> s;

s.insert(S(i));

//for user defined data type how sorting is done ? and : add operator < overloading

bool f(int& i)

{

return i < 3;

}

int i = 0;

if(f(i++) && f(i++))

{

}

// what will be i value?

struct I

{

int i\_;

I(int i) : i\_(i) {}

const I operator++(int val) // ans is here for how to overload operator++

{

I old(i\_);

i\_++;

return old;

}

I& operator++()

{

i\_ = i\_+ 1;

return s\*this;

}

};

int main()

{

I++;//I.operator++();

}

1. I i(0);

assert(i.i\_ == 0); what is mean by assert

i++;

assert(i.i\_ == 1);

1. int j = 0;

j++++;

while overloading operator ++() means post increment plz use above code so that j++++ will not allowed .

1. In linux , if file is not accessible then how to solve issue?
2. What is mean by “false sharing ” in multithreading?
3. Program

Void f1()

{

F2();

}

Void f2()

{

Throw ex

}

Int main()

{

F1();

}

What will be happen? No catch is there

Ans-> it will not give the compile time error even not run time error. But when f1() called and throw statement get executed then it os problematic to handle call termination.

1. So how to overcome this issue?
   1. Ans; We can use no except.
2. Program

Void f1() noexcept

{

F2();

}

Void f2()

{

Throw;

}

Int main()

{

F1();

}

Que: here by using noexcept the f1() will not throw exception but again for that we need pass bool parameter inside void f1() noexcept(bool) something like that. For this check cppnut videos.

1. Program

Class A()

{

Virtual void f1(int val){}

};

Cass B :public:

{

Void f1(string s){}

}

Int main()

{

A obj;

B objB;

A\* objA = &obj;

A\* ptrA = & objB

}

Que: for above code which methods will get call ?

At the run time the parameter inside virtual function are get converted. For this check geeks for geeks.

1. What is mean by deadlock, multithreading
2. Where will use recursive\_lock? And what is recursive\_lock()?
3. Do u know python?
4. Can we throw exception from ctr and destructor?and if throw then what will happen?
5. What is the difference between pair and tupple?
6. What types of casting in c++ and explain each
7. No of Smart pointers in c++ and explain each
8. What is mean by make\_shared and how is it useful?
9. Write down the program for copy ctr, move ctr and the main function for this?
10. Convert ab -> ab Ab AB bA write down the program for this . may t=be there will abc also and will be 8 combinations
11. Program for finding non negative number which is not present in vector

-3, 0, -6, 4, -1, 2, 1, -3

Here after 1, 2 3 is miising so return 3 value from vector

Ans -> int solution(vector<int>& v)

{

//your code here

unsigned int count = 10;

for(unsigned int i =1 ; i < count ;i++)

{

auto iter = std::find(i);

if(iter == vec.end())

{

cout <<"i vallue is missed";

return i;

}

}

1. -rwxr-xr-x what is mean by this in linux
2. Program was given call the prinName method using pointer , reference ,object

#include <iostream>

using namespace std;

class vehicle

{

char\* m\_name;

public:

vehicle(char\* arr)

{

m\_name = new char[strlen(arr)];

strcpy(m\_name, arr);

}

virtual void printName()

{

for(int i = 0; i < strlen(m\_name), i++)

{

cout<<m\_name[i]<<endl;

}

}

};

class car : public vehicle

{

int m\_ver;

public:

car(char\* arr, int val): vehicle(arr), m\_ver(val){}

void printName()

{

cout<<m\_ver<<endl;

}

};

void print(vehicle& v)

{

v.printName();

}

int main()

{

vehicle\* vp = new car("Jazz", 2);

print(\*vp);// which method will call.becoz object is type of car.

return 0;

}

Note :They asked me to correct code and make it runnable

1. Vector, set , multiset, unordered\_set, unordorrder\_multiset?
2. Map internally use which data structure?
   1. Ans; Balance binary search tree called as red-black tree..AVL tree
3. How to do sorting in set .
   1. Ans use second parameter in set like less<>, greater<>
4. Where and how used stack in ur application?
5. Top command in linux?
6. How to use binary search?
   1. Ans : first sort and then use binary search using mid, left and right position and comparision
7. What is mean by mutex and semaphore ?
   1. Ans : semaphore use counting and mutex use lock mechanisam
8. What is mean by synchronization?
9. Which system call u have used ?
   1. Ans: Fork() used to duplicate process
10. Without using c++11 smart pointer how u can achive smart pointer?
    1. Will create class design as Smart Pointer and will overload \* and -> operator inside that class.
11. How can you optimize code ?
12. Which IPC used?
    1. And TCP used
13. So what is mean by TCP , UDP? And diff
14. What is mean by little endian and big endian?
15. What is mean by IP4 and IP6 ?

class CopyDemo

{

int Salary;

public:

CopyDemo(const CopyDemo& other)

{

}

void SetSalary(int val)

{

Salary = val;

}

};

void fun(const CopyDemo& obj)

{

obj.SetSalary(100); //Does salary will set here or not? Ans: no error: passing 'const CopyDemo' as 'this' argument discards qualifiers [-fpermissive]

}

int main() {

// Write C++ code here

std::cout << "Hello world!";

CopyDemo obj1;

fun(obj1);

return 0;

}

1. Create class design or classes for chess in c++ [need to check it]

class Player

{

string name;

bool win;

}

class ChessBoard

{

map<hourse, moves> map;

}

1. Create class design or classes for folder and files structur in c++
   1. Ans:

class File

{

string fileName;

string filePath;

}

class Folder

{

string folderName;

string folderPath;

set<File> files; //used composition relationship

set<Folder\*> Folders; //used composition relationship

}

1. What is mean by interface?
2. How to write down the code for memory leak?
   1. Ans : write down the class and inside that create pointer and new it but don’t delete it

class CopyDemo

{

int\* data;

public:

copyDemo(int val)

{

data = new int(val);

}

~CopyDemo()

{

//delete data; if not delete then memory leak

//data = nullptr;

}

};

int main()

{

CopyDemo obj(10); //out of scope destr called but data object not delete //there so memory leak.

}

1. Write down swap function using reference and pointer

Ans : void swap(int\* a, int\* b)

{

int temp = \*a;

\*a = \*b;

\*b = temp;

}

int main()

{

int a = 10, b = 20;

swap(&a, &b);

std::cout<< a << " " << b; //a=20, b=10

return 0;

}

1. Write the program whete 100 elements are there and sort that based on salary

Ans:

class CopyDemo

{

int Salary;

};

int main()

{

std::vector<CopyDemo> vec(100);

vec.push\_back() //till ;...100

std::sort(vec.begin(), vec.end(),

[](const auto& a, const auto& b)

{

return a.Salary < b.Salary;

});

}

1. What is the difference between DOM parser and SAP parser?
2. Templates has int, string…but return only int value?

template<typename T>

T fun(T val)

{

}

fun<int>(10);

fin<string>("A")

Ans : Use Template Specialization

#include <iostream>

#include <iostream>

using namespace std;

template <class T>

T fun(T a)

{

cout << "The main template fun(): "

<< a << endl;

return a;

}

template<>

int fun(int a)

{

cout << "Specialized Template for int type: "

<< a << endl;

return a;

}

int main()

{

fun<char>('a');

fun<int>(10);

fun<float>(10.14);

return 0;

}

1. Which one is better Inheritance or composition?

Ans: Composition - has-a relationship between objects.

Inheritance - is-a relationship between classes.

Composition - Composing object holds a reference to composing classes and hence relationship is loosely bound.

Inheritance - Derived object carries the base class definition in itself and hence its tightly bound.

Composition - Used in Dependency Injection

Inheritance - Used in Runtime Polymorphism

Composition - Single class objects can be composed within multiple classes.

Inheritance - Single class can only inherit 1 Class.

Composition - Its the relationship between objects.

Inheritance - Its the relationship between classes.

Prefer composition over inheritance as it is more malleable / easy to modify later, but do not use a compose-always approach. With composition, it's easy to change behavior on the fly with Dependency Injection / Setters. Inheritance is more rigid as most languages do not allow you to derive from more than one type.

1. For the threaded application which smart pointer will use? Is Unique pointer or shared pointer thread safe

I told Ans : Shared pointer

Que: why shared pointer and not unique pointer

1. Time complexity of std::sort() method?

Ans:  **O(N log(N))**

**Binary Search = O(log n)**

1. Find out min max value in const time?

Ans; As per my knowledge unorder\_set can use which used internally hash Data structure.

Need to check it on.

I implememted vector and use sort method but that will not give u result in const time

# M

1. Is it possible function overloading/static polymorphisam.

class Base

{

public:

int add() //error note: previous declaration 'int Base::add()'

{

cout <<"return int";

return 0;

}

double add() // error: 'double Base::add()' cannot be overloaded with 'int Base::add()'

{

cout <<"return double";

return 1.1;

}

};

Ans :Not possible to override.

1. What will be result? Which class add() method will get call

#include <iostream>

using namespace std;

class Base

{

public:

virtual void add(int i)

{

cout <<"Base"<<endl;

}

};

class Derived: public Base

{

public:

void add(int i, int j)

{

cout <<"Derived"<<endl;

}

};

int main() {

Base\* obj = new Derived;

obj->add(1); Ans: Base class add() method will get call

return 0;

}

1. What is mean by override? Final? Can we use final in method and class

Ans: final keywork can use for class and method also.

1. Is it possible to write only try block and not catch?
   1. int main() {

try

{

}

return 0;

}

* 1. try

{

throw 1;

}

Ans : Above both case will give error , error: expected 'catch' before '}'

1. what is the output? And is int get converts into double in catch bliock of second?

// Online C++ compiler to run C++ program online

#include <iostream>

using namespace std;

void last()

{

cout<<"last entry"<<endl;

throw 1;

cout << "last exit"<<endl;

}

void second()

{

cout<<"Second Entry"<<endl;

try

{

last();

}

catch(double d)

{

cout<< "Second Catch = "<< d<<endl;

}

cout<<"second exit"<<endl;

}

void first()

{

cout<<"First Entry"<<endl;

try

{

second();

}

catch(int i)

{

cout<< "First Catch int = "<< i<<endl;

}

catch(double d)

{

cout<< "First Catch double = "<< d<<endl;

}

cout<<"first exit"<<endl;

}

int main() {

// Write C++ code here

std::cout << "main entry"<<endl;

try

{

first();

}

catch(int i)

{

cout<< "main catch int="<< i<<endl;

}

cout<<"main exit"<<endl;

return 0;

}

Ans : First Catch int = 1 wil get call.

1. What is mean by unique pointer, shared pointer and weak pointer?
2. Can we pass unique pointer as a parameter in method? can we return unique pointer from method? If we have unique pointer p3=p2 ? is it possible?

Ans : operator = and copy ctr both are default deleted in unique pointer .

#include <iostream>

#include<memory>

using namespace std;

void fun(unique\_ptr<int> p)

{

cout <<"fun = " << \*p<<endl;

}

unique\_ptr<int> Fun1()

{

cout<<"Fun1"<<endl; //temp obj is return so internally move called

return make\_unique<int>(100);

}

int main() {

// Write C++ code here

cout<<"Hello"<<endl;

unique\_ptr<int> p=make\_unique<int>(10);

fun(std::move(p)); //pass unique pointer

unique\_ptr<int> p1 = Fun1(); //Return unique Pointer from function

cout<< "p1 = "<<\*p1;

unique\_ptr<int> p2=make\_unique<int>(1000);

unique\_ptr<int> p3;

// p3=p2; // use of deleted function "operator="

return 0;

}

1. Any example of weak pointer?
2. How to avoid increase the reference count when we pass shared pointer in methos?

Ans : use shared parameter reference or pointer as a parameter.

1. Lamba Expression Que: [=], [&] , How to pass by ref, pass by val in lamba captcha? How to pass value as const in lambda expression. whole study of lambda .
2. How to explicitly return any value from lamba?
   1. Ans : []()->int{}
3. User defined class and used set container to set user defined class .How to insert data in sorted order in set.
   1. Ans : use operator < overloading

class Emp

{

public:

int id;

Emp(int val): id(val){}

first approach overloas operator<

bool operator<(const Emp& obj) const

{

return this->id < obj.id;

}

};

int main() {

// Write C++ code here

cout<<"Hello"<<endl;

set<Emp> data;

data.insert(Emp(21));

data.insert(Emp(14));

data.insert(Emp(41));

for(auto t: data)

{

cout<< t.id<< " ";

}

}

* 1. Second one is lambda

Auto cmp = [](){}

Set<Class> setData (cmp);

#include <set>

#include <iostream>

#include <iterator>

#include <algorithm>

int main()

{

auto comp = [](int x, int y){ return x < y; };

auto set = std::set<int,decltype(comp)>( comp );

set.insert(1);

set.insert(10);

set.insert(1); // Dupe!

set.insert(2);

std::copy( set.begin(), set.end(), std::ostream\_iterator<int>(std::cout, "\n") );

}

//not working same code for Emp class ..need to study on this.

1. Thread? Mutex?Race condition?

//t1 locked but return then it keeps locking and no one will enter in this line.SO what //is the solution instead of any synchronization? Sol=> automic(cross check it)

m.lock();

i++;

return; //above que on this line

m.unlock()

1. what is mean by noexcept?
2. Vec{5,6,5,6,7,6,7}

Print ans : 5-2, 6-3, 7-2

Means count the frequency of number.

Ans :

// Online C++ compiler to run C++ program online

#include <iostream>

#include<vector>

#include <map>

using namespace std;

int main()

{

vector<int> v = {5,6,5,6,7,6,7};

std::map<int, int> map;

for(int i=0 ; i<v.size();i++)

{

auto iter = map.find(v[i]);

if(iter!=map.end())

{

int val = iter->first;

int count = iter->second;

count=count+1;

map.at(val) = count;

}

else

{

map.insert({v[i], 1});

}

}

for(auto val: map)

{

cout<< val.first << " "<< val.second << endl;

}

return 0;

}

1. What is mean by Multiple inheritance . Write down the classes and inheritance for that
2. Write down the classes for diamon problem?
3. Write down code for copy ctr?
4. Write down code for upcasting and downcasting?
5. What is mean by oops concept?
6. What is mean by enum ? can we use duplicate numbers in enum(Ans-yes)?
7. What is mean by make\_shared and how is it useful?
8. Why will use #define and const and what is the difference

1. Diff between Qvarient and templates
2. Exec()?
3. Synchronization?
4. Can we connect multiple signals with signal slot?
5. Can we connect single signal with multiple slots?
6. QMap?Qvector?
7. Blockedqueedconnection?
8. More questions was on lead position
9. Socket programming and asked if packet loss and then how to know that packet has lost.
10. What is mean by QObject?
11. In linux Virtual memory?

## Write down the program for link list

Ans:

// Online C++ compiler to run C++ program online

#include <iostream>

#include <cstring>

using namespace std;

struct Node

{

int data;

Node\* next;

};

int main() {

// Write C++ code here

struct Node\* head = new Node;

head->next = nullptr;

head->data = 1;

struct Node\* node = new Node;

node->next = nullptr;

node->data = 2;

head->next = node;

struct Node\* temp = head;

while(temp !=nullptr)

{

cout << temp->data<<endl;

temp=temp->next;

}

return 0;

}

## String reverse

Ans: This program use second char to while reversing string;Instead of this use single char and do string reverse.

<https://www.geeksforgeeks.org/reverse-a-string-in-c-cpp-different-methods/>

#include<iostream>

#include<cstring>

#include <string>

using namespace std;

class String

{

char\* ch;

int len;

public:

String(char\* val)

{

len = strlen(val);

ch = new char[len+1];

for(int i = 0; i< len;i++)

{

ch[i] = val[i];

}

}

void ReverseString()

{

cout << "ReverseString"<<endl;

char\* val ;

val = new char[len];

for(int i= len-1 ;i>=0; i--)

{

int index=len-1-i;

val[index] = ch[i];

}

for(int i= 0 ;i<len; i++)

{

ch[i] = val[i];

}

}

void Print()

{

for(int i = 0; i< len;i++)

{

cout << ch[i];

}

}

};

//function to call reverse string

void ReverseStringUsingSwap(std::string& str)

{

int n = str.length();

cout << "len= " << n <<endl;

for(int i =0 ;i< n/2; i++)

{

cout << i <<" ";

swap(str[i], str[n-i-1]);

}

cout << str<<endl;

}

int main() {

// Write C++ code here

std::cout << "Hello world!"<<endl;

String obj("Abcd");

obj.Print();

cout <<endl;

obj.ReverseString();

obj.Print();

cout <<endl;

//reverse using Swap

string str = "Rohini";

ReverseStringUsingSwap(str);

return 0;

}

## Design pattern implementation of Observer pattern

// Online C++ compiler to run C++ program online

#include <iostream>

#include <vector>

using namespace std;

class Observer

{

public:

void Subscribe(string str)

{

cout << str <<endl;

}

};

class Subject

{

vector<Observer\*> Vec;

public:

void AddObserver(Observer\* obj)

{

Vec.push\_back(obj);

}

void Publish(string str)

{

for(auto val: Vec)

{

val->Subscribe(str);

}

}

};

int main() {

// Write C++ code here

std::cout << "Hello world!"<<endl;

Subject subObj;

Observer obs1;

Observer obs2;

Observer obs3;

subObj.AddObserver(&obs1);

subObj.AddObserver(&obs1);

subObj.AddObserver(&obs3);

subObj.Publish("Design Pattern");

return 0;

}

## Access Specifier

class A

{

public:

int a;

private:

int b;

protected:

int c;

}

class B:public A

{}

class C: private A

{}

class D:protected A

{}

Ans :

// Online C++ compiler to run C++ program online

#include <iostream>

using namespace std;

class A

{

public:

int a;

private:

int b;

protected:

int c;

public:

void Print()

{

cout << "Print A= " << a << " "<< b << " " << c << endl;

}

};

class B:public A

{

public:

B()

{

a = 10;

//b = 20; //Erro: int A::b' is private within this context

c = 30;

}

};

class C: private A

{

public:

C()

{

a = 10;

//b = 20; //Erro: int A::b' is private within this context

c = 30;

}

};

class D:protected A

{

public:

D()

{

a = 10;

//b = 20; //Erro: int A::b' is private within this context

c = 30;

}

};

int main() {

// Write C++ code here

std::cout << "Hello world!"<<endl;

A objA;

objA.a = 10;

//objA.b = 20; //Error : int A::b' is private within this context

//objA.c = 30; //Error : 'int A::c' is protected within this context

objA.Print();

B objB;

objB.a = 10;

//objB.b = 20; //Error : int A::b' is private within this context

//objB.c = 30; //Error : 'int A::c' is protected within this

objB.Print();

C objC; //

//objC.a = 10; //error: 'int A::a' is inaccessible within this context

//objC.b = 20; //error: 'int A::b' is private within this context

//objC.c = 30; //error: 'int A::c' is protected within this context

//objC.Print(); //error: 'void A::PrintC()' is inaccessible within this context

D objD;

//objD.a = 10; //error: 'int A::a' is inaccessible within this context

// objD.b = 20; // error: 'int A::b' is private within this context

//objD.c = 30;// error: 'int A::c' is protected within this context

//objD.Print(); // error: 'void A::PrintD()' is inaccessible within this context

return 0;

}

## General Que:

1. How to access base class member variables in derived class
   1. Ans : either ctr or can directly thr this\*
2. How to avoid deadlock?
3. What is mean by condition variable
4. Can we set explicity capacity in vector?
5. How to insert data in middle in vector and what will be the internal behaviour of that?
6. What is the output

int arr[] = {5,10,15,20,25,30};  
int arrSize = sizeof(arr)/sizeof(arr[0]);  
cout << “Size of the array is: ” << arrSize;

Ans : output is 6

1. Program remove duplicate no

Input = 15, 5, 15, 5, 5, 25, 30, 98, 85

Output = 25, 30, 98, 85

vector<int> vec;

void RemoveDuplicateNumbers()

{

std::map<int, int> map; // number, count

for(int i=0;i<vec.size();i++)

{

auto iter = map.find(vec[i]);

if(iter!=map.end())

{

int count = iter->second;

count++;

map[iter->first] = count;

}

else

{

map.insert({vec[i], 1});

}

}

for(auto iter: map)

{

if(iter->second > 1)

{

map.remove(iter);

}

}

}

1. What is the difference between delete and free ? in terms of memory handling
2. What is mean by volatile
3. What is mean by compile time error and runtime error?
4. Can we overload destrcuctor?

#include<iostream>

using namespace std;

class A

{​​​

public:

A(){​​​ cout <<"1";}​​​

A(const A &obj){​​​ cout <<"2";}​​​

}​​​;

class B: virtual A

{​​​

public:

B(){​​​cout <<"3";}​​​

B(const B & obj){​​​cout<<"4";}​​​

}​​​;

class C: virtual A

{​​​

public:

C(){​​​cout<<"5";}​​​

C(const C & obj){​​​cout <<"6";}​​​

}​​​;

class D:B,C

{​​​

public:

D(){​​​cout<<"7";}​​​

D(const D & obj){​​​cout <<"8";}​​​

}​​​;

int main()

{​​​

D d1; //Ans 1,3,5,7

D d(d1); //Ans 1,3,5,8

}​​​

//--------------------------------------------------

#include <iostream>

using namespace std;

class A

{

protected:

int x;

public:

A() {x = 0;}

friend void show();

};

class B: public A

{

public:

B() : y (0) {}

private:

int y;

};

void show()

{

A a;

B b;

cout << "The default value of A::x = " << a.x << " ";

cout << "The default value of B::y = " << b.y;

}

Ans : we cannot inherit friend in derived class

//-------------------------------------------------------------------------

#include<iostream>

using namespace std;

class base

{​​​

int arr[10];

}​​​;

class b1: public virtual base

{​​​ }​​​;

class b2: public virtual base

{​​​ }​​​;

class derived: public b1, public b2

{​​​}​​​;

int main(void)

{​​​

cout << sizeof(derived); //80 byte [if virtual inheritance then size will be 40 byte]

return 0;

}​​​

//-------------------------------------------

#include<iostream>

using namespace std;

class Test

{​​​

public:

Test();

}​​​;

Test::Test() {​​​

cout << " Constructor Called. ";

}​​​

void fun() {​​​

static Test t1;

}​​​

int main() {​​​

cout << " Before fun() called. ";

fun();

fun();

cout << " After fun() called. ";

return 0;

}​​​

Ans :

Before fun() called.

Constructor Called.

After fun() called.

//-----------------------------------------

#include <iostream>

using namespace std;

class A

{​​​

private:

int x;

public:

A(int \_x) {​​​ x = \_x; }​​​

int get() {​​​ return x; }​​​

}​​​;

class B

{​​​

static A a;

public:

static int get()

{​​​ return a.get(); }​​​

}​​​;

int main(void)

{​​​

B b;

cout << b.get();

return 0;

}​​​

//Ans : compile time error and avoid those error add this line A B::a = A();

//-------------------------------------------------------

class A

{​​​

public:

A()

{​​​

}​​​

virtual void f(int x = 5)

{​​​

cout <<"In A"<< x << endl;

}​​​

}​​​;

class B: public A

{​​​

public:

B()

{​​​}​​​

void f(int x)

{​​​

cout << " In B " << x <<endl;

}​​​

}​​​;

int main()

{​​​

A \*obj = new B();

obj->f();

return 0;

}​​​

Ans : In B : 5

Explanation : AT compile time A class f(5) will get call and run time B class f with 5 value will call.

//------------------------------------------------------------

Que: if use new to allocate memory then compiler should give error.

A\* obj = new A();

Ans: either create ctr as private or delete

void\* new()=delete;

//----------

Que: while object creation compiler will give error cannot create object but thr new can create object

A obj;//compile error

A\* obj=new A(10);

ans: declare destructor as private

//------------------

Que: 644 is the value and using this how to change permission to executable(x) in app.out file

rwx

ugo

111 101 101

rwx r-x r-x

ans:

1) chmod 755

2) chmod +x

//----------------------------------------

Que: What is mean by soft link and hard link in linux?

ls -l

//--------------------------------

//Instead of c++11 final develop own final class using basic c++ concept

class Final;

class MakeFinal

{

private:

MakeFinal (){cout<< MakeFinal ctr"<<endl;}

friend class Final;

};

//compile time error

class Final: virtual MakeFinal //IMP virtual here

{

public :

Final(){cout<<"Final class<< endl;}

};

class Derived: public Final

{

public:

Derived()

{

cout<< "Derived ctr"<< endl;

}

};

int main()

{

Derived d;

return 0;

}

Note: MakeFinal is also a virtual base class.

The reason for this is to call the constructor of MakeFinal through the constructor of Derived,

not Final (The constructor of a virtual base class is not called by the class that inherits from it,

instead the constructor is called by the constructor of the concrete class).

Derived‘s constructor directly invokes MakeFinal’s constructor, and the constructor of MakeFinal is private, therefore we get the compilation error.

//------------------------------------------------------------------------------------------------------------------------------