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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Programming in Modern C++ (course)

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Course outline

- How does an NPTEL online course work? ()
- Week 0 ()
- Week 1 ()
- Week 2 ()

Week 7 : Assignment 7

The due date for submitting this assignment has passed.

Due on 2023-03-15, 23:59 IST.

Assignment submitted on 2023-03-13, 18:00 IST

1) Consider the following code segment. **2 points**

```
#include <iostream>
using namespace std;
class employee {
    string name ;
    int salary;
    public:
        employee(int _sal, string _name) : name(_name), salary(_sal) {}
        void update(int s, string na) const{
            ( ------------------------- )->salary = s; //LINE-1
            ( ------------------------- )->name = na;  //LINE-2
        }
        void showInfo() const {
            cout << name << " : " << salary;
        }
};
int main(void) {
    const employee e(3000, "Raj");
    e.update(5000, "Rajan");
    e.showInfo();
    return 0;
}
```

Fill in the blank at LINE-1 and LINE-2 with the same statement such that the program will print Rajan : 5000.

a) const_cast <employee*> (this)

b) static_cast <employee*> (this)

c) dynamic_cast <employee*> (this)

a) `(employee*)(this)`

b)

c)

d)

Yes, the answer is correct.
Score: 2

Accepted Answers:

a)

d)

2) Consider the following code segment. **2 points**

```
#include<iostream>
using namespace std;
class A{
    public:
        virtual void f() {}
        virtual void g() {}
};
class B : public A{
    public:
        void g() {}
        void h() {}
        virtual void i();
};
class C : public B{
    public:
        void f() {}
        virtual void h() {}
};
```

What will be virtual function table (VFT) for the `class C`?

a)
```
C::f(C* const)
B::g(B* const)
C::h(C* const)
B::i(B* const)
```

b)
```
A::f(A* const)
B::g(B* const)
C::h(C* const)
B::i(B* const)
```

a) c) A::f(A* const)
b) B::g(B* const)
c) B::h(B* const)
d) C::i(C* const)

No, the answer is incorrect.
Score: 0

Accepted Answers:
a) d) A::f(A* const)
B::g(B* const)
C::h(C* const)
C::i(C* const)

3) Consider the following code segment. **2 points**

```
#include <iostream>
using namespace std;
int main() {
    char c = 'C';
    double d = 3.14;
    char *cp = &c;
    double *pd;
    c = static_cast<char>(d);       // LINE-1
    d = static_cast<double>(c);     // LINE-2
    pd = static_cast<double*>(cp); // LINE-3
    c = static_cast<char>(&c);      // LINE-4
    return 0;
}
```

Which line/s will give compilation error?

a) LINE-1

b) LINE-2

c) LINE-3

d) LINE-4

- [ ] a)
- [ ] b)
- [x] c)
- [x] d)

Yes, the answer is correct.

Score: 2

Accepted Answers:

c)

d)

4) Consider the following code segment. **2 points**

```
class Test1 { };
class Test2 { };
Test1* t1 = new Test1;
Test2* t2 = new Test2;
```

Which of the following type-casting is permissible?

a) `t2 = static_cast<Test2*>(t1);`

b) `t2 = dynamic_cast<Test2*>(t1);`

c) `t2 = reinterpret_cast<Test2*>(t1);`

d) `t2 = const_cast<Test2*>(t1);`

- ○ a)
- ○ b)
- ◉ c)
- ○ d)

Yes, the answer is correct.
Score: 2

Accepted Answers:

c)

5) Consider the following code segment. **2 points**

```
#include <iostream>
#include <typeinfo>
using namespace std;
class B { public: virtual ~B(){}};
class D: public B {};
int main() {
    B b;
    D d;
    D *dp = &d;
    B *bp = dp;
    D *dpp = (D*)dp;
    cout << (typeid(bp).name() == typeid(dpp).name());
    cout << (typeid(*bp).name() == typeid(*dpp).name());
    cout << (typeid(dp).name() == typeid(dpp).name());
    cout << (typeid(*dp).name() == typeid(*dpp).name());
    return 0;
}
```

What will be the output?

a) 0101

b) 0111

c) 0110

d) 0010

- a)
- b)

c)

d)

Yes, the answer is correct.
Score: 2

Accepted Answers:

b)

6) Consider the following code segment. **2 points**

```
#include <iostream>
using namespace std;
class A{ public: virtual ~A(){} };
class B : public A{};
class C : public A{};
int main(){
    A objA;
    B objB;
    A* pA = dynamic_cast<A*>(&objB); //LINE-1
    pA == NULL ? cout << "0" : cout << "1";
    B* pB = dynamic_cast<B*>(pA); //LINE-2
    pB == NULL ? cout << "0" : cout << "1";
    C* pC = dynamic_cast<C*>(new A); //LINE-3
    pC == NULL ? cout << "0" : cout << "1";
    pC = dynamic_cast<C*>(&objB); //LINE-4
    pC == NULL ? cout << "0" : cout << "1";
    return 0;
}
```

What will be the output?

a) 0101

b) 1010

c) 1100

d) 1011

- a)
- b)

c)

d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
c)

7) Consider the following code segment. **2 points**

```
#include <iostream>
using namespace std;
int main() {
    const double g = 9.8;
    const double *pg = &g;
    double *pt = ________________________(pg); //LINE-1
    *pt = 9.81;
    cout << *pt;
    return 0;
}
```

Fill in the blank at LINE-1 so that the program will print 9.81.

a) const_cast<double*>

b) static_cast<double*>

c) dynamic_cast<double*>

d) (const double*)

a)

b)

c)

d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
a)

8) Consider the following code segment. **2 points**

```
#include<iostream>
using namespace std;
class C1{
    string a = "C++";
};
class C2{
    public:
        string b = "Programming";
};
int main(){
    C1 u;
    C2 *v = _________________________(&u);
    cout << v->b;
    return 0;
}
```

Fill in the blank at LINE-1 so that the program will print "C++".

a) `reinterpret_cast<C2*>`

b) `static_cast<C2*>`

c) `dynamic_cast<C2*>`

d) `(C2*)`

- [x] a)
- [ ] b)
- [ ] c)
- [x] d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
a)
d)

9) Consider the code segment given below. **2 points**

```
class A1{ public: void f(){} };
class A2 : public A1 { public: virtual void f(){}};
class A3 : public A2{ public: void g(){} };
class A4 : public A1{ public: virtual void g(){} };
```

How many virtual function table (VFT) will be created?

a) 1

b) 2

c) 3

d) 4

- ( ) a)
- (•) b)
- ( ) c)
- ( ) d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

c)